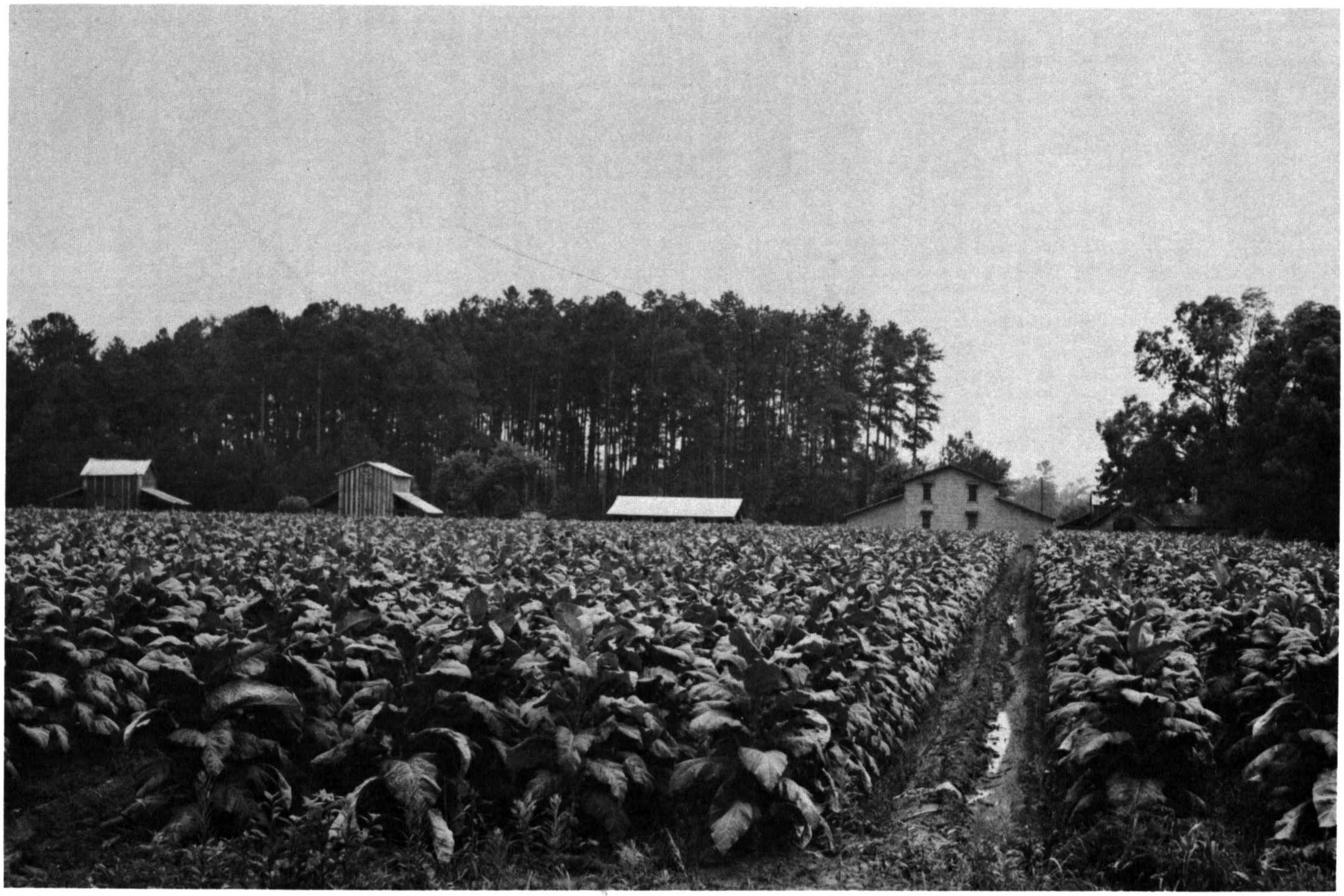
Clarendon County, South Carolina



United States Department of Agriculture
Soil Conservation Service
In cooperation with
South Carolina Agricultural Experiment Station
and
South Carolina Land Resources Conservation Commission

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in the period 1965–70. Soil names and descriptions were approved in 1972. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1972. This survey was made cooperatively by the Soil Conservation Service, the South Carolina Agricultural Experiment Station, and the South Carolina Land Resources Conservation Commission. It is part of the technical assistance furnished to the Clarendon Soil and Water Conservation District.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Clarendon County are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described and the woodland group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of the capability units.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Use of the Soils for Wildlife Habitat."

Community planners and others can read about soil properties that affect the choice of sites for dwellings, industrial buildings, and for recreation areas in the section "Town and Country Planning."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation, Morphology, and Classification of the Soils."

Newcomers in Clarendon County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the information about the county given in the section "Additional Facts About The County."

Cover: **Excellent tobacco crop in an area of Lynchburg loamy sand that is adequately drained.**

Contents

SOIL SURVEY OF CLARENDON COUNTY, SOUTH CAROLINA

BY TALBERT R. GERALD, SOIL CONSERVATION SERVICE

SOILS SURVEYED BY TALBERT R. GERALD AND BENJAMIN N. STUCKEY, JR.,[1] SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION AND THE SOUTH CAROLINA LAND RESOURCES CONSERVATION COMMISSION

CLARENDON COUNTY is in the east-central part of South Carolina in the Middle Atlantic Coastal Plain (fig. 1). It occupies 599 square miles, or about 383,000 acres. In addition, Lake Marion occupies 95 square miles, or 60,800 acres in this county. Manning, the county seat, is the largest town in Clarendon County, which was formed in 1855.

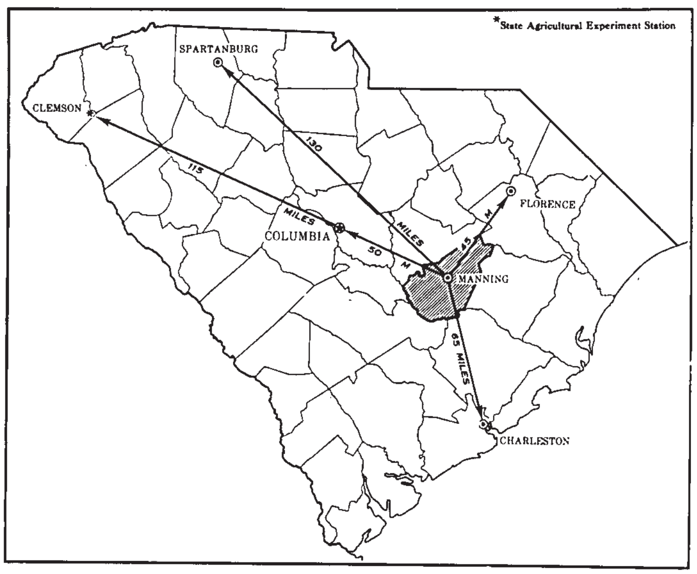


***Figure 1.*—Location of Clarendon County in South Carolina.**

Most of the county has broad, nearly level to gently sloping, predominantly sandy and loamy soils. The soils on flood plains of the rivers and smaller streams are subject to frequent flooding. The major soil series in the county are the Clarendon, Dothan, Fuquay, Lynchburg, Paxville, Rains, Rutlege, and Troup. Sixty-five percent of the soils in Clarendon County have excess water in the profile, and much of the acreage is artificially drained by ditches and tile.

About 33 percent of the county is used for cultivated crops; 1.5 percent for pasture; 59 percent for woodland; and 6.5 percent for urban and nonfarm purposes. The principal crops grown are tobacco, cotton, corn, and soybeans. Forest products are an important source of income.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soils are in Clarendon County, where they are located, and how they can be used. The soil scientists went into the county knowing they were likely to find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Dothan and Lynchburg, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Dothan loamy fine sand,

[1] Assisting with the fieldwork were J. J. PITTS, T. A. DUDLEY, and E. C. HERREN.

0 to 2 percent slopes, is one of two phases within the Dothan series in Clarendon County.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series or of different phases within one series. Two such kinds of mapping units are shown on the soil map of Clarendon County: soil associations and undifferentiated groups.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soils, joined by a hyphen. Portsmouth-Johnston association is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils or of two or more. If there are two or more dominant series represented in the group, the name of the group ordinarily consists of the names of the dominant soils, joined by "and." If a large part of a mapping unit consists of one series and other series constitute inclusions, only one series is used in the name. Tawcaw soils is an example.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kind of soil. Yields under defined management are estimated for all the soils.

Soil scientists observe how soils behave when used as a growing place for native and cultivated plants and as material for structures, foundations for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that filter fields for onsite disposal of sewage fail on a given kind of soil, and they relate this to the slow permeability of the soil or its high water table. They see that streets, road pavements, and foundations for houses are cracked on a named kind of soil and they relate this failure to the high shrink-swell potential of the soil material. Thus, they use observation and knowledge of soil properties, together with available research data, to predict limitations or suitability of soils for present and potential uses.

After data have been collected and tested for the key, or benchmark, soils in a survey area, the soil scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Clarendon County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area or in planning engineering works, recreation facilities, and community developments. It is not a suitable map for planning the management of a farm or field or for selecting the exact location of a road, building, or other structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The soil associations in this county have been grouped into three general kinds of landscapes for broad interpretative purposes. Each of the broad groups and their included soil associations are described in the following pages. Information about the soils in each of the nine soil associations is given in the section "Descriptions of the Soils."

Soil associations and delineations on the general soil map in this soil survey do not fully agree with those of the general soil maps in adjacent counties published at a different date. Differences in the maps are the result of improvements in the classification of soils, particularly in the modifications or refinements in soil series concepts. In addition, more precise and detailed maps are needed because the uses of the general soil maps have expanded in recent years. The more modern maps meet this need. Still another difference is caused by the range in slope that is permitted within associations in different surveys.

Nearly Level to Gently Sloping Soils of the Ridges and Upper Slopes

These associations form broad stream divides where soils are dominantly well drained. Slopes generally are long and smooth, but a few are short and have sharp breaks. Branching drainageways occur throughout these associations, except in areas where the dominant soils are sandy throughout. Most of these soils have a sandy surface layer and a subsoil that has high-chroma colors.

1. Dothan-Lynchburg-Rains association

Well drained and somewhat poorly drained soils that have a sandy surface layer and a loamy subsoil, and poorly drained soils that are loamy throughout

This association consists of broad ridges occupied by nearly level to gently sloping, well-drained soils; broad flat areas occupied by somewhat poorly drained soils; and depressions at lower elevations occupied by poorly drained soils. Many small streams dissect this association, and some originate within the boundaries of the association. The higher ridges are adjacent and parallel to the drainageways and small streams. Away from the drainageways, the topography slopes down to depressed areas, which are about midway between the drainageways. Toward the drainageways, the ridges have narrow, sloping sides that are parallel to the flood plains of the small streams. Areas of poorly drained to very poorly drained soils along the small streams range from a few hundred feet to nearly one-half mile in width.

This association makes up about 52 percent of the county. About 22 percent of this is Dothan soils, about 18 percent is Lynchburg soils, about 15 percent is Rains soils, and the remaining 45 percent is minor soils.

Dothan soils are well drained. They occupy the highest positions in the association. They have a surface layer of grayish-brown loamy fine sand and a subsoil of yellowish-brown sandy clay loam. They have more than 5 percent plinthite below a depth of about 36 inches.

Lynchburg soils are somewhat poorly drained. They are in intermediate positions in the association. They have a surface layer of very dark grayish-brown loamy sand and a subsoil of sandy clay loam that has mottles in shades of gray, brown, yellow, and red.

Rains soils are poorly drained and are in low, flat, or depressed, wet areas. They commonly have a surface layer of very dark grayish-brown sandy loam and a subsoil of gray sandy clay loam that has yellow, brown, and red mottles.

Minor soils in this association are the Troup, Fuquay, Orangeburg, Clarendon, Paxville, Rutlege, and Osier soils and, in the western part of the association, Faceville, Marlboro, McColl, and Grady soils. Well-drained Troup, Fuquay, Orangeburg, Faceville, and Marlboro soils are adjacent to Dothan soils in the highest positions in the association. Moderately well drained Clarendon soils are in intermediate positions. Poorly drained McColl and Grady soils are in oval-shaped depressions known as Carolina bays. Very poorly drained Paxville, Rutlege, and Osier soils are in the lowest areas, generally along streams.

This association is intensively farmed. About 60 percent of the acreage is cultivated, and the rest is woodland. Almost all of the well drained and moderately well drained soils, a large acreage of the somewhat poorly drained soils, and some of the poorly drained soils are cultivated. Most farms are owner operated and range from 150 to 300 acres in size. General-type farms are dominant, and tobacco, corn, soybeans, and cotton are the principal crops.

The quail population in this association is large, and the area is suited to the development of quail and other small-game hunting. Cover is adequate, and a moderate amount of natural food is available. Some sites are suitable for dam-type ponds or lakes. Excavated ponds are numerous and are a source of irrigation water. Some are suitable for fishing if they are managed properly.

Most of this association is only moderately well suited to industrial sites, recreational uses, or sites for dwellings that have onsite sewage disposal because the poorly drained soils are poorly suited to these uses.

2. Faceville-Marlboro-Rains association

Well-drained soils that have a sandy surface layer and a clayey subsoil, and poorly drained soils that are loamy throughout

This association consists of broad areas of nearly level to gently sloping, well-drained soils and smaller areas of low-lying flat and depressed, poorly drained soils. It is in the western section of the county between Summerton and Rimini.

This association makes up about 5 percent of the county. About 32 percent of this is Faceville soils, about 22 percent is Marlboro soils, about 15 percent is Rains soils, and the remaining 31 percent is minor soils.

Faceville and Marlboro soils are well drained and are in the highest positions in the association. Faceville soils have a surface layer of brown loamy sand and a subsoil of mainly red sandy clay. Marlboro soils have a surface layer of dark grayish-brown loamy sand and a subsoil of strong-brown sandy clay.

Rains soils are poorly drained and are in broad, flat areas. They commonly have a surface layer of very dark grayish-brown sandy loam and a subsoil of gray sandy clay loam that has yellow, brown, and red mottles.

Minor soils in this association are the Fuquay, Dothan, Orangeburg, Lynchburg, Grady, McColl, and Paxville soils. Well-drained Fuquay, Dothan, and Orangeburg soils are in the same drainage positions as Faceville and Marlboro soils. Somewhat poorly drained Lynchburg soils are in intermediate drainage positions. Poorly drained Grady and McColl soils are in oval-shaped depressions known as Carolina bays. Very poorly drained Paxville soils are in the lowest areas, generally along streams.

About 55 percent of the acreage in this association is cultivated or is pastured, and the rest is woodland. Farms range from about 150 acres to several hundred acres in size. The general-type farms are owner or tenant operated. Principal crops are cotton, corn, and soybeans.

Food and cover for the numerous quail and rabbits are well distributed. Fall and winter habitat for doves is good. Some excellent sites for dam-type ponds or lakes are available.

Most of the soils in this association are suited to industrial sites, recreational uses, or sites for dwellings that have onsite sewage disposal. The poorly drained soils are less suited.

3. Lakeland-Rutlege association

Excessively drained and very poorly drained soils that are sandy throughout

This association consists of areas of nearly level to gently sloping, excessively drained soils and small, depressed areas of very poorly drained soils. It adjoins and is parallel to Lake Marion and extends north and south of Dingle Pond. Persanti Island is in this association.

This association makes up about 1 percent of the county. About 85 percent of this is Lakeland soils, about 10 percent is Rutlege soils, and the remaining 5 percent is minor soils.

Lakeland soils are excessively drained. They are in the highest positions in the association. They have a surface layer of dark-brown sand that is underlain by yellowish-brown sand.

Rutlege soils are very poorly drained and are in low, wet areas of the association. They have a surface layer of black loamy fine sand that is underlain by gray sand.

The only minor soils in this association are Foreston soils. They are moderately well drained and are in intermediate drainage positions.

The major soils in this association are not suited to farming, and very little of the acreage is cultivated. Most of the cleared acreage has been planted to pine trees in recent years (fig. 2).

The soils in this association are not very productive; therefore, the supply of natural food for wildlife is limited. Other than a few natural ponds, there are no pond sites.

Figure 2.—**Planted forest of pine on Lakeland sand, 0 to 6 percent slopes. The trees are 10 years old.**

Most of this association is moderately suited to industrial sites, recreational uses, or sites for dwellings that have onsite sewage disposal.

Dominantly Nearly Level Soils of the Lower Slopes and Flats

These associations form broad, low flats and low-lying areas. Slopes are dominantly less than 1 percent. Most soils in the associations have restricted drainage. Drainage patterns are poorly defined, and some areas are ponded. These soils generally have a sandy or loamy surface layer and a subsoil dominated by low-chroma colors or having many low-chroma mottles.

4. Lynchburg-Clarendon-Rains association

Somewhat poorly drained and moderately well drained soils that have a sandy surface layer and a loamy subsoil, and poorly drained soils that are loamy throughout

This association consists of broad areas of nearly level to depressed soils. Major drainage is poorly defined in some areas. Elevations vary only a few feet throughout the association, and the higher elevations parallel the few drainageways.

This association makes up about 23 percent of the county. About 20 percent of this is Lynchburg soils, 18 percent is Clarendon soils, 15 percent is Rains soils, and the remaining 47 percent is minor soils.

Lynchburg soils are somewhat poorly drained. They are in intermediate drainage positions between Clarendon and Rains soils. They have a surface layer of very dark grayish-brown loamy sand and a subsoil of sandy clay loam that has mottles in shades of gray, brown, yellow, and red.

Clarendon soils are moderately well drained and are in the better drained positions in the association. They have a surface layer of dark grayish-brown loamy sand and a subsoil of yellowish-brown sandy clay loam that has gray mottles in the lower part. They have more than 5 percent plinthite below a depth of about 40 inches.

Rains soils are poorly drained and are in low, flat, or depressed areas. They commonly have a surface layer of very dark grayish-brown sandy loam and a subsoil of gray sandy clay loam that has yellow, brown, and red mottles.

Minor soils in this association are the Dothan, Foreston, Ocilla, Scranton, Paxville, and Rutlege soils. Well-drained Dothan soils are in the highest positions in the association. Moderately well drained Foreston and Ocilla soils and somewhat poorly drained Scranton soils are in intermediate drainage positions. Very poorly drained Paxville and Rutlege soils are in the lowest areas, generally along streams.

This association is suited to most crops commonly grown in the county if the soils are drained and adequately fertilized. About 30 percent of the acreage is cultivated, and the rest is woodland. Most farms are owner operated and range from 125 to 200 acres in size. The main sources of income are tobacco, cotton, corn, and soybeans.

The better drained soils are well suited to the development of habitat for quail. Cover is well distributed, and a moderate amount of natural food is available. Only a few sites are available for dam-type ponds or lakes. Excavated ponds are numerous and are a source of irrigation water. Some are suitable for fishing if they are properly managed.

Most of this association is poorly suited to industrial sites, recreational uses, or sites for dwellings that have onsite sewage disposal.

5. Lynchburg-Paxville association

Somewhat poorly drained soils that have a sandy surface layer and a loamy subsoil, and very poorly drained soils that are loamy throughout

This association consists of broad areas of level and depressed soils east of Foreston. Elevations vary only a few feet throughout the association, and major drainage is poorly developed.

This association makes up about 2 percent of the county. About 40 percent of this is Lynchburg soils, about 30 percent is Paxville soils, and the remaining 30 percent is minor soils.

Lynchburg soils are somewhat poorly drained. They are in the higher positions in the association. They have a surface layer of very dark grayish-brown loamy sand and a subsoil of sandy clay loam that has mottles in shades of gray, brown, yellow, and red.

Paxville soils are very poorly drained and are in the lowest positions in the association. They have a thick surface layer of black loam and a subsoil of very dark grayish-brown sandy clay loam.

Minor soils in this association are the Foreston, Ocilla, Scranton, Rutlege, and Osier soils. Moderately well drained Foreston and Ocilla soils are in the highest drainage positions in the association. Somewhat poorly drained Scranton soils are at intermediate elevations. Very poorly drained Rutlege and Osier soils are at the lowest elevations, as are Paxville soils.

Most of the acreage in this association is woodland. Less than 10 percent is cultivated or pastured. These soils are productive if they are adequately drained and fertilized, but the lack of major drainage outlets limits artificial drainage.

This association provides a favorable habitat for deer. The quail population would greatly increase if food patches were planted throughout the area. Both food and cover are ample for the numerous rabbits.

Most of this association is poorly suited to industrial sites, recreation uses, or sites for dwellings that have onsite sewage disposal because the water table is seasonally high.

6. Persanti-Cantey-Red Bay association

Moderately well drained and poorly drained soils that have a loamy surface layer and a clayey subsoil, and well-drained soils that are loamy throughout

This association consists of broad areas of nearly level to depressed soils and a few small areas of gently sloping soils. It is on a terrace adjacent to the Santee River in the southern to southwestern part of the county, it adjoins and is parallel to Lake Marion from Potato Creek to Rimini.

This association makes up about 7 percent of the county. About 44 percent of this is Persanti soils, 24 percent is Cantey soils, about 18 percent is Red Bay soils, and the remaining 14 percent is minor soils.

Persanti soils are moderately well drained. They are in intermediate drainage positions between Cantey and Red Bay soils. They have a surface layer of dark-gray very fine sandy loam and a subsoil of brownish-yellow clay that has many gray and red mottles in the lower part.

Cantey soils are poorly drained. They are in depressions and at lower elevations. They have a surface layer of dark-gray loam and a subsoil of gray clay that has yellow, brown, and red mottles.

Red Bay soils are well drained. They are at the highest elevations in the association. They have a surface layer of dark reddish-brown sandy loam and a subsoil of dark-red sandy clay loam.

Minor soils in this association are the Orangeburg and Summerton soils. They are well drained and are at the highest elevations along with Red Bay soils.

About 20 percent of the acreage of this association is cultivated or pastured. The rest is woodland. Red Bay, Orangeburg, and Summerton soils are the main soils that are cultivated. General farms are operated by the owner or a tenant. The average farm is about 300 acres. Principal crops are cotton, corn, and soybeans.

The small game population, which consists of rabbits, squirrels, and quail, is fairly large in this association. Large tracts of woodland, particularly those adjoining Lake Marion, provide a favorable habitat for deer. There are some desirable sites that can be developed as duck fields.

Most of this association is poorly suited to industrial sites, recreation uses, or sites for dwellings that have onsite sewage disposal.

7. Ponzer-Rutlege association

Very poorly drained soils that have a mucky surface layer and a loamy underlying layer, or that are sandy throughout

This association consists of several oval-shaped Carolina bays just north of Turbeville, in the northern part of the county.

This association makes up less than 1 percent of the county. About 65 percent of this is Ponzer soils, about 25 percent is Rutlege soils, and the remaining 10 percent is minor soils.

Ponzer and Rutlege soils are very poorly drained. Ponzer soils have a surface layer of dark-brown and black decomposed organic matter, about 20 inches thick, underlain by loamy mineral material. Rutlege soils have a surface layer of black loamy fine sand underlain by gray sand.

Minor soils in this association are the Rimini and Scranton soils. Excessively drained Rimini soils are on rims around Carolina bays. Somewhat poorly drained Scranton soils are in the intermediate drainage positions.

Most of this association is woodland, consisting mostly of bottom-land hardwoods. Water management is needed where pines are grown. In recent years, some acreage has been drained and cleared and is used for corn and soybeans.

The large tracts of woodland provide favorable habitat for deer. The squirrel population in this association is fairly large, but other small game are not numerous because the wet habitat is unfavorable.

This association is wet and is poorly suited to industrial sites, recreation uses, or sites for dwellings that have onsite sewage disposal.

Nearly Level Soils of the Flood Plains

These associations are on flood plains of rivers. Soils are somewhat poorly drained to very poorly drained. Drainage patterns are poorly defined. These soils are frequently flooded, and some have water on the surface most of the time. Most of these soils have a loamy surface layer and are dominated by low-chroma colors below the surface layer.

8. Johnston-Portsmouth association

Very poorly drained soils that are dominantly loamy throughout

This association consists of the flood plains of Black River and Pocotaligo River.

This association makes up about 6 percent of the county. About 50 percent of this is Johnston soils, 23 percent is Portsmouth soils, and the remaining 27 percent is minor soils.

Johnston and Portsmouth soils are very poorly drained. Johnston soils have a thick surface layer of black and very dark gray loam, which is high in organic matter. The surface layer is underlain by stratified layers of gray loamy and sandy material. Portsmouth soils have a surface layer of very dark brown loam and a subsoil of dark-gray sandy clay loam.

Minor soils in this association are the Paxville, Rutlege, and Osier soils. These soils are very poorly drained and are in the same positions as the major soils.

This association is frequently flooded and consequently is not suited to either cultivated crops or pasture. Most of this association is woodland. Much of the association is in small farms, the owners of which have farms that extend from another association into this one. However, some large tracts are owned by corporations or individuals engaged in the production of pulpwood, sawtimber, and veneer. Bottom-land hardwoods are better suited to these soils than most other trees.

Squirrels are fairly plentiful in this association. Some of the streams and lakes provide excellent fishing.

This association is wet and is poorly suited to industrial sites, recreation uses, or sites for dwellings that have onsite sewage disposal.

9. Tawcaw association

Somewhat poorly drained soils that have a loamy surface layer and a clayey subsoil

This association is on the flood plains of the Santee River in the southeast corner of the county, just east of Santee Dam. The soils in this association formed in recent alluvium washed from uplands of the Piedmont and the Coastal Plains.

This association makes up about 3 percent of the county. About 80 percent of this is Tawcaw soils, and the remaining 20 percent is minor soils.

Tawcaw soils are somewhat poorly drained. They are at the higher elevations in the association. They have a surface layer of dark-brown silty clay loam and a subsoil of yellowish-brown silty clay loam that has gray mottles.

Minor soils in this association are in long, narrow depressions. These soils are poorly drained. They are similar to the Tawcaw soils, but they are grayer throughout.

This association is frequently flooded. Consequently, it is not suited to either cultivated crops or pasture. The entire acreage is in hardwoods (fig. 3). Some of the acreage is in general farms that are owner operated, but several large tracts are owned by commercial producers of pulpwood, sawtimber, and veneer.

This association provides excellent habitat for deer. A fairly good habitat for squirrels is provided, and some wild turkeys are also in this area. Much of the acreage is leased by hunting clubs. Sites for woodland duck ponds are numerous, but water control measures are necessary.

This association is frequently flooded and is poorly suited to industrial sites, recreation uses, or sites for dwellings that have onsite sewage disposal.

Descriptions of the Soils[2]

In this section the soils of Clarendon County are described in detail and their use and management are discussed. Each soil series is described in detail, and then, briefly, the mapping units in that series. Unless it is specifically mentioned otherwise, it is to be assumed

[2] C. A. HOLDEN, JR., conservation agronomist, Soil Conservation Service, assisted with the description of management for each mapping unit.

***Figure 3.*—Unmanaged hardwood forest on soils of the Tawcaw association.**

that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second is much more detailed and is for those who need to make thorough and precise studies of soils. The profile described in the soil series is representative for mapping units in that series. If a given mapping unit has a profile in some ways different from the one described in the series, these differences are stated in the description of the mapping unit, or they are apparent in the name of the mapping unit. Unless it is otherwise stated, the colors given in the descriptions are those of a moist soil. The description of each mapping unit contains suggestions on how the soil can be managed.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each mapping unit description is the capability unit and woodland group in which the mapping unit has been placed. The capability unit and woodland group for each mapping unit can also be found by referring to the "Guide to Mapping Units" at the back of this survey.

The acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*6*).[3]

[3] Italic number in parentheses refer to Literature Cited, p. 66.

Brogdon Series

The Brogdon series consists of nearly level, deep, well-drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is brown loamy sand about 9 inches thick. The subsoil extends to a depth of 72 inches. The upper 22 inches of the subsoil is yellowish-brown sandy loam, the next 17 inches is yellowish-brown loamy sand, the next 9 inches is brownish-yellow loamy sand, and the lower 15 inches is dominantly yellowish-brown sandy clay loam.

Permeability is moderate. Runoff is slow to medium. Available water capacity is medium to low. The content of organic matter is low.

Representative profile of Brogdon loamy sand, 0 to 2 percent slopes, at the intersection of Interstate 95 and secondary State Highway 50, and 100 feet south of Interstate 95, and 300 feet west of secondary State Highway 50:

Ap—0 to 9 inches, brown (10YR 5/3) loamy sand; weak, medium, granular structure; very friable; many fine roots; common clean quartz grains; medium acid, pH 5.7; abrupt, smooth boundary.

B2t—9 to 31 inches, yellowish-brown (10YR 5/8) sandy loam; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; few fine roots; many fine and medium pores; common clean quartz grains; very strongly acid, pH 4.6; gradual, wavy boundary.

B3 and A'21—31 to 48 inches, yellowish-brown (10YR 5/8) loamy sand and small bodies of strong-brown (7.5YR 5/8) sandy loam; very weak, medium, subangular blocky structure; very friable; pockets of clean light-gray (10YR 7/1) sand grains; common, coarse, clean quartz grains; very strongly acid, pH 5.0; clear, smooth boundary.

A'22—48 to 57 inches, brownish-yellow (10YR 6/6) loamy sand; few, fine, faint and distinct, yellowish-brown and strong-brown mottles; single grained; loose; many streaks and pockets of clean light-gray (10YR 7/1) sand grains; common, coarse, clean quartz grains; strongly acid, pH 5.2; clear, smooth boundary.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent	Soil	Acres	Percent
Brogdon loamy sand, 0 to 2 percent slopes	960	0.3	Osier loamy fine sand	5,300	1.4
Cantey loam	6,800	1.8	Paxville loam	31,800	8.3
Clarendon loamy sand	20,800	5.4	Persanti very fine sandy loam, 0 to 2 percent slopes	12,800	3.3
Dothan loamy fine sand, 0 to 2 percent slopes	38,600	10.1	Ponzer mucky loam	2,600	.7
Dothan loamy fine sand, 2 to 6 percent slopes	7,200	1.9	Portsmouth-Johnston association	10,600	2.8
Faceville loamy sand, 0 to 2 percent slopes	2,600	.7	Rains sandy loam	47,400	12.4
Faceville loamy sand, 2 to 6 percent slopes	4,800	1.3	Red Bay sandy loam, 0 to 2 percent slopes	3,500	.9
Foreston fine sand	6,700	1.7	Red Bay sandy loam, 2 to 6 percent slopes	1,600	.4
Fuquay fine sand, 0 to 6 percent slopes	38,000	9.9	Rimini fine sand	300	.1
Fuquay fine sand, 6 to 10 percent slopes	3,200	.8	Rutlege loamy fine sand	16,000	4.2
Grady loam	2,200	.6	Scranton fine sand	4,200	1.1
Johnston soils	8,700	2.3	Summerton fine sandy loam, 0 to 2 percent slopes	1,300	.3
Lakeland sand, 0 to 6 percent slopes	3,400	.9	Summerton fine sandy loam, 2 to 6 percent slopes	1,700	.4
Lynchburg loamy sand	57,640	15.0	Tawcaw soils	11,500	3.0
Marlboro loamy sand, 0 to 2 percent slopes	4,300	1.1	Troup sand, 0 to 6 percent slopes	11,100	2.9
Marlboro loamy sand, 2 to 6 percent slopes	2,000	.5	Troup sand, 6 to 10 percent slopes	1,800	.5
McColl loam	2,300	.6	Irrigation and farm ponds	500	.1
Ocilla loamy sand	2,000	.5	Borrow pits	600	.2
Orangeburg loamy sand, 0 to 2 percent slopes	3,800	1.0			
Orangeburg loamy sand, 2 to 6 percent slopes	2,400	.6	Total	383,000	100.0

B'21t—57 to 60 inches, yellowish-brown (10YR 5/6) sandy clay loam; few, fine and medium, distinct, strong-brown (7.5YR 5/8) and pale-brown (10YR 6/3) mottles; moderate, medium, subangular blocky structure; friable; sand grains coated and bridged; many, coarse, clean quartz grains; strongly acid, pH 5.2; clear, smooth boundary.

B22t—60 to 72 inches, mottled yellowish-brown (10YR 5/6), strong-brown (7.5YR 5/8), and yellowish-red (5YR 4/8) sandy clay loam; common, medium, distinct, red (2.5YR 4/8) and gray (10YR 6/1) mottles; weak, medium, subangular blocky structure; friable; thin, patchy, faint clay films on faces of peds; common, coarse, clean quartz grains; very strongly acid, pH 4.6.

The solum is more than 60 inches thick. The A horizon is medium acid or strongly acid, and the B horizon is strongly acid or very strongly acid.

The A horizon ranges from 7 to 18 inches in thickness. The Ap horizon is 7 to 9 inches thick and is dark gray, dark grayish brown, or brown. The A2 horizon ranges from 0 to 12 inches in thickness. It is sand or loamy sand and is light yellowish brown, very pale brown, or pale brown.

The B1 horizon, where present, is light yellowish-brown or yellowish-brown sandy loam and is 4 to 10 inches thick. The B2t horizon is 10 to 24 inches thick. It is yellowish-brown or strong-brown sandy loam or sandy clay loam. The B3 horizon, where present, ranges to 12 inches in thickness. It is yellowish-brown or strong-brown sandy loam or sandy clay loam. Part of the A'2 horizon is mixed with the B3 horizon in some places. Depth to the A2 horizon ranges from 24 to 48 inches. The A2 horizon is commonly 10 to 26 inches thick and is light yellowish-brown or brownish-yellow sand or loamy sand. The B'2t horizon ranges from about 15 inches to more than 30 inches in thickness. It is dominantly yellowish brown and has yellow, brown, red, and gray mottles. It is sandy loam or sandy clay loam. In some profiles, this horizon contains 2 to 4 percent plinthite at a depth of less than 60 inches and 5 to 10 percent plinthite at a depth of more than 60 inches.

Brogdon soils occur with Clarendon, Lynchburg, Dothan, and Fuquay soils. Unlike those soils, Brogdon soils have a bisequel profile. They are better drained than Clarendon and Lynchburg soils. Brogdon soils have less than 5 percent plinthite within a depth of 60 inches, and Dothan and Fuquay soils have more than 5 percent.

Brogdon loamy sand, 0 to 2 percent slopes (BrA).—This soil is mainly north of the Pocotaligo River.

Included with this soil in mapping are a few small areas of Dothan, Fuquay, and Clarendon soils and some areas of soils that have more than 5 percent plinthite within 60 inches of the surface. Also included are a few areas of soils that have a surface layer of sand. A few areas of wetter soils that are less than 4 acres in size are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cleared and is cultivated.

This soil is easily tilled throughout a wide range of moisture content. It is slightly droughty during periods of low rainfall.

Under good management, this soil is suited to cotton, tobacco, corn, soybeans, bahiagrass, and Coastal bermudagrass. Large amounts of organic matter and fertilizer are needed to maintain yields, improve tilth, decrease the rate of leaching, improve available water capacity, and help control soil blowing. Winds early in spring cause considerable soil blowing in exposed areas that are dry and freshly plowed. Stripcropping with small grain or establishing permanent windbreaks are effective in reducing soil losses and damage to crops. Capability unit IIs–3; woodland group 2o1.

Cantey Series

The Cantey series consists of nearly level, deep, poorly drained soils. These soils formed in clayey Coastal Plain sediment.

In a representative profile the surface layer is dark-gray loam about 6 inches thick. The subsoil, extending to a depth of 72 inches, is gray clay that has brownish and reddish mottles.

Permeability is slow. Runoff is slow, and these soils are ponded much of the time. Available water capacity is medium. The content of organic matter is moderate.

Representative profile of Cantey loam, 17 miles southwest of Manning, 2 miles south of St. Paul on secondary State Highway 373, 2.5 miles southwest on dirt road, 400 feet east of road:

A1—0 to 6 inches, dark-gray (10YR 4/1) loam; few, fine, faint, pale-brown and dark-brown mottles; moderate, medium, granular structure; friable; many fine and medium roots; strongly acid, pH 5.2; abrupt, smooth boundary.

B21tg—6 to 18 inches, gray (10YR 6/1) clay; common, medium, distinct, yellowish-brown (10YR 5/8) mottles and few, fine, prominent, yellowish-red mottles; moderate, medium, angular and subangular blocky structure; firm, plastic and slightly sticky; thick prominent clay films on faces of peds and in root channels; common fine and medium roots; few fine pores; very strongly acid, pH 4.8; gradual, smooth boundary.

B22tg—18 to 32 inches, gray (10YR 6/1) clay; common, medium, distinct, yellowish-brown (10YR 5/8) mottles, few, medium, distinct, strong-brown (7.5YR 5/8) mottles, and few, fine, prominent, red mottles; moderate, medium, angular and subangular blocky structure; very firm, plastic and slightly sticky; thick prominent clay films on faces of peds; few fine roots and pores; very strongly acid, pH 4.8; gradual, smooth boundary.

B23tg—32 to 52 inches, gray (10YR 6/1) clay; common, medium, distinct, yellowish-brown (10YR 5/8) and yellowish-red (5YR 4/8) mottles and few, fine, prominent red mottles; moderate, medium, subangular blocky structure; very firm, plastic and slightly sticky; thin, patchy, distinct clay films on faces of ped; few fine roots and pores; very strongly acid, pH 4.6; gradual, smooth boundary.

B3tg—52 to 72 inches, gray (10YR 6/1) clay; common, medium, distinct, yellowish-brown (10YR 5/8) mottles and few, fine, distinct, strong-brown mottles; massive; very firm, plastic; very strongly acid, pH 4.6.

The solum is more than 60 inches thick. The soils are strongly acid or very strongly acid throughout.

The A horizon ranges from 3 to 12 inches in thickness. The A1 horizon is 3 to 8 inches thick and is gray, dark gray, very dark gray, or black. The A2 horizon, where present, is 3 to 6 inches thick and is gray or light brownish-gray sandy loam or fine sandy loam.

The B1 horizon, where present, is 3 to 6 inches thick and is dark-gray, gray, or light brownish-gray sandy clay loam or clay loam. The B2t horizon ranges from 35 inches to more than 60 inches in thickness. It is dark-gray, gray, or light-gray sandy clay or clay that commonly has few to many, yellow, brown, and red mottles. The B3 horizon ranges from 6 to 24 inches in thickness. It is dark gray, gray, or light gray and has few to many, yellow, brown, and red mottles. It is sandy clay loam, sandy clay, or clay.

Cantey soils occur with Summerton, Red Bay, Persanti, Rains, and Paxville soils. Cantey soils are more poorly drained than Summerton, Red Bay, and Persanti soils. They have a finer textured subsoil than Rains and Paxville soils.

Cantey loam (Ca).—This soil is in low areas adjacent to Lake Marion.

Included with this soil in mapping are small areas of Persanti, Rains, and Paxville soils. Also included are areas of soils that have a surface layer of silt loam or fine sandy loam.

About 90 percent of the acreage is natural forest that consists of loblolly pine, water-tolerant hardwoods, bushes, and shrubs. Many areas are subject to frequent flooding, and drainage is needed before this soil can be used for either crops or pasture. If protected from flooding and drained, this soil can be used for corn and soybeans, but it is better suited to pasture.

The plow layer is difficult to keep in good tilth. It can be tilled only within a narrow range of moisture content without clodding. Open ditches are needed for drainage because tile drains do not always function effectively. This soil tends to puddle and pack if grazed when wet. Capability units IVw–2 if drained and Vw–1 if undrained; woodland group 2w9.

Clarendon Series

The Clarendon series consists of nearly level, deep, moderately well drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is dark grayish-brown loamy sand about 8 inches thick. The subsurface layer is pale-brown loamy sand about 8 inches thick. The subsoil is sandy clay loam and extends to a depth of 72 inches. The upper 23 inches of the subsoil is yellowish brown and has gray mottles beginning at a depth of 28 inches. The lower 33 inches is mottled yellowish brown, red, and gray and is 10 to 20 percent plinthite.

Permeability is moderate in the upper part of the profile and moderately slow in the lower part. Runoff is slow to medium. Available water capacity is medium. The content of organic matter is moderate.

Representative profile of Clarendon loamy sand, 5.2 miles west of Manning, 50 feet south of secondary State Highway 79:

Ap—0 to 8 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; many fine and medium roots; strongly acid, pH 5.5; clear, smooth boundary.

A2—8 to 16 inches, pale-brown (10YR 6/3) loamy sand; weak, fine, granular structure; very friable; many fine roots; few pebbles of ironstone; strongly acid, pH 5.4; clear, smooth boundary.

B21t—16 to 28 inches, yellowish-brown (10YR 5/6) sandy clay loam; few, fine and medium, distinct, yellowish-red (5YR 4/8) mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in pores; few fine roots; many fine pores; few pebbles of ironstone; very strongly acid, pH 4.9; gradual, smooth boundary.

B22t—28 to 39 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, distinct, gray (10YR 6/1) mottles and few, medium, prominent, red (2.5YR 4/8) mottles; moderate, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in pores; many fine pores; few plinthite nodules; very strongly acid, pH 4.7; gradual, wavy boundary.

B23t—39 to 65 inches, mottled yellowish-brown (10YR 5/8), red (2.5YR 4/8), and gray (10YR 6/1) sandy clay loam; moderate, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in pores; many fine pores; about 20 percent plinthite nodules; very strongly acid, pH 4.8; gradual, wavy boundary.

B3t—65 to 72 inches, mottled yellowish-brown (10YR 5/8), red (2.5YR 4/8), and gray (10YR 6/1) sandy clay loam and pockets of sandy material; moderate, medium, subangular blocky structure; firm; about 10 percent plinthite nodules; very strongly acid, pH 4.8.

The solum is more than 60 inches thick. The A horizon ranges from slightly acid to very strongly acid, and the B horizon is strongly acid or very strongly acid. Mottles indicative of wetness are within 30 inches of the surface. Horizons that are 5 to 30 percent plinthite are within 30 to 48 inches of the surface.

The A horizon ranges from 10 to 18 inches in thickness. The Ap horizon is 6 to 9 inches thick and is very dark gray, dark gray, dark grayish brown, or grayish brown. The darker colors are in wooded areas. The A2 horizon is 4 to 10 inches thick and is very pale brown, pale-brown, light yellowish-brown, or brownish-yellow loamy sand or loamy fine sand.

The B1 horizon, where present, is 3 to 6 inches thick and is yellowish-brown or brownish-yellow sandy loam or fine sandy loam. The Bt horizon commonly ranges from 40 inches to more than 60 inches in thickness. It is yellowish brown or brownish yellow and has gray and red mottles.

Clarendon soils occur with Dothan, Lynchburg, Rains, Ocilla, and Foreston soils. Clarendon soils contain plinthite, whereas all of those soils, except the Dothan soils, do not. They are more poorly drained than Dothan soils and better drained than Lynchburg and Rains soils. Clarendon soils have a thinner A horizon than Ocilla soils and a finer textured subsoil than Foreston soils.

Clarendon loamy sand (Cd).—This soil is in broad areas.

Included with this soil in mapping are small areas of Dothan, Foreston, Ocilla, and Lynchburg soils. Some areas that have a surface layer of loamy fine sand or sandy loam are also included. Small, depressed, wet areas that are less than 4 acres in size are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cleared and cultivated. If adequately drained, this soil is suited to tobacco, cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are suitable plants for pasture and hay.

Open ditches, tile drains, or a combination of the two are used to drain this soil. Row crops can be grown for many consecutive years. A better cropping system, however, is one where crop residues are returned to the soil and where close-growing crops are grown half of the time or where winter cover crops are grown and then plowed under. Capability unit IIw–2; woodland group 2w8.

Dothan Series

The Dothan series consists of nearly level to gently sloping, deep, well-drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is grayish-brown loamy fine sand about 7 inches thick. The subsurface layer is very pale brown loamy fine sand about 9 inches thick. The subsoil is sandy clay loam about 54 inches thick. In sequence from the top, the upper 39 inches of the subsoil is yellowish brown; the next 7 inches is brownish yellow; and the lower 8 inches is mottled brown, red, and gray. The underlying material is mottled brown, red, and gray loamy material.

Layers at a depth of 36 inches or more are 5 to 20 percent plinthite.

Permeability is moderate in layers above the plinthite but is moderately slow in layers that have plinthite. Available water capacity and runoff are medium. The content of organic matter is low.

Representative profile of Dothan loamy fine sand, 0 to 2 percent slopes, from intersection of Interstate 95 and U.S. Highway 521 near Alcolu, 2¼ miles northwest on U.S. Highway 521, then northeast 1 mile on secondary State Highway 28, then 50 feet east of highway:

Ap—0 to 7 inches, grayish-brown (10YR 5/2) loamy fine sand; weak, fine, granular structure; very friable; many fine roots; few indurated iron nodules; slightly acid, pH 6.2; clear, wavy boundary.

A2—7 to 16 inches, very pale brown (10YR 7/4) loamy fine sand; few, fine, faint, brownish-yellow, light yellowish-brown, and grayish-brown mottles; weak, medium, granular structure; very friable; many fine and medium roots; many fine pores; few indurated iron nodules; medium acid, pH 5.6; clear, smooth boundary.

B21t—16 to 24 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; many fine roots and pores; few indurated iron nodules; strongly acid, pH 5.2; clear, smooth boundary.

B22t—24 to 36 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; common fine roots; many fine pores; few plinthite nodules and common indurated iron nodules; strongly acid, pH 5.5; clear, smooth boundary.

B23t—36 to 55 inches, yellowish-brown (10YR 5/6) sandy clay loam; few, medium, distinct, strong-brown (7.5YR 5/8) and yellowish-red (5YR 4/8) mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; few fine roots and pores; 5 to 10 percent plinthite nodules and common indurated iron nodules; strongly acid, pH 5.5; gradual, smooth boundary.

B24t—55 to 62 inches, brownish-yellow (10YR 6/6) sandy clay loam; common, medium, distinct, strong-brown (7.5YR 5/8) and few, fine, distinct, light-gray mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds; few fine pores; 10 to 20 percent plinthite nodules and few indurated iron nodules; strongly acid, pH 5.2; gradual, smooth boundary.

B3t—62 to 70 inches, mottled light yellowish-brown (10YR 6/4), strong-brown (7.5YR 5/8), light-gray (10YR 7/1), yellowish-brown (10YR 5/8), and yellowish-red (5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable; 10 to 20 percent plinthite nodules; very strongly acid, pH 5.0; clear, wavy boundary.

C—70 to 75 inches, mottled brown, red, and gray, stratified, loamy material; structureless; friable; 5 to 10 percent plinthite nodules; very strongly acid, pH 4.8.

The solum ranges from 60 to more than 72 inches in thickness. The A horizon ranges from slightly acid to strongly acid, and the B horizon is strongly acid or very strongly acid.

The A horizon ranges from 7 to 18 inches in thickness. The Ap or A1 horizon ranges from 5 to 9 inches in thickness. It is dark grayish brown, grayish brown, light grayish brown, or gray. The A2 horizon ranges from 5 to 12 inches in thickness. It is very pale brown, pale-brown, or light yellowish-brown loamy sand or loamy fine sand.

The B1 horizon, where present, ranges from 2 to 6 inches in thickness. It is yellowish-brown or brownish-yellow sandy loam or fine sandy loam. The B2t horizon is 40 to more than 50 inches thick and is yellowish-brown, brownish-yellow, or strong-brown sandy loam or sandy clay loam. The lower part of the B2t horizon commonly has yellowish-red and pale-brown mottles; and it has a few red and gray mottles. The content of plinthite in these horizons ranges from 5 to 20 percent. The B3 horizon, where present, is sandy loam or sandy clay loam. It ranges from 5 to 32 inches in thickness. It commonly has yellowish-brown, strong-brown, yellowish-red, and gray mottles. The C horizon is sandy loam, sandy clay loam, or sandy clay.

Dothan soils occur with Orangeburg, Faceville, Marlboro, Fuquay, Troup, Ocilla, Foreston, Clarendon, and Rains soils. Dothan soils contain plinthite, whereas all of the soils except the Fuquay and Clarendon do not. They have a yellower subsoil than Orangeburg and Faceville soils and have a coarser textured subsoil than Faceville and Marlboro soils. They have a thinner A horizon than Fuquay, Troup, and Ocilla soils. Dothan soils are better drained than Ocilla, Foreston, Clarendon, Lynchburg, and Rains soils.

Dothan loamy fine sand, 0 to 2 percent slopes (DoA).—This soil is on broad ridges throughout the county. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Orangeburg, Marlboro, Brogdon, Fuquay, and Clarendon soils and some areas of soils that have a surface layer of loamy sand. Also included are some long, narrow areas of Dothan loamy fine sand, 2 to 6 percent slopes, adjacent to drainageways and some areas of soils that have less than 5 percent plinthite within 60 inches of the surface. Small, wet, depressed areas, less than 4 acres in size, are included and shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. This soil is suited to tobacco, cotton, corn, soybeans (fig. 4), bahiagrass, and Coastal bermudagrass.

This soil is easily tilled within a wide range of moisture content. Soil blowing is a hazard in some large fields. Stripcropping, windbreaks, and rotations that include perennial grasses are effective in reducing soil losses and damage to crops. Trees and deep-rooted crops may be damaged because the plinthite layer restricts the movement of water and roots. Capability unit IIs–2; woodland group 2o1.

Dothan loamy fine sand, 2 to 6 percent slopes (DoB).—This soil is on broad ridges and narrow side slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Orangeburg, Marlboro, and Fuquay soils and some areas of soils that have a surface layer of loamy sand. Also included are a few small areas of soils that have slopes of less than 2 percent and a few acres that have slopes of 6 to 8 percent. Some areas that have less than 5 percent plinthite within 60 inches of the surface are also included. Some small, wet areas, less than 4 acres in size, are included and are shown on the detailed soil map by the symbol for wet spot.

Principal crops grown on this soil are tobacco, cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are better suited plants for hay and pasture than most others. Trees and deep-rooted crops may be damaged because the plinthite layer restricts the movement of water and roots.

Erosion is the chief hazard on this soil. Contour tillage, terraces, grassed waterways, and rotations that include sod crops are some conservation practices that aid in controlling erosion. Crop residue kept on or near

Figure 4.—**Soybeans grow well on Dothan loamy fine sand, 0 to 2 percent slopes.**

the surface increases infiltration and reduces erosion. Capability unit IIe–5; woodland group 2o1.

Faceville Series

The Faceville series consists of nearly level to gently sloping, deep, well-drained soils. These soils formed in mainly clayey Coastal Plain sediment.

In a representative profile the surface layer is brown loamy sand about 9 inches thick. The subsoil extends to a depth of 74 inches. In sequence from the top, the upper 5 inches of the subsoil is yellowish-red sandy clay loam; the next 11 inches is yellowish-red sandy clay; the next 39 inches is red sandy clay; and the lower 10 inches is red sandy clay loam.

Permeability is moderate. Runoff and available water capacity are medium. The content of organic matter is low.

Representative profile of Faceville loamy sand, 0 to 2 percent slopes, 0.6 mile east of Rimini on secondary State Highway 26, 0.65 mile north on farm road, and 30 feet east of road, in cultivated field:

AP—0 to 9 inches, brown (10YR 4/3) loamy sand; weak, fine, granular structure; very friable; common fine roots; few fine pores; strongly acid, pH 5.5; abrupt, smooth boundary.

B1t—9 to 14 inches, yellowish-red (5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable, sticky; thin patchy clay films on faces of peds and in old root channels; few fine roots; many fine pores; few uncoated quartz sand grains; very strongly acid, pH 5.0; clear, smooth boundary.

B21t—14 to 25 inches, yellowish-red (5YR 4/8) sandy clay; moderate, medium, subangular blocky structure; friable, sticky; thin patchy clay films on faces of peds and in old root channels; few fine roots; many fine pores; few uncoated quartz sand grains; strongly acid, pH 5.1; clear, smooth boundary.

B22t—25 to 30 inches, red (2.5YR 4/8) sandy clay; moderate, medium, subangular blocky structure; friable, sticky; thin patchy clay films on faces of peds and in pores; few fine roots; many fine pores; few uncoated quartz sand grains; strongly acid, pH 5.3; clear, smooth boundary.

B23t—30 to 64 inches, red (2.5YR 4/8) sandy clay; few, medium, distinct, strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable, sticky; thin, patchy, distinct clay films on faces of peds; few fine pores; few uncoated quartz sand grains; very strongly acid, pH 4.7; gradual, smooth boundary.

B3t—64 to 74 inches, red (2.5YR 4/8) sandy clay loam; few, fine and medium, distinct, strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable, sticky; thin, patchy, distinct clay films on faces of peds; few uncoated quartz sand grains; very strongly acid, pH 4.9.

The solum is more than 72 inches thick. The soils are strongly acid or very strongly acid throughout.

The A horizon ranges from 5 to 13 inches in thickness. The Ap horizon is 5 to 9 inches thick and is dark yellowish brown, brown, grayish brown, or dark grayish brown. An A2 horizon, where present, is 2 to 6 inches thick and is pale-brown or light yellowish-brown loamy sand or sandy loam.

The Bt horizon is more than 60 inches thick. It is yellowish-red or red sandy clay, sandy clay loam, clay loam, or clay. The lower part of the Bt horizon has few to many, yellowish-brown and strong-brown mottles. The B1 horizon, where present, is yellowish red or strong brown and is 3 to 8 inches thick.

Faceville soils occur with Marlboro, Red Bay, Orangeburg, Grady, and McColl soils. Faceville soils have a redder subsoil than Marlboro soils and a finer textured subsoil than Red Bay and Orangeburg soils. They are better drained than Grady and McColl soils.

Faceville loamy sand, 0 to 2 percent slopes (FaA).—This soil is on broad ridges. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Marlboro and Orangeburg soils and some areas of soils that have a surface layer of loamy sand. Also included are some small areas that have slopes of 2 to 6 percent. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. Suitable crops are tobacco, cotton, corn, and soybeans. Suitable pasture and hay plants are bahiagrass and Coastal bermudagrass.

This soil has few limitations to use for crops. Row crops can be grown each year. This soil is easily tilled throughout a fairly wide range of moisture content. Capability unit I–2; woodland group 3o1.

Faceville loamy sand, 2 to 6 percent slopes (FaB).—This soil is on broad ridges and narrow slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Marlboro and Orangeburg soils and some areas of soils that have a surface layer of sandy loam. Also included are some small areas of soils that have slopes of less than 2 percent and some small areas that have slopes of more than 6 percent. Other inclusions are about 500 acres of eroded soils where the surface layer is 3 to 5 inches of reddish-brown sandy clay loam. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

About 85 percent of the acreage is cultivated. The rest is woodland. Principal crops grown are cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are suitable plants for pasture and hay.

Erosion is the chief hazard. Contour tillage and crop rotations that include sod crops are sufficient to control erosion in some fields. In other fields, terraces, grassed waterways, and contour tillage are needed in addition to crop rotations. Crop residue kept on or near the surface increases infiltration and reduces erosion. Keeping this soil in close-growing crops at least half of the time helps to control erosion. Capability unit IIe–2; woodland group 3o1.

Foreston Series

The Foreston series consists of nearly level, deep, moderately well drained soils. These soils formed mainly in sandy Coastal Plain sediment.

In a representative profile the surface layer is very dark grayish-brown fine sand about 7 inches thick. The subsoil extends to a depth of 72 inches. The upper 19 inches of the subsoil is yellowish-brown fine sandy loam; the next 20 inches is brownish-yellow fine sandy loam that has light-gray and pale-brown mottles; and the lower 26 inches is yellowish-brown loamy fine sand and sand that has light-gray and yellowish-red mottles.

Permeability is moderately rapid. Runoff is slow. Available water capacity is medium. The content of organic matter is low.

Representative profile of Foreston fine sand, 1.2 miles north of Foreston and 300 feet west of secondary State Highway 50:

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) fine sand; weak, fine, granular structure; very friable; many fine and medium roots; few clean quartz grains; medium acid, pH 5.8; abrupt, smooth boundary.

B21t—7 to 26 inches, yellowish-brown (10YR 5/6) fine sandy loam; few, medium, faint, yellow (10YR 7/6) and strong-brown (7.5YR 5/6) mottles; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; common fine roots; many fine pores; very strongly acid, pH 4.6; clear, smooth boundary.

B22t—26 to 46 inches, brownish-yellow (10YR 6/6) fine sandy loam; common, medium, distinct, light-gray (10YR 7/1) and pale-brown (10YR 6/3) mottles and few, fine, distinct, strong-brown mottles; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; few fine roots; many fine pores; very strongly acid, pH 4.7; gradual, smooth boundary.

B31—46 to 66 inches, yellowish-brown (10YR 5/6) loamy fine sand and pockets of clean sand grains; common, medium, distinct, light-gray (10YR 7/1) and yellowish-red (5YR 4/8) mottles and few, fine, pale-brown mottles; single grained; loose; very strongly acid, pH 4.8; gradual, smooth boundary.

B32—66 to 72 inches, yellowish-brown (10YR 5/6) fine sand and pockets of clean sand grains and finer textured material; common, medium, distinct, yellowish-red (5YR 4/8) mottles and few, fine, light-gray and pale-brown mottles; single grained; loose; very strongly acid, pH 5.0.

The solum ranges from 60 inches to more than 80 inches in thickness. The A horizon is medium acid or strongly acid, and the B horizon is strongly acid or very strongly acid.

The Ap or A1 horizon is 4 to 9 inches thick and is dark grayish brown, very dark grayish brown, dark gray, or very dark gray. The A2 horizon, where present, is 4 to 12 inches thick and is very pale brown, pale-brown, light yellowish-brown, or brownish-yellow sand or loamy sand.

The B1 horizon, where present, is 5 to 12 inches thick and is yellowish-brown on light yellowish-brown loamy sand or sandy loam. The B2t horizon is 20 to 40 inches thick, is yellowish brown or brownish yellow, and has strong-brown, pale-brown, yellowish-red, or gray mottles in the lower part.

Few to many mottles that have a chroma of 2 or less are at a depth between 18 and 30 inches. The B2t horizon is sandy loam or fine sandy loam. The B3 horizon is yellowish brown, brownish yellow, pale brown, very pale brown, or light gray and has few to many mottles in shades of brown, yellow, and gray.

Foreston soils occur with Troup, Fuquay, Dothan, Ocilla, Clarendon, Lynchburg, and Scranton soils. Foreston soils have a sandier subsoil than any of those soils, except the Scranton soils which are sandy throughout. They are more poorly drained than Troup, Fuquay, and Dothan soils and are better drained than Lynchburg and Scranton soils. Foreston soils have a thinner A horizon than Troup, Fuquay, and Ocilla soils.

Foreston fine sand (Fo).—This soil is in broad areas. Included with this soil in mapping are a few areas of Clarendon, Lynchburg, Ocilla, and Scranton soils and some areas of soils that have a surface layer of loamy sand or loamy fine sand. Some small areas are included that do not have 2-chroma mottles within 30 inches of the surface. Also included are a few small areas of soils that have 5 to 10 percent plinthite in the subsoil. Wet, depressed areas that are less than 4 acres in size are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. If adequately drained and under good management, this soil is suited to tobacco, cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass.

Good tilth is easily maintained. Open ditches, tile drains, or a combination of the two are used to drain these soils. Row crops can be grown each year, if all crop residue is conserved and turned under to maintain the content of organic matter. Capability unit IIw-2; woodland group 2w2.

Fuquay Series

The Fuquay series consists of nearly level to sloping, deep, well-drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is dark grayish-brown fine sand about 7 inches thick. The subsurface layer is pale-brown fine sand about 20 inches thick. The subsoil extends to a depth of 72 inches. In sequence from the top, the upper 12 inches of the subsoil is yellowish-brown sandy loam; the next 13 inches is yellowish-brown sandy clay loam; the next 14 inches is mottled yellowish-brown and strong-brown sandy clay loam that is about 15 to 20 percent plinthite; and the lower 6 inches is mottled sandy clay that is about 10 to 15 percent plinthite.

Permeability is moderate in the upper part of the subsoil and slow in the lower part, which contains plinthite. Runoff is slow. Available water capacity is low to medium. The content of organic matter is low.

Representative profile of Fuquay fine sand, 0 to 6 percent slopes, 3.75 miles east on U.S. Highway 521 from intersection of U.S. Highway 301 and U.S. Highway 521 in Manning, 2 miles south on secondary State Highway 384, 200 feet west of highway:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) fine sand; weak, fine, granular structure; very friable; many fine roots; medium acid, pH 5.7; abrupt, smooth boundary.

A2—7 to 27 inches, pale-brown (10YR 6/3) fine sand; few, medium, distinct, yellowish-brown (10YR 5/8) mottles; weak, fine, granular structure; very friable; common fine roots; many fine pores; pockets of clean sand; medium acid, pH 5.7; clear, wavy boundary.

B1—27 to 39 inches, yellowish-brown (10YR 5/6) sandy loam; few, fine, distinct, very pale brown mottles; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; few fine roots; many fine pores; few pockets of clean sand; strongly acid, pH 5.2; clear, smooth boundary.

B21t—39 to 52 inches, yellowish-brown (10YR 5/6) sandy clay loam; common, medium, distinct, strong-brown (7.5YR 5/8) mottles and few, medium, distinct, yellowish-red (5YR 4/8) and pale-brown (10YR 6/3) mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films in pores and on faces of peds; few fine roots and pores; few plinthite and indurated iron nodules; strongly acid, pH 5.5; clear, smooth boundary.

B22t—52 to 58 inches, yellowish-brown (10YR 5/6) sandy clay loam; many, medium, distinct, strong-brown (7.5YR 5/8) and yellowish-red (5YR 4/8) mottles and few, fine, distinct, pale-brown and light-gray mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films in pores and on faces of peds; few fine roots and pores; 15 to 20 percent plinthite nodules and few indurated iron nodules; strongly acid, pH 5.3; gradual, smooth boundary.

B23t—58 to 66 inches, mottled strong-brown (7.5YR 5/8), yellowish-brown (10YR 5/8), pale-brown (10YR 6/3), yellowish-red (5YR 4/8), and light-gray (10YR 7/1) sandy clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds; few fine roots and pores; 15 to 20 percent plinthite nodules and few indurated iron nodules; very strongly acid, pH 5.0; clear, smooth boundary.

B3t—66 to 72 inches, mottled red (2.5YR 4/8) and light-gray (10YR 7/1) sandy clay; common, medium, distinct, yellowish-brown (10YR 5/8) mottles and few, medium, distinct, pale-brown (10YR 6/3) and dark-red (2.5YR 3/6) mottles; massive; firm in place; 10 to 15 percent plinthite nodules; very strongly acid, pH 4.9.

The solum is more than 72 inches thick. The A horizon is medium acid or strongly acid, and the B horizon is strongly acid or very strongly acid.

The A horizon ranges from 24 to 38 inches in thickness. The Ap or A1 horizon is 6 to 9 inches thick and is dark gray, dark grayish brown, or grayish brown. The A2 horizon ranges from 15 to 30 inches in thickness. It is very pale brown, pale-brown, or light yellowish-brown sand, fine sand, loamy sand, or loamy fine sand.

The B1 horizon, where present, is 4 to 12 inches thick and is yellowish brown or brownish yellow. The Bt horizon ranges from 30 inches to more than 50 inches in thickness. The upper part of the Bt horizon is yellowish-brown, strong-brown, or brownish-yellow sandy loam or sandy clay loam, and the lower part has yellowish-brown, strong-brown, pale-brown, yellowish-red, red, and light-gray mottles. It is sandy clay loam or sandy clay. Plinthite nodules, beginning in the upper part of the Bt horizon, increase with depth and make up 15 to 20 percent, by volume, of that horizon at depths between 50 and 65 inches.

Fuquay soils occur with Troup, Dothan, Brogdon, Foreston, and Ocilla soils. Fuquay soils are more than 5 percent plinthite within 60 inches of the surface, whereas Troup, Brogdon, Foreston, and Ocilla soils are not. They have a thicker surface layer than Dothan, Brogdon, and Foreston soils. Fuquay soils are better drained than Foreston and Ocilla soils.

Fuquay fine sand, 0 to 6 percent slopes (FuB).—This soil is on broad ridges and upper slopes. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Troup, Dothan, Brogdon, Ocilla, and Foreston soils, some areas of soils that have a surface layer of loamy fine sand, and a few areas of soils that have a red or yellowish-red subsoil. Also included are some areas of soils that are less than 5 percent plinthite within 60 inches of the surface. Depressed areas that are less than 4 acres in size are shown on the detailed soil map by a symbol for wet spot.

About 65 percent of this soil is cultivated. The rest is woodland. Principal crops grown are tobacco, cotton, corn, and soybeans. Suitable pasture grasses are bahiagrass, sericea lespedeza, and Coastal bermudagrass (fig. 5).

This soil is slightly droughty during periods of low rainfall. Soil blowing is a hazard in some of the larger fields. This soil is easily tilled throughout a wide range of moisture content. Large amounts of organic matter and fertilizer are needed to maintain yields, improve tilth, decrease the rate of leaching, improve moisture holding capacity, and help control soil blowing. Close-growing crops should be grown at least half the time. Stripcropping with small grain and establishing permanent windbreaks are effective in reducing losses of soil and damage to crops. Capability unit IIs–2; woodland group 3s2.

Fuquay fine sand, 6 to 10 percent slopes (FuC).—This soil is on narrow slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Dothan and Troup soils and a few areas of soils that have a red or yellowish-red subsoil. Also included are small areas that have less than 6 percent slopes or more than 10 percent slopes.

Most of the acreage is woodland. In cultivated areas, the principal crops grown are cotton, corn, and soybeans. Bahiagrass, Coastal bermudagrass, and sericea lespedeza are used for pasture or hay.

This soil is easily tilled throughout a wide range of moisture content. Because the surface layer is thick and sandy, this soil is slightly droughty in dry periods. Erosion is a hazard if this soil is used for row crops. Keeping close-growing crops on this soil at least 2 years out of 3 helps maintain an adequate supply of organic matter and control erosion. Terraces, vegetated waterways, contour tillage, and crop residue management are needed to control erosion. Capability unit IIIe–5; woodland group 3s2.

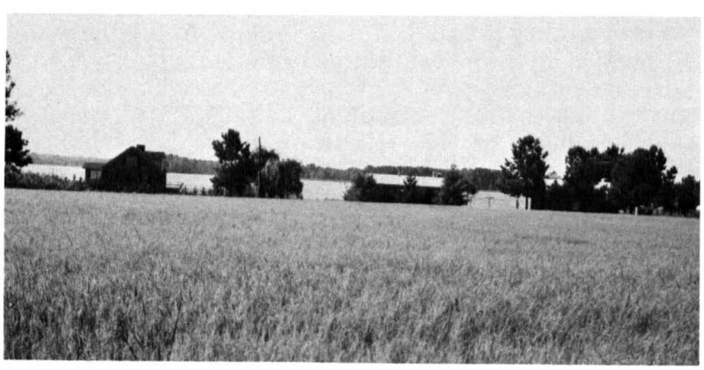


Figure 5.—**Coastal bermudagrass for hay on Fuquay fine sand, 0 to 6 percent slopes.**

Grady Series

The Grady series consists of nearly level, deep, poorly drained soils. These soils formed mainly in clayey Coastal Plain sediment.

In a representative profile the surface layer is very dark gray loam about 5 inches thick. The subsoil extends to a depth of 72 inches. The upper 16 inches of the subsoil is gray clay; the next 13 inches is dark-gray clay loam; the next 30 inches is gray clay loam; and the lower 8 inches is gray sandy clay loam.

Permeability and runoff are slow. Runoff from surrounding areas floods these soils in many places unless outlet ditches are constructed. Available water capacity is medium. The content of organic matter is moderate.

Representative profile of Grady loam, 4 miles southwest of Paxville and 50 feet west of secondary State Highway 145, in oval-shaped bay:

A1—0 to 5 inches, very dark gray (10YR 3/1) loam; weak, fine, subangular blocky structure; friable; many fine and medium roots; few fine pores; very strongly acid, pH 4.9; clear, smooth boundary.

B21tg—5 to 9 inches, gray (10YR 5/1) clay; few, fine, faint, pale-brown mottles and few, fine, distinct, yellowish-red and brownish-yellow mottles; moderate, medium, subangular blocky structure; firm; thin, patchy, distinct clay films on faces of peds and in root channels; many fine roots and pores; very strongly acid, pH 4.7; clear, wavy boundary.

B22tg—9 to 21 inches, gray (10YR 5/1) clay; common, medium, distinct, brownish-yellow (10YR 6/8) and pale-brown (10YR 6/3) mottles and common, fine, distinct, yellowish-red and red mottles; moderate, medium, angular and subangular blocky structure; firm; thin, patchy, distinct clay films on faces of peds and in root channels; few fine roots; common fine and medium pores; very strongly acid, pH 4.7; clear, wavy boundary.

B23tg—21 to 34 inches, dark-gray (N 4/0) clay loam; few, fine, distinct, red, yellowish-red, strong-brown, yellowish-brown, brownish-yellow, and light-gray mottles; strong, medium, angular blocky structure; very firm; thick, patchy, prominent clay films on faces of peds and in root channels; few fine and medium pores; very strongly acid, pH 4.8; gradual, smooth boundary.

B24tg—34 to 43 inches, gray (N 5/0) clay loam; few, fine and medium, distinct, yellowish-red (5YR 4/8), strong-brown (7.5YR 5/8), and light-gray (10YR 7/1) mottles; strong, medium, angular and subangular blocky structure; very firm; thin, patchy, distinct clay films on faces of peds; few fine roots; few fine and medium pores; very strongly acid, pH 4.7; clear, smooth boundary.

B25tg—43 to 64 inches, gray (10YR 5/1) clay loam; few, fine, distinct, yellowish-red, yellowish-brown, pale-brown, and light-gray mottles; massive in place; very firm; very strongly acid, pH 4.9; gradual, smooth boundary.

B3—64 to 72 inches, gray (10YR 5/1) sandy clay loam; few, fine, distinct, yellowish-red, brownish-yellow, and pale-brown mottles; massive; firm; pockets of sandy material; very strongly acid, pH 4.9.

The soils are strongly acid or very strongly acid throughout.

The A1 horizon is 4 to 8 inches thick and is black or very dark gray. The B1 horizon, where present, is 3 to 5 inches thick and is dark-gray, grayish-brown, or light brownish-gray clay loam or sandy clay loam. The B2t horizon ranges from 30 inches to more than 60 inches in thickness. It is dark gray, gray, or light gray and has few to many yellowish-brown, strong-brown, yellowish-red, and red mottles. This horizon is clay, clay loam, or sandy clay. The B3 horizon is gray or light gray and has few to many mottles in varying shades of brown and red. It is clay loam, sandy clay, or sandy clay loam.

Grady soils occur with Faceville, Marlboro, Dothan, Orangeburg, Fuquay, Lynchburg, Rains, and McColl soils. Grady soils are more poorly drained than Faceville, Marlboro, Dothan, Orangeburg, Fuquay, and Lynchburg soils. They have a finer textured B2t horizon than Rains soils, and they lack a Bx horizon, which McColl soils have.

Grady loam (Gr).—This soil is in oval-shaped depressions known locally as Carolina bays.

Included with this soil in mapping are a few small areas of Paxville, Rains, and McColl soils and some areas of soils that have a surface layer of sandy loam, fine sandy loam, or clay loam. Also included are some areas of soils that have a considerable decrease in clay content within 60 inches of the surface.

Most of the acreage is woodland or is idle. This soil must be drained before it can be used for crops or pasture. If adequately drained, it can be used for corn or soybeans. Bahiagrass is a suitable plant for pasture.

This soil can be tilled only within a narrow range of moisture content. It tends to puddle and pack if grazed when wet. Soil-improving crops should be grown at least 1 year out of 3 to maintain good tilth and the supply of organic matter. Capability unit IVw-2 if drained and Vw-1 if undrained; woodland group 2w9.

Johnston Series

The Johnston series consists of nearly level, deep, very poorly drained soils. These soils formed in stream deposits of loamy and sandy sediment. They are subject to flooding and are covered with standing water for long periods.

In a representative profile the surface layer is loam that is high in organic matter and is about 26 inches thick. The upper 8 inches of the surface layer is black, and the lower 18 inches is very dark gray. The next layer is very dark gray and light brownish-gray sandy loam about 6 inches thick. The underlying material is gray. It is loamy sand in the upper 40 inches and coarse sand at a depth of 72 inches.

Permeability is moderate. Runoff is very slow. Available water capacity is medium. The content of organic matter is high.

Representative profile of Johnston loam in an area of Portsmouth-Johnston association, 0.7 mile northeast of Wilson Crossroads and 300 feet east of U.S. Highway 301 in Black River swamp:

A11—0 to 8 inches, black (10YR 2/1) loam, high in organic matter; weak, fine, granular structure; very friable; many fine roots; very strongly acid, pH 4.8; clear, smooth boundary.

A12—8 to 26 inches, very dark gray (10YR 3/1) loam, high in organic matter; weak, fine, subangular blocky structure; friable; common fine roots; few fine pores; very strongly acid, pH 4.8; clear, smooth boundary.

AC—26 to 32 inches, very dark gray (10YR 3/1) and light brownish-gray (10YR 6/2) sandy loam; weak, fine, subangular blocky structure; friable; few fine roots and pores; very strongly acid, pH 4.8; clear, smooth boundary.

C1g—32 to 52 inches, gray (10YR 6/1) loamy sand; common, medium and coarse, distinct, dark-gray (10YR 4/1) mottles; structureless; very friable; few fine roots and pores; very strongly acid, pH 4.6; clear, smooth boundary.

C2g—52 to 72 inches, gray (10YR 6/1) loamy sand; few, fine, faint, light-gray and pale-brown mottles; massive; friable; few fine roots; strongly acid, pH 5.3; clear, wavy boundary.

C3g—72 to 75 inches, gray (10YR 6/1) coarse sand; single grained; loose; strongly acid, pH 5.3.

These soils are strongly acid or very strongly acid throughout.

The A horizon is 24 to 40 inches thick and is black or very dark gray loam, silt loam, sandy loam, or fine sandy loam. It is high in organic matter throughout. In places there is a surface layer of muck and undecomposed organic matter 6 to 8 inches thick. The C horizon is dark gray, gray, or light gray. The upper part of the C horizon is fine sandy loam, sandy loam, or loamy sand. Below a depth of 40 inches, the C horizon is sandy clay loam, sandy loam, loamy sand, or sand.

Johnston soils occur with Paxville, Rutlege, and Osier soils. Johnston soils have a thicker black or very dark gray surface layer than any of those soils.

Johnston soils (JS).—These are very poorly drained, alluvial soils on flood plains of the Pocotaligo River. Included in mapping are areas of Paxville, Rutlege, and Osier soils. This undifferentiated group was mapped at a lower intensity than most other mapping units.

All of the acreage is woodland that consists mainly of water-tolerant hardwoods, but there are a few scattered pines. The soils are flooded several times a year during heavy rain, and water stands on the surface for long periods. The soils cannot be used for cultivation or pasture unless extensively reclaimed with dikes and drainage ditches. They are better suited to woodland and to habitat for wildlife (fig. 6) than to most other use. Capability unit VIIw-1; woodland group 1w9.

Lakeland Series

The Lakeland series consists of nearly level to gently sloping, deep, excessively drained soils. These soils formed in sandy Coastal Plain sediment.

In a representative profile the surface layer is dark-brown sand about 9 inches thick. The underlying material is sand to a depth of 72 inches or more. The upper 53 inches of the underlying material is yellowish brown, and the lower 10 inches is brownish yellow.

Permeability is rapid. Runoff is slow. Available water capacity is low. The content of organic matter is low.

Representative profile of Lakeland sand, 0 to 6 percent slopes, 2,200 feet east of Lake Marion and 1.25 miles southeast of U.S. Highway 301:

A1—0 to 9 inches, dark-brown (7.5YR 3/2) sand; single grained; loose; many fine roots; strongly acid, pH 5.3; abrupt, smooth boundary.

C1—9 to 62 inches, yellowish-brown (10YR 5/8) sand; single grained; loose; most sand grains coated; few fine roots and pores; strongly acid, pH 5.2; gradual, wavy boundary.

C2—62 to 72 inches, brownish-yellow (10YR 6/6) sand; single grained; loose; few fine pores; many clean sand grains; strongly acid, pH 5.3.

These soils are strongly acid or very strongly acid throughout. The texture is sand or fine sand to a depth of more than

Figure 6.—**Pocotaligo River Swamp (Johnston soils), capability unit VIIw-1.**

80 inches, but there is clay and 5 to 10 percent silt at a depth between 10 and 40 inches.

The A horizon is 4 to 9 inches thick and is very dark grayish brown, dark grayish brown, grayish brown, or dark brown. The C horizon is yellowish brown, strong brown, brownish yellow, or yellow.

Lakeland soils occur with Troup, Fuquay, Foreston, Rutlege, and Osier soils. Lakeland soils are coarser textured throughout than Troup, Fuquay, and Foreston soils, and they lack a B horizon. They are better drained than Rutlege and Osier soils.

Lakeland sand, 0 to 6 percent slopes (LaB).—This soil is on undulating topography.

Included with this soil in mapping are small areas of Troup, Fuquay, and Rimini soils and several small areas of soils that have slopes of more than 6 percent. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is woodland. Much of the area that was once cleared and farmed has been replanted to pines. This soil is not well suited to row crops. During years of optimum moisture supply, however, it is suited to corn, cotton, soybeans, and watermelons. It is better suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza than to row crops.

The soil is droughty, low in inherent fertility, and subject to fertilizer losses caused by rapid leaching. It is also subject to damage by soil blowing if it is cultivated. Fertilizer is more efficient on this soil if applied in split applications. Cropping systems that include close-growing crops 3 years out of every 4 or 5 and crops that produce large amounts of residue are necessary to maintain the content of organic matter and good tilth. Stripcropping at right angles to the prevailing winds is needed to control soil blowing, and rye has proved an excellent crop to use for this. Capability unit IVs-1; woodland group 4s2.

Lynchburg Series

The Lynchburg series consists of nearly level, deep, somewhat poorly drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is very dark grayish-brown loamy sand about 9 inches thick. The subsoil extends to a depth of 72 inches. In sequence from the top, the upper 7 inches of the subsoil is pale-brown sandy loam; the next 6 inches is pale-brown sandy clay loam; and the lower 50 inches is mottled, gray sandy clay loam.

Permeability is moderate. Runoff is slow. Available water capacity is medium. The content of organic matter is moderate.

Representative profile of Lynchburg loamy sand, 1 mile north of Paxville and 500 feet west of U.S. Highway 15:

Ap—0 to 9 inches, very dark grayish-brown (10YR 3/2) loamy sand; weak, fine, granular structure; very friable; many fine roots; very strongly acid, pH 4.7; abrupt, smooth boundary.

B1—9 to 16 inches, pale-brown (10YR 6/3) sandy loam; few, fine, distinct, yellowish-brown mottles; weak, medium, subangular blocky structure; friable; common fine roots and pores; medium acid, pH 6.0; clear, smooth boundary.

B21t—16 to 22 inches, pale-brown (10YR 6/3) sandy clay loam; common, medium, distinct, yellowish-brown (10YR 5/8) mottles and few, fine, distinct, gray mottles; weak, medium, subangular blocky structure; friable; thin, patchy, faint clay films on faces of peds and in root channels; few fine roots; few fine and medium pores; strongly acid, pH 5.5; clear, smooth boundary.

B22tg—22 to 42 inches, gray (10YR 5/1) sandy clay loam; many, medium, distinct, strong-brown (7.5YR 5/8) and yellowish-red (5YR 4/8) mottles; weak, medium, subangular blocky structure; friable; thin, patchy, faint clay films on faces of peds and in root channels; few fine roots; many fine and medium pores; very strongly acid, pH 4.9; clear, wavy boundary.

B23tg—42 to 66 inches, gray (10YR 5/1) sandy clay loam; many, medium, distinct, yellowish-brown (10YR 5/8), strong-brown (7.5YR 5/8), and yellowish-red (5YR 5/8) mottles and common, medium, distinct, dark grayish-brown (10YR 4/2) mottles; weak, medium, subangular blocky structure; friable; thin, patchy, faint clay films on faces of peds; few fine pores; very strongly acid, pH 4.7; clear, smooth boundary.

B3tg—66 to 72 inches, dark-gray (10YR 4/1) sandy clay loam; common, fine and medium, distinct, yellowish-brown (10YR 5/8) and strong-brown (7.5YR 5/8) mottles and few, fine, distinct, yellowish-red mottles; weak, medium, subangular blocky structure; friable; pockets of sandy and clayey material; very strongly acid, pH 4.6.

The solum is more than 60 inches thick. The upper 16 inches of these soils is medium acid to very strongly acid, and the lower horizons are strongly acid or very strongly acid.

The A horizon ranges from 8 to 16 inches in thickness. The Ap or A1 horizon is 4 to 9 inches thick and is very dark gray, dark gray, very dark grayish brown, or dark grayish brown. The A2 horizon, where present, is 3 to 12 inches thick and is pale-brown or light brownish-gray loamy sand or sandy loam.

The B1 horizon, where present, is 4 to 15 inches thick, is pale brown or light yellowish brown, and has yellowish-brown and gray mottles. The B2t horizon commonly is sandy clay loam, but in places it is sandy loam. It ranges from 30 inches to more than 50 inches in thickness. The upper part of the B2t horizon is pale brown or light yellowish brown and has few to many mottles in varying shades of gray, red, yellow, and brown. The upper 10 inches of the B2t horizon has mottles that have a chroma of 2 or less, and the lower part has dominantly gray colors and has common to many, red, yellow, and brown mottles. The B3 horizon is 14 to 30 inches thick, has dominantly gray colors, and has common to many mottles in varying shades of red, yellow, and brown. It is sandy loam, sandy clay loam, or sandy clay.

Lynchburg soils occur with Dothan, Clarendon, Foreston, Rains, and Scranton soils. Lynchburg soils are more poorly drained than Dothan, Clarendon, and Foreston soils. They are better drained than Rains soils. Lynchburg soils have a finer textured subsoil than Scranton soils, which are sandy throughout.

Lynchburg loamy sand (Ly).—This soil is in broad areas.

Included with this soil in mapping are small areas of Clarendon, Foreston, Ocilla, and Scranton soils, areas of firm soils, and areas of soils that have a surface layer of sandy loam. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

About 60 percent of the acreage is woodland. The rest is in row crops and pasture. If adequately drained and under good management, the soil is suited to tobacco, cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass.

Tilth is generally good. Drainage is needed if the soil is used for crops. Open ditches, tile drains, or a combination of the two are used to drain the soil. Row crops can be grown each year. Growing and turning under a cover crop every year is necessary to maintain the organic-matter content and to improve tilth. Capability unit IIw–2; woodland group 2w8.

Marlboro Series

The Marlboro series consists of nearly level to gently sloping, deep, well-drained soils. These soils formed in clayey Coastal Plain sediment.

In a representative profile the surface layer is dark grayish-brown loamy sand about 9 inches thick. The subsoil is sandy clay to a depth of 72 inches. The upper 51 inches of the subsoil is strong brown, and the lower 12 inches is mottled in varying shades of brown and red.

Permeability is moderate. Runoff and available water capacity are medium. The content of organic matter is low.

Representative profile of Marlboro loamy sand, 0 to 2 percent slopes, 0.5 mile north of Davis Crossroads and 600 feet east of secondary State Highway 38:

Ap—0 to 9 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; many fine roots; medium acid, pH 5.8; abrupt, smooth boundary.

B21t—9 to 19 inches, strong-brown (7.5YR 5/8) sandy clay; moderate, medium, subangular blocky structure; friable, sticky; thin patchy clay films on faces of peds and in old root channels; many fine roots and pores; few uncoated quartz sand grains; medium acid, pH 5.7; clear, smooth boundary.

B22t—19 to 39 inches, strong-brown (7.5YR 5/8) sandy clay; moderate, medium, subangular blocky structure; friable, sticky; thin patchy clay films on faces of peds and in old root channels; common fine roots; few uncoated quartz sand grains; slightly acid, pH 6.1; clear, smooth boundary.

B23t—39 to 50 inches, strong-brown (7.5YR 5/8) sandy clay; moderate, medium, subangular blocky structure;

friable, sticky; thin patchy clay films on faces of peds; few fine roots and pores; few uncoated quartz sand grains; strongly acid, pH 5.2; gradual, smooth boundary.

B24t—50 to 60 inches, strong-brown (7.5YR 5/8) sandy clay; common, fine and medium, distinct, yellowish-red (5YR 4/8) and yellowish-brown (10YR 5/8) mottles and few, fine, distinct, red mottles; moderate, medium, subangular blocky structure; friable, sticky; thin patchy clay films on faces of peds; few uncoated quartz sand grains; strongly acid, pH 5.3; gradual, smooth boundary.

B31t—60 to 64 inches, mottled strong-brown (7.5YR 5/6), yellowish-brown (10YR 5/6), yellowish-red (5YR 4/6), and red (2.5YR 4/8) sandy clay; few, fine, distinct, pale-brown mottles; weak, medium, subangular blocky structure; friable, sticky; few uncoated quartz sand grains; about 2 percent plinthite nodules; strongly acid, pH 5.2; clear, smooth boundary.

B32t—64 to 72 inches, mottled brown (10YR 5/3) and red (2.5YR 4/6) sandy clay; common, medium, distinct, gray (10YR 6/1) mottles; weak, medium, subangular blocky structure; friable, sticky; few uncoated quartz sand grains; about 2 percent plinthite nodules; very strongly acid, pH 5.0.

The solum is more than 72 inches thick. The A horizon and upper part of the Bt horizon are slightly acid to strongly acid, and the lower part of the Bt horizon is strongly acid or very strongly acid.

The A horizon ranges from 5 to 14 inches in thickness. The Ap horizon is 5 to 9 inches thick and is grayish brown or dark grayish brown. The A2 horizon is 0 to 5 inches thick and is light yellowish-brown or pale-brown loamy or loamy fine sand.

The B1 horizon, where present, is 2 to 5 inches thick and is yellowish-brown or strong-brown sandy loam or sandy clay loam. The Bt horizon is more than 60 inches thick. It is sandy clay, clay loam, or clay. The upper part of the Bt horizon is yellowish brown or strong brown. The lower part is mottled yellowish brown, strong brown, yellowish red, red, pale brown, and gray.

Marlboro soils occur with Orangeburg, Faceville, Dothan, Clarendon, Lynchburg, and Rains soils. Marlboro soils have a finer textured, yellower subsoil than Orangeburg soils. They have a yellower subsoil than Faceville soils and a finer textured subsoil than Dothan soils. Marlboro soils are better drained than Clarendon, Lynchburg, and Rains soils.

Marlboro loamy sand, 0 to 2 percent slopes (MaA).—This soil is on broad ridges. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Faceville, Orangeburg, and Dothan soils and some areas of soils that have a surface layer of loamy fine sand or sandy loam. Also included are a few small areas that have slopes of 2 to 4 percent and a few areas of soils similar to Marlboro soil in the upper horizons but that are 5 to 10 percent plinthite at a depth of 40 to 60 inches. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cleared and is cultivated. The soil has few limitations to use for crops. Row crops can be grown each year. The soil is suited to tobacco, cotton (fig. 7), corn, soybeans, bahiagrass, and Coastal bermudagrass. It is easily tilled throughout a wide range of moisture content. Capability unit I–2; woodland group 3o1.

Marlboro loamy sand, 2 to 6 percent slopes (MaB).—This soil is on broad ridges and narrow slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Faceville, Orangeburg, and Dothan soils and some

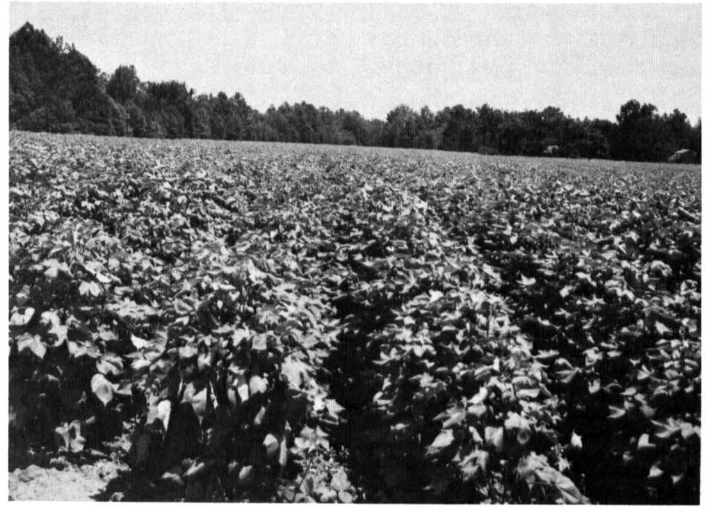


Figure 7.—**Marlboro loamy sand, 0 to 2 percent slopes, is well suited to cotton.**

areas of soils that have a surface layer of loamy fine sand or sandy loam. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent slopes. Also included are some small areas of soils where erosion has exposed the subsoil. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. The soil is suited to tobacco, cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass.

Erosion is the chief hazard. Contour tillage and a crop rotation that includes sod crops are sufficient to control erosion in some fields. In other fields terraces, grassed waterways, and contour tillage are needed in addition to crop rotation. Crop residue kept on or near the surface increases infiltration and reduces erosion. Keeping the soil in close-growing crops at least half of the time helps to control erosion. Capability unit IIe–2; woodland group 3o1.

McColl Series

The McColl series consists of nearly level, poorly drained soils. These soils are moderately deep to a fragipan. They formed in loamy and clayey Coastal Plain sediment.

In a representative profile the surface layer is dark grayish-brown loam about 9 inches thick. The subsoil is 49 inches thick. The upper 6 inches of the subsoil is gray clay loam that has yellowish-brown mottles; the next 13 inches is gray sandy clay that has yellowish-brown mottles; and the lower 30 inches is mottled yellowish-brown, strong-brown, and gray, firm, hard, and brittle sandy clay. The underlying material is mottled yellowish-brown sandy clay.

Permeability is slow. Runoff is ponded. Available water capacity is medium. The content of organic matter is moderate.

Representative profile of McColl loam, 2 miles west of Summerton from the intersection of secondary State

Highway 26 and secondary State Highway 41; 0.75 mile southwest on Highway 41; 0.25 mile southeast on dirt road; 200 feet northeast of road:

Ap—0 to 9 inches, dark grayish-brown (2.5Y 4/2) loam; weak, fine, granular structure; very friable; many fine roots; few fine pores; strongly acid, pH 5.3; abrupt, smooth boundary.

B21tg—9 to 15 inches, gray (N 6/0) clay loam; common, fine, distinct, yellowish-brown and light yellowish-brown mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; few fine roots; many fine pores; very strongly acid, pH 4.9; clear, smooth boundary.

B22tg—15 to 28 inches, gray (N 6/0) sandy clay; common, medium, distinct, yellowish-brown (10YR 5/8) and light yellowish-brown (10YR 6/4) mottles and few, medium, distinct, yellowish-red (5YR 4/8) mottles; moderate, medium, subangular blocky structure; firm; thin, patchy, distinct clay films on faces of peds and in root channels; few fine roots; many fine pores; very strongly acid, pH 4.7; abrupt, smooth boundary.

Bx1—28 to 52 inches, mottled strong-brown (7.5YR 5/8) and gray (10YR 5/1) sandy clay; few, medium, distinct, yellowish-red (5YR 4/8) and yellowish-brown (10YR 5/8) mottles; strong, medium, subangular blocky structure; hard, firm, compact and brittle; thin, patchy, distinct clay films on faces of peds; few fine pores; very strongly acid, pH 4.5; clear, wavy boundary.

Bx2—52 to 58 inches, mottled yellowish-brown (10YR 5/8) and gray (10YR 5/1) sandy clay; few, medium, distinct, yellowish-red (5YR 4/8) and strong-brown (7.5YR 5/8) mottles; strong, medium, subangular blocky structure; hard, firm, compact and brittle; thin, patchy, distinct clay films on faces of peds; few fine pores; few mica flakes; very strongly acid, pH 4.5; clear, wavy boundary.

C1—58 to 66 inches, yellowish-brown (10YR 5/8) sandy clay; few, medium, distinct, strong-brown (7.5YR 5/8) and gray (10YR 5/1) mottles; massive; gray soil material is firm and brown is friable; few mica flakes; very strongly acid, pH 4.6; gradual, wavy boundary.

C2—66 to 72 inches, yellowish-brown (10YR 5/8) sandy clay; common, medium, distinct, strong-brown (7.5YR 5/8), red (2.5YR 4/8), and gray (10YR 5/1) mottles; massive; gray soil material is firm and brown is friable; few mica flakes; very strongly acid, pH 4.6.

The solum ranges from 42 to 60 inches in thickness. Few to common iron concretions are throughout some profiles. The soils are strongly acid or very strongly acid throughout.

The Ap or A1 horizon is 5 to 9 inches thick and is black, very dark gray, or dark grayish brown. The A2 horizon, where present, is 3 to 6 inches thick and is pale-brown, very pale-brown, light brownish-gray, or light-gray sandy loam or fine sandy loam.

The B1 horizon, where present, is 2 to 8 inches thick and is gray, grayish-brown, or light brownish-gray sandy clay loam or clay loam. The B2t horizon is 15 to 30 inches thick and is gray, grayish-brown, or light brownish-gray sandy clay or clay loam. Some profiles have few to many mottles of pale brown, light yellowish brown, yellowish brown, and strong brown. The Bx horizon commonly is 18 to 40 inches thick. It is dominantly strong brown, yellowish brown, and gray and has few to many mottles of yellowish red and red. It is sandy clay, clay loam, or sandy clay loam. In some profiles the Bx horizon is 2 to 4 percent plinthite nodules.

The C horizon is mottled gray, yellow, brown, and red sandy loam, sandy clay loam, and sandy clay.

In Clarendon County, depth to the Bx horizon in McColl soils ranges from 28 to 36 inches, which is deeper than is defined as the range for the McColl series, but this difference does not alter the use and behavior of McColl soils.

McColl soils occur with Fuquay, Dothan, Orangeburg, Marlboro, Faceville, Lynchburg, Rains, and Grady soils. McColl soils have a Bx horizon, whereas all those soils do not. They are more poorly drained than Fuquay, Dothan, Orangeburg, Marlboro, Faceville, and Lynchburg soils.

McColl loam (Mc).—This soil is in concave, oval-shaped depressions that lack natural drainage outlets in most areas. In about 40 percent of the acreage, this soil has a surface layer of sandy loam.

Included with this soil in mapping are small areas of Grady and Rains soils. Also included in about 40 percent of the acreage of this soil are soils that have less than 35 percent clay in the subsoil.

About 75 percent of the acreage is woodland. If adequately drained, the soil can be used for corn or soybeans. Bahiagrass is suited to pasture.

Drainage is needed before the soil can be used for crops or pasture, but most areas lack drainage outlets (fig. 8). This soil can be tilled only within a narrow range of moisture content. It tends to puddle and pack if grazed or tilled when wet. Soil-improvement crops should be grown at least 1 year out of 3 to maintain good tilth and the content of organic matter. Capability unit IIIw-2 if drained and Vw-1 if undrained; woodland group 2w9.

Ocilla Series

The Ocilla series consists of nearly level, deep, moderately well drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is very dark grayish-brown loamy sand about 8 inches thick. The subsurface layer is pale-brown loamy sand about 15 inches thick. The subsoil extends to a depth of 74 inches. The upper 5 inches of the subsoil is yellowish-brown sandy loam; the next 28 inches is yellowish-brown sandy loam that has strong-brown, yellowish-red, and light gray mottles; the lower 18 inches is mottled gray, brown, and red sandy clay loam.

Permeability is rapid in the sandy surface layer and moderate in the loamy subsoil. Runoff is slow. Available water capacity is low to medium. The content of organic matter is low.

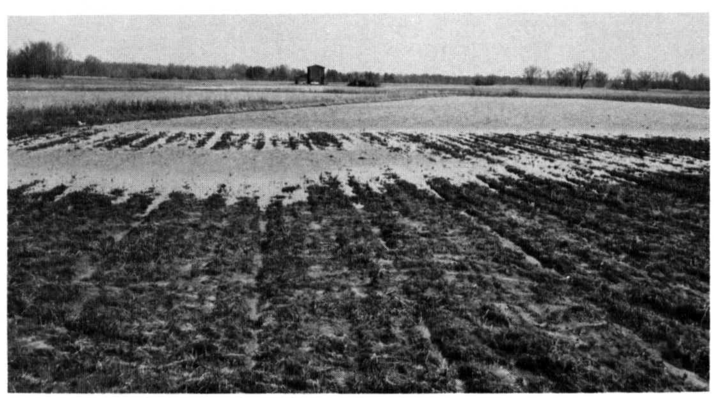


Figure 8.—**McColl loam in a 6-acre depression that is flooded. It is surrounded by Dothan loamy fine sand, 0 to 2 percent slopes.**

Representative profile of Ocilla loamy sand, 2 miles southeast on secondary State Highway 50 from intersection of U.S. Highway 301 and secondary State Highway 50; 0.5 mile southwest on dirt road; 0.4 mile west on farm road; 25 feet north of road:

A1—0 to 8 inches, very dark grayish-brown (10YR 3/2) loamy sand, light brownish gray (10YR 6/2) dry; weak, fine, granular structure; very friable; many fine and medium roots; common fine pores; strongly acid; pH 5.2; clear, smooth boundary.

A2—8 to 23 inches, pale-brown (10YR 6/3) loamy sand; weak, medium, subangular blocky structure; very friable; common fine roots; many fine and medium pores; small pockets of clean sand grains; medium acid; pH 5.8; clear smooth boundary.

B21t—23 to 28 inches, yellowish-brown (10YR 5/6) sandy loam; few, fine, distinct, strong-brown, pale-brown, and yellowish-red mottles; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; common fine roots; many fine and medium pores; very strongly acid, pH 5.0; clear, smooth boundary.

B22t—28 to 36 inches, yellowish-brown (10YR 5/6) sandy loam; common, medium, distinct, strong-brown (7.5YR 5/8) and pale-brown (10YR 6/3) mottles and few, medium, distinct, yellowish-red (5YR 5/8) and light-gray (10YR 7/1) mottles; moderate, medium, subangular blocky structure; friable; sand grains coated and bridged; common fine pores; very strongly acid, pH 4.9; clear, smooth boundary.

B23t—36 to 42 inches, yellowish-brown (10YR 5/6) sandy loam; common, medium, distinct, strong-brown (7.5YR 5/8), pale-brown (10YR 6/3), yellowish-red (5YR 5/8), and light-gray (10YR 7/1) mottles; weak, medium, subangular blocky structure; friable; sand grains coated; very strongly acid, pH 4.9; clear, smooth boundary.

B24t—42 to 56 inches, yellowish-brown (10YR 5/4) sandy loam; common, medium, distinct, strong-brown (7.5YR 5/8), pale-brown (10YR 6/3), yellowish-red (5YR 5/8), and light-gray (10YR 7/1) mottles; weak, medium, subangular blocky structure; friable; very strongly acid, pH 4.8; gradual, smooth boundary.

B3tg—56 to 74 inches, mottled light-gray (10YR 7/1), yellowish-brown (10YR 5/8), strong-brown (7.5YR 5/8), and yellowish-red (5YR 5/8) sandy clay loam: massive; firm; very strongly acid, pH 5.0.

The solum is more than 60 inches thick. The A horizon is medium acid or strongly acid, and the B horizon is strongly acid or very strongly acid.

The A horizon ranges from 21 to 34 inches in thickness. The Ap or A1 horizon is 5 to 9 inches thick and is very dark gray, very dark grayish brown, or dark grayish brown. The A2 horizon is 12 to 25 inches thick and is very pale brown, pale brown, or light yellowish brown loamy sand or sand.

The B1 horizon, where present, is 3 to 12 inches thick and is brownish-yellow or light yellowish-brown sandy loam or loamy sand. The B2t horizon ranges from 30 inches to more than 50 inches in thickness. It is brownish-yellow, yellowish-brown, or light yellowish-brown sandy loam or sandy clay loam. The upper part of the B2t horizon has few red and gray mottles and the lower part is mottled in varying shades of brown, red, and gray. The B3 horizon is 6 to 24 inches thick and is sandy loam or sandy clay loam that is mottled in varying shades of brown, red, and gray.

Ocilla soils occur with Dothan, Clarendon, Foreston, Lynchburg, Rains, and Fuquay soils. Ocilla soils have a thicker A horizon than Dothan, Clarendon, Foreston, Lynchburg, and Rains soils. They are more poorly drained than Dothan and Fuquay soils and better drained than Lynchburg and Rains soils.

Ocilla loamy sand (Oc).—This soil is in broad areas. Included with this soil in mapping are small areas of Fuquay, Clarendon, Foreston, and Lynchburg soils. Also included are a few small areas that have slopes of 2 to 6 percent and a few areas of soils that have sandy material in the lower part of the profile. Small, wet, depressed areas that are less than 4 acres in size are shown on the detailed soil map by the symbol for wet spot.

About 50 percent of the acreage is cultivated. The rest is woodland. If drained, the soil is suited to tobacco, cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass.

Tile drains, open ditches, or a combination of the two can be used to drain this soil. Open ditches are difficult to maintain because of the sloughing action of the subsoil. This soil is easily tilled, but it cannot be cultivated so soon after a rain as the associated Dothan and Fuquay soils can. Returning crop residue to the soil, using soil-improving crops at least 1 year out of 3, and using rotations that include perennial grasses are essential to maintain good tilth and the content of organic matter. Capability unit IIIw-1; woodland group 3w2.

Orangeburg Series

The Orangeburg series consists of nearly level to gently sloping, deep, well-drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is brown loamy sand about 10 inches thick. The subsoil extends to a depth of 72 inches. The upper 6 inches of the subsoil is yellowish-red sandy loam, and the lower 56 inches is red sandy clay loam.

Permeability is moderate. Runoff and available water capacity are medium. The content of organic matter is low.

Representative profile of Orangeburg loamy sand, 0 to 2 percent slopes, 4.25 miles southwest of Rimini on secondary State Highway 76 and 1,000 feet northeast of the highway:

Ap—0 to 10 inches, brown (10YR 4/3) loamy sand; weak, fine, granular structure; very friable; many fine roots; strongly acid, pH 5.4; clear, smooth boundary.

B1t—10 to 16 inches, yellowish-red (5YR 4/8) sandy loam; weak, fine, subangular blocky structure; friable; few fine roots and pores; medium acid, pH 5.6; gradual, smooth boundary.

B21t—16 to 44 inches, red (2.5YR 4/6) sandy clay loam; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; few fine pores; medium acid, pH 5.6; gradual, smooth boundary.

B22t—44 to 65 inches, red (2.5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; few fine pores; few fine particles of feldspar; medium acid, pH 5.7; gradual, smooth boundary.

B23t—65 to 72 inches, red (2.5YR 4/8) sandy clay loam; few, fine, faint, strong-brown and dark-red mottles; weak, medium, subangular blocky structure; friable; sand grains coated and bridged; few fine pores; few fine particles of feldspar; strongly acid, pH 5.1.

The solum ranges from 60 inches to more than 72 inches in thickness. The A horizon is medium acid or strongly acid, and the B horizon ranges from medium acid to very strongly acid.

The A horizon ranges from 6 to 18 inches in thickness. The surface is 5 to 10 inches thick and is dark grayish brown, dark brown, or brown. The A2 horizon is 0 to 10 inches thick. It is very pale brown, pale-brown, strong-brown, yellowish-red, or dark reddish-brown loamy sand or loamy fine sand.

The B1 horizon, where present, is 4 to 16 inches thick and is yellowish red or strong brown. The B2t horizon ranges from 40 inches to more than 60 inches in thickness. It is yellowish-red or red sandy loam or sandy clay loam. In many places strong-brown and dark-red mottles are in the lower part of the Bt horizon.

Orangeburg soils occur with Dothan, Red Bay, Faceville, Marlboro, Fuquay, Troup, and Clarendon soils. Orangeburg soils have a redder subsoil than Dothan, Marlboro, Fuquay, and Troup soils. Their subsoil is not so dark red as that of Red Bay soils. They have a coarser textured subsoil than Faceville and Marlboro soils. Orangeburg soils are better drained than Clarendon soils.

Orangeburg loamy sand, 0 to 2 percent slopes (OrA).—This soil is on broad ridges. It has the profile described as representative of the series.

Included with this soil in mapping are a few areas of Dothan, Faceville, Red Bay, and Fuquay soils and a few areas of soils that have slopes of 2 to 6 percent. Small, wet, depressed areas that are less than 4 acres in size are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. The soil is suited to tobacco, cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass. The soil can be tilled throughout a wide range of moisture content.

This soil has very few limitations. Under good management, it can be cropped intensively without losing soil through erosion. Capability unit I–1; woodland group 2o1.

Orangeburg loamy sand, 2 to 6 percent slopes (OrB).—This soil is on broad ridges and on narrow slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Dothan, Faceville, Red Bay, and Fuquay soils and some areas of soils that have slopes of less than 2 percent or more than 6 percent. Also included are some small areas where erosion has exposed the subsoil. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. Principal crops grown are tobacco, cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are better suited plants for hay and pasture than most others.

Erosion is the chief hazard. Contour tillage and rotations that include sod crops control erosion in some fields. In other fields, terraces, grassed waterways, and contour tillage are needed in addition to crop rotation. Crop residue kept on or near the surface increases infiltration and reduces erosion. Keeping the soil in close-growing crops at least half of the time helps to control erosion. Capability unit IIe–1; woodland group 2o1.

Osier Series

The Osier series consists of nearly level, deep, poorly drained to very poorly drained soils. These soils formed in sandy Coastal Plain sediment.

In a representative profile the surface layer is very dark gray loamy fine sand about 5 inches thick. The underlying material is fine sand. The upper 10 inches of the underlying material is mixed light gray and grayish brown; the next 9 inches is light gray; the next 24 inches is white; and at a depth below about 48 inches the soil material is light gray.

Permeability is rapid but is impeded by a high water table much of the time. Runoff is very slow, and these soils are ponded for long periods. Available water capacity is very low. The content of organic matter is low.

Representative profile of Osier loamy fine sand, 1 mile west on State Highway 261 from intersection of State Highway 261 and secondary State Highway 50 and 50 feet north of highway:

A1—0 to 5 inches, very dark gray (10YR 3/1) loamy fine sand; weak, fine, granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.8; abrupt, wavy boundary.

C1g—5 to 15 inches, mixed grayish-brown (10YR 5/2) and light-gray (10YR 7/1) fine sand; few, medium, faint, gray (10YR 5/1) mottles; single grained; loose; few fine and medium roots; very strongly acid, pH 4.8; clear, smooth boundary.

C2g—15 to 24 inches, light-gray (10YR 7/1) fine sand; single grained; loose; common fine roots; strongly acid, pH 5.4; gradual, smooth boundary.

C3g—24 to 35 inches, white (N 8/0) fine sand; few, fine, distinct, yellowish-brown stains in old root channels, and few, fine, faint, very pale brown mottles; single grained; loose; strongly acid, pH 5.4; gradual, smooth boundary.

C4g—35 to 48 inches, white (N 8/0) fine sand; single grained; loose; strongly acid, pH 5.2; gradual, smooth boundary.

C5g—48 to 72 inches, light-gray (10YR 7/1) fine sand; single grained; loose; strongly acid, pH 5.1.

These soils are strongly acid or very strongly acid throughout. The A1 horizon is 2 to 6 inches thick and is black or very dark gray. The C horizon is white, light-gray, gray, or grayish-brown sand or fine sand. Some profiles have a few, pale-brown and yellowish-brown mottles.

Osier soils occur with Troup, Fuquay, Foreston, Lynchburg, Scranton, Rains, Paxville, and Rutlege soils. Osier soils are more poorly drained than Troup, Fuquay, Foreston, Lynchburg, and Scranton soils. They are coarser textured than Rains and Paxville soils. Osier soils do not have a thick, black or very dark gray surface layer, but Rutlege soils do.

Osier loamy fine sand (Os).—This soil is in low, wet areas at the head of small streams, along small streams, and in small, oval-shaped depressions.

Included with this soil in mapping are small areas of Rutlege, Paxville, Scranton, and Rains soils, small areas of soils that have several inches of alluvial material on the surface, and some areas of soils that have a surface layer of sand or loamy sand.

Most of the acreage is woodland. The soil generally is not suited to row crops. Areas used for pasture must be drained intensively. Fertilizer and lime leach rapidly. Capability unit Vw–2; woodland group 3w3.

Paxville Series

The Paxville series consists of nearly level, deep, very poorly drained soils. These soils formed in mainly loamy Coastal Plain sediment.

In a representative profile the surface layer is black and about 15 inches thick; the upper 9 inches is loam and the lower 6 inches is fine sandy loam. The subsoil extends to a depth of 72 inches. The upper 25 inches of the subsoil is very dark grayish-brown sandy clay loam; the next 8 inches is dark grayish-brown sandy loam; and the lower 24 inches is mottled, gray and brown fine sand.

Permeability is moderate. Runoff is ponded or very slow. Available water capacity is medium. The content of organic matter is high.

Representative profile of Paxville loam, 1.6 miles east of Turbeville and 100 feet north of U.S. Highway 378:

Ap1—0 to 9 inches, black (10YR 2/1) loam; weak, medium, subangular blocky structure; friable; many fine roots and pores; few clean quartz grains; high in organic-matter content; very strongly acid, pH 4.8; clear, smooth boundary.

A12—9 to 15 inches, black (10YR 2/1) fine sandy loam; weak, medium, subangular blocky structure; friable; common fine roots; many fine pores; very strongly acid, pH 4.8; clear, smooth boundary.

B21tg—15 to 30 inches, very dark grayish-brown (10YR 3/2) sandy clay loam; few, fine and medium, faint, dark grayish-brown (10YR 4/2) mottles; weak, medium, subangular blocky structure; friable, slightly sticky and plastic; most sand grains coated and bridged with clay; common fine roots and pores; very strongly acid, pH 4.6; gradual, smooth boundary.

B22tg—30 to 40 inches, very dark grayish-brown (10YR 3/2) sandy clay loam; few, fine, distinct, yellowish-brown mottles; weak, medium, subangular blocky structure; firm, slightly sticky; sand grains coated and bridged with clay; some sandy clay and some sandy loam material; few pockets of clean sand grains; very strongly acid, pH 4.7; gradual, smooth boundary.

B31g—40 to 48 inches, dark grayish-brown (10YR 4/2) sandy loam; many, medium, faint, very dark grayish-brown (10YR 3/2) mottles; massive; friable; pockets of loamy sand material and clean sand grains; very strongly acid, pH 4.6; gradual, smooth boundary.

B32g—48 to 72 inches, coarsely mottled gray (10YR 5/1) and brown (10YR 5/3) fine sand; single grained; loose; few pockets of loamy material; very strongly acid, pH 4.6.

The solum ranges from 60 inches to more than 80 inches in thickness. The soils are strongly acid or very strongly acid throughout.

The A horizon is black or very dark gray and is 10 to 18 inches thick. The B1 horizon, where present, is 4 to 10 inches thick and is very dark gray, dark-gray, or gray sandy loam or fine sandy loam. The B2t horizon is 20 to 40 inches thick and is very dark grayish-brown, dark grayish-brown, very dark gray, dark-gray, or gray sandy clay loam or sandy loam. Some profiles have few to common mottles of yellow, brown, and red. The B3 horizon is dark grayish brown, grayish brown, dark gray, gray, or light gray. It is sandy loam, loamy sand, sand, or fine sand.

Paxville soils occur with Dothan, Clarendon, Lynchburg, Rains, Rutlege, Troup, and Fuquay soils. Paxville soils have a blacker surface layer and are more poorly drained than Dothan, Clarendon, Lynchburg, and Rains soils. They have a finer textured subsoil than Rutlege soils.

Paxville loam (Pa).—This soil is in slightly depressed areas along drainageways, in oval-shaped bays, and at the head of draws. About 30 percent of the acreage has a surface layer of sandy loam or fine sandy loam.

Included with this soil in mapping are small areas of Rains, Rutlege, and Osier soils and some areas of soils that have a subsoil of sandy clay.

Most of the acreage is woodland. The soil is well suited to timber production. Intensive drainage is needed for crops. If the soil is adequately drained, corn, soybeans, and bahiagrass can be grown.

This soil can be drained by open ditches, tile drains, or a combination of the two. Large amounts of fertilizer and additions of organic matter are needed to maintain good tilth and to be beneficial to crops. Capability units IIIw-4 if drained and Vw-1 if undrained; woodland group 1w9.

Persanti Series

The Persanti series consists of nearly level, deep, moderately well drained soils. These soils formed in clayey Coastal Plain sediment.

In a representative profile the surface layer is dark-gray very fine sandy loam about 6 inches thick. The subsoil is clay and extends to a depth of 72 inches. The upper 11 inches of the subsoil is brownish yellow; the next 43 inches is mottled in varying shades of brown, red, and gray; and the lower 12 inches is light gray and has brown mottles.

Permeability is slow. Runoff and available water capacity are medium. The content of organic matter is low.

Representative profile of Persanti very fine sandy loam, 0 to 2 percent slopes, 3 miles west of Goat Island Landing in a large wooded area:

A1—0 to 6 inches, dark-gray (10YR 4/1) very fine sandy loam; weak, medium, subangular blocky structure; friable; many fine roots; very strongly acid, pH 4.9; clear, smooth boundary.

B21t—6 to 17 inches, brownish-yellow (10YR 6/6) clay; common, medium, distinct, pale-brown (10YR 6/3) mottles and few, fine, distinct, strong-brown and yellowish-red mottles; moderate, medium, subangular blocky structure; firm, very hard; thin distinct clay films on faces of peds and in root channels; common fine roots; few fine pores; strongly acid, pH 5.1; gradual, smooth boundary.

B22t—17 to 44 inches, mottled brownish-yellow (10YR 6/6), strong-brown (7.5YR 5/8), and pale-brown (10YR 6/3) clay; common, fine and medium, distinct, light-gray (10YR 7/2) and yellowish-red (5YR 4/8) mottles and few, fine, prominent, red mottles; strong, medium, subangular blocky structure; very firm, very hard; thick prominent clay films on faces of peds; few fine roots and pores; very strongly acid, pH 4.9; gradual, smooth boundary.

B23tg—44 to 60 inches, mottled light-gray (10YR 7/2) and yellowish-brown (10YR 5/8) clay; many, fine and medium, distinct, strong-brown (7.5YR 5/8) mottles and few, fine, prominent, yellowish-red and red mottles; strong, medium, subangular blocky structure; very firm, very hard; thick prominent clay films on faces of peds; few fine pores; very strongly acid, pH 4.9; clear, smooth boundary.

B3tg—60 to 72 inches, light-gray (10YR 7/1) clay; common, medium, distinct, strong-brown (7.5YR 5/8) mottles, few, fine, prominent, yellowish-red mottles, and few, fine, faint, pale-brown mottles; strong, medium, angular and subangular blocky structure; very firm, very hard; thick prominent clay films on faces of peds; strongly acid, pH 5.3.

The solum ranges from 60 inches to more than 72 inches in thickness. The soils are strongly acid or very strongly acid throughout.

The A horizon is 3 to 12 inches thick. The A1 horizon is 3 to 8 inches thick and is dark gray, dark grayish brown, or grayish brown. The A2 horizon, where present, is 2 to 7 inches thick and is very pale brown, pale-brown, or light yellowish-brown sandy loam or fine sandy loam.

The B1 horizon is 0 to 8 inches of light yellowish-brown or brownish-yellow sandy clay loam or clay loam. The B2t horizon ranges from 30 inches to more than 60 inches in thickness. The upper part of this horizon is yellowish brown, brownish yellow, or light yellowish brown and has few to common mottles of brown, red, and gray. The lower part is mottled in varying shades of brown, red, and gray. Mottles that have a chroma of 2 or less are 15 to 30 inches from the surface. The B3 horizon is 6 to 36 inches thick and commonly is mottled in shades of brown, red, and gray. It is clay, sandy clay, or clay loam.

Persanti soils occur with Red Bay, Orangeburg, Faceville, and Cantey soils. Persanti soils are more poorly drained and have a finer textured subsoil than Red Bay and Orangeburg soils. They are more poorly drained than Faceville soils and are better drained than Cantey soils.

Persanti very fine sandy loam, 0 to 2 percent slopes (PeA).—This soil is in broad areas adjacent to Lake Marion.

Included with this soil in mapping are small areas of Summerton and Cantey soils, a few areas of soils that are not so deep as Persanti soils, and a few areas of soils that have 5 to 15 percent plinthite within 60 inches of the surface. Some areas of similar soils that are somewhat poorly drained and areas of soils that have a surface layer of loam, fine sandy loam, or sandy loam are also included. Small, depressed areas, 1 to 4 acres in size, of wetter soils are shown on the detailed soil map by the symbol for wet spot.

About 60 percent of the acreage is woodland. The rest is cultivated or pastured. Principal cultivated crops are cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are suited pasture grasses.

Tilth is only fair, and the soil can be tilled only within a narrow range of moisture content. Large amounts of organic matter and fertilizer are needed to maintain good tilth and are beneficial to crops. Growing and turning under cover crops are necessary to maintain the organic-matter content and tilth. Capability unit IIw–5; woodland group 2w8.

Ponzer Series

The Ponzer series consists of nearly level, deep, very poorly drained, organic soils. These soils formed in freshwater from woody material.

In a representative profile the surface layer is mixed, black mucky loam and dark-brown organic material about 20 inches thick. The underlying material is alternate layers of loamy sand or sand and loam or fine sandy loam to a depth of more than 72 inches.

Permeability is moderate, but these soils have a high water table. Runoff is very slow and is ponded much of the time. Available water capacity is high. The content of organic matter is very high.

Representative profile of Ponzer mucky loam, about 2 miles northeast of Turbeville in about the center of Dials Bay, 1¼ miles northwest of the southern lip of the bay:

Oa1—0 to 20 inches, mixed, black (N 2/0) mucky loam and dark-brown (7.5YR 4/4) sapric material; structureless; friable; many fine and medium roots; many fine and medium pores; very strongly acid, pH 4.5; clear, wavy boundary.

IIC1—20 to 24 inches, brown (7.5YR 5/4) loam; weak, fine, subangular blocky structure; friable; common fine and medium roots and pores; very strongly acid, pH 4.6; clear, smooth boundary.

IIIC2—24 to 28 inches, very pale brown (10YR 7/4) loamy sand and pockets of clean white sand; structureless; very friable; common fine roots and pores; very strongly acid, pH 4.9; abrupt, wavy boundary.

IIIC3—28 to 33 inches, mixed white (2.5Y 8/1) and very pale brown (10YR 7/4) sand; single grained; loose; few fine roots; strongly acid, pH 5.2; abrupt, wavy boundary.

IVC4—33 to 38 inches, black (10YR 2/1) fine sandy loam; weak, medium, subangular blocky structure; firm; many, fine and medium, partly decomposed roots; few fine pores; very strongly acid, pH 4.6; abrupt, irregular boundary.

VC5—38 to 42 inches, pale-brown (10YR 6/3) fine sandy loam; weak, medium, subangular blocky structure; firm; pockets of white sand in lower part; many, fine and medium, partly decomposed roots; very strongly acid, pH 4.7; clear, wavy boundary.

VC6—42 to 48 inches, dark-gray (10YR 4/1) loamy sand and dark-gray (10YR 4/1) and black (10YR 2/1) loam; massive; loamy sand is friable, loam is firm; common, fine and medium, partly decomposed roots concentrated in the loam; few fine pores; extremely acid, pH 4.4; gradual, wavy boundary.

VIC7—48 to 75 inches, stratified layers of gray (10YR 5/1) and light-gray (10YR 7/1) sand and dark-gray (10YR 4/1) and black (10YR 2/1) loam; sand is single grained and loose, loam is massive and firm; few, fine, partly decomposed roots in loam; very strongly acid, pH 5.0; gradual, wavy boundary.

VIC8—75 to 92 inches, very dark gray (10YR 3/1) sandy clay loam; massive; firm; many, fine and medium, partly decomposed roots; strongly acid, pH 5.4.

These soils are strongly acid to extremely acid throughout.

The organic surface layer is 16 to 32 inches thick and is black, very dark brown, or dark brown. Below the organic layer are alternate layers of sand or loamy sand and sandy loam, fine sandy loam, loam, or clay loam. The sandy layers are very pale brown, gray, light gray, or white. The finer textured layers are black, very dark gray, dark gray, brown, or pale brown.

In Clarendon County, the organic-matter content of Ponzer soils is lower than that defined as within the range for the Ponzer series, but this difference does not alter their use and behavior.

Ponzer soils occur with Paxville, Rutlege, Osier, Rimini, and Scranton soils. Ponzer soils contain more organic material throughout than those soils.

Ponzer mucky loam (Po).—This soil is in Dials Bay and Woods Mill Pond in the northeast corner of the county.

Included with this soil in mapping are some areas of Paxville and Rutlege soils and some areas of soils that have an organic surface layer less than 16 inches thick. A ¼- to ½-mile wide strip on the outer edges of the bay contains the largest number of included soils.

This soil is better suited to woodland and as a habitat for wildlife than to most other uses. It cannot be used for cultivated crops or pasture unless it is extensively drained and reclaimed. Capability unit VIIw–1; woodland group 4w3.

Portsmouth Series

The Portsmouth series consists of nearly level, very poorly drained soils. These soils are moderately deep over a sandy substratum. They formed in loamy and sandy fluvial sediment.

In a representative profile the surface layer is very dark brown loam about 18 inches thick. The subsoil is dark-gray sandy clay loam about 12 inches thick. The underlying material, beginning at a depth of about 30 inches, is light brownish-gray and gray sand.

Permeability is moderate. Runoff is very slow or ponded. Available water capacity is medium. The content of organic matter is high.

Representative profile of Portsmouth loam, in an area of Portsmouth-Johnston association, 0.6 mile northeast of Wilson Crossroads and 0.7 mile northwest of U.S. Highway 301 in Black River Swamp:

A1—0 to 18 inches, very dark brown (10YR 2/2) loam; weak, fine, granular structure; very friable; common fine roots; high in content of organic matter; strongly acid, pH 5.2; clear, smooth boundary.

B2tg—18 to 30 inches, dark-gray (10YR 4/1) sandy clay loam; weak, medium, subangular blocky structure; friable, sticky; patchy clay films on faces of peds and in root channels; few fine roots; common fine and medium pores; very strongly acid, pH 4.8; abrupt, smooth boundary.

IIC1g—30 to 43 inches, light brownish-gray (10YR 6/2) sand; single grained; loose, very strongly acid, pH 4.8; gradual, smooth boundary.

IIC2g—43 to 72 inches, gray (10YR 6/1) sand; single grained; loose; very strongly acid, pH 4.6.

The solum ranges from 25 to 40 inches in thickness. The soils are strongly acid or very strongly acid throughout.

The A horizon is black, very dark gray, or very dark brown and ranges from 12 to 20 inches in thickness. The B1 horizon, where present, is very dark gray, dark-gray, or gray sandy loam or fine sandy loam. It ranges from 6 to 10 inches in thickness. The B2t horizon is very dark brown, very dark grayish brown, grayish brown, very dark gray, dark gray, or gray. It is sandy loam, sandy clay loam, or clay loam and ranges from 10 to 30 inches in thickness. Some profiles have few to common mottles of yellow, brown, and red. The B3 horizon, where present, is grayish-brown, very dark gray, dark-gray, or gray sandy loam or loamy sand. It ranges from 4 to 18 inches in thickness. The C horizon is very dark gray, dark-gray, light brownish-gray, gray, or light-gray sand or loamy sand.

Portsmouth soils occur with Johnston, Paxville, Rutlege, and Osier soils. They have a thinner surface layer and a finer textured subsoil than Johnston soils. They have a thinner subsoil than Paxville soils and a finer textured subsoil than Rutlege and Osier soils.

Portsmouth-Johnston association (PT).—This mapping unit consists of very poorly drained soils that occur in an intricate pattern in heavily wooded areas on the flood plains of the Black River. The composition of this mapping unit is more variable than that of most others in the survey area, but it has been controlled well enough to allow interpretation for the anticipated uses.

Portsmouth soils make up about 50 percent of this mapping unit and Johnston soils about 30 percent. The remaining 20 percent is Paxville, Rutlege, and Osier soils. All these soils are similar to the Portsmouth and Johnston soils in use and management. The Portsmouth soils and the Johnston soils have the profile described as representative of their series.

Most of this mapping unit is woodland that consists mainly of water-tolerant hardwoods. Also in the stands are some cypress and a few scattered pines. The entire association is flooded every year during heavy rain, and water stands on some areas for long periods during the year (fig. 9). These soils are not suited to crops or pasture. Capability unit VIIw-1; woodland group 1w9.

Rains Series

The Rains series consists of nearly level, deep, poorly drained soils. These soils formed in loamy Coastal Plain sediment.

In a representative profile the surface layer is very dark grayish-brown sandy loam about 5 inches thick. The subsurface layer is grayish-brown sandy loam about 2 inches thick. The subsoil is gray and dark-gray sandy clay loam to a depth of 72 inches.

Permeability is moderate. Runoff is slow. Available water capacity is medium. The content of organic matter is moderate.

Representative profile of Rains sandy loam, 1 mile north of Paxville and 1,000 feet west of U.S. Highway 15:

A1—0 to 5 inches, very dark grayish-brown (10YR 3/2) sandy loam; weak, fine, granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.6; clear, smooth boundary.

A2—5 to 7 inches, grayish-brown (10YR 5/2) sandy loam; few, fine, faint, pale-brown mottles; weak, fine, granular structure; very friable; many fine and medium roots; very strongly acid; pH 4.5; clear, smooth boundary.

B21tg—7 to 13 inches, gray (10YR 5/1) sandy clay loam; few, fine, distinct, yellowish-brown and strong-brown mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; common fine and medium roots; many fine pores; very strongly acid, pH 4.6; clear, smooth boundary.

B22tg—13 to 27 inches, dark-gray (10YR 4/1) sandy clay loam; common, fine and medium, distinct, yellowish-brown (10YR 5/8) mottles and few, fine, distinct, strong-brown mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; common fine and medium roots; many fine pores; very strongly acid, pH 4.6; clear, smooth boundary.

B23tg—27 to 51 inches, dark-gray (10YR 4/1) sandy clay loam; many, medium and coarse, distinct, yellowish-brown (10YR 5/8) and strong-brown (7.5YR 5/8) mottles and common, medium, prominent, red (2.5YR 5/8) and yellowish-red (5YR 5/8) mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; few fine roots; common fine pores; very strongly acid, pH 4.7; gradual, wavy boundary.

B24tg—51 to 60 inches, dark-gray (10YR 4/1) sandy clay loam; common, medium, distinct, yellowish-brown (10YR 5/8) mottles and few, fine, distinct, strong-brown and yellowish-red mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in root channels; few fine roots and pores; very strongly acid, pH 4.6; gradual, wavy boundary.

B3tg—60 to 72 inches, dark-gray (10YR 4/1) sandy clay loam; few, fine and medium, distinct, yellowish-brown (10YR 5/8) and strong-brown (7.5YR 5/8) mottles; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds; pockets of grayish-brown (10YR 5/2) sandy material; very strongly acid, pH 4.6.

The solum ranges from 60 inches to more than 80 inches in thickness. The soils are strongly acid or very strongly acid throughout.

The A horizon is 5 to 20 inches thick. The A1 horizon is 5 to 9 inches thick and is dark grayish brown, very dark grayish brown, very dark gray, or black. The A2 horizon is 2 to 12 inches thick and is pale-brown, light brownish-gray, grayish-brown, gray, or dark-gray fine sandy loam, sandy loam, or loamy sand.

The B1 horizon, where present, is 3 to 10 inches thick. It is light gray, gray, light brownish gray, grayish brown, or dark grayish brown and has few mottles of yellowish brown and pale brown. It is sandy loam or fine sandy loam. The B2t horizon commonly ranges from 30 inches to more than 40 inches in thickness. It is dark gray, gray, or light gray and has few to many mottles in varying shades of yellow,

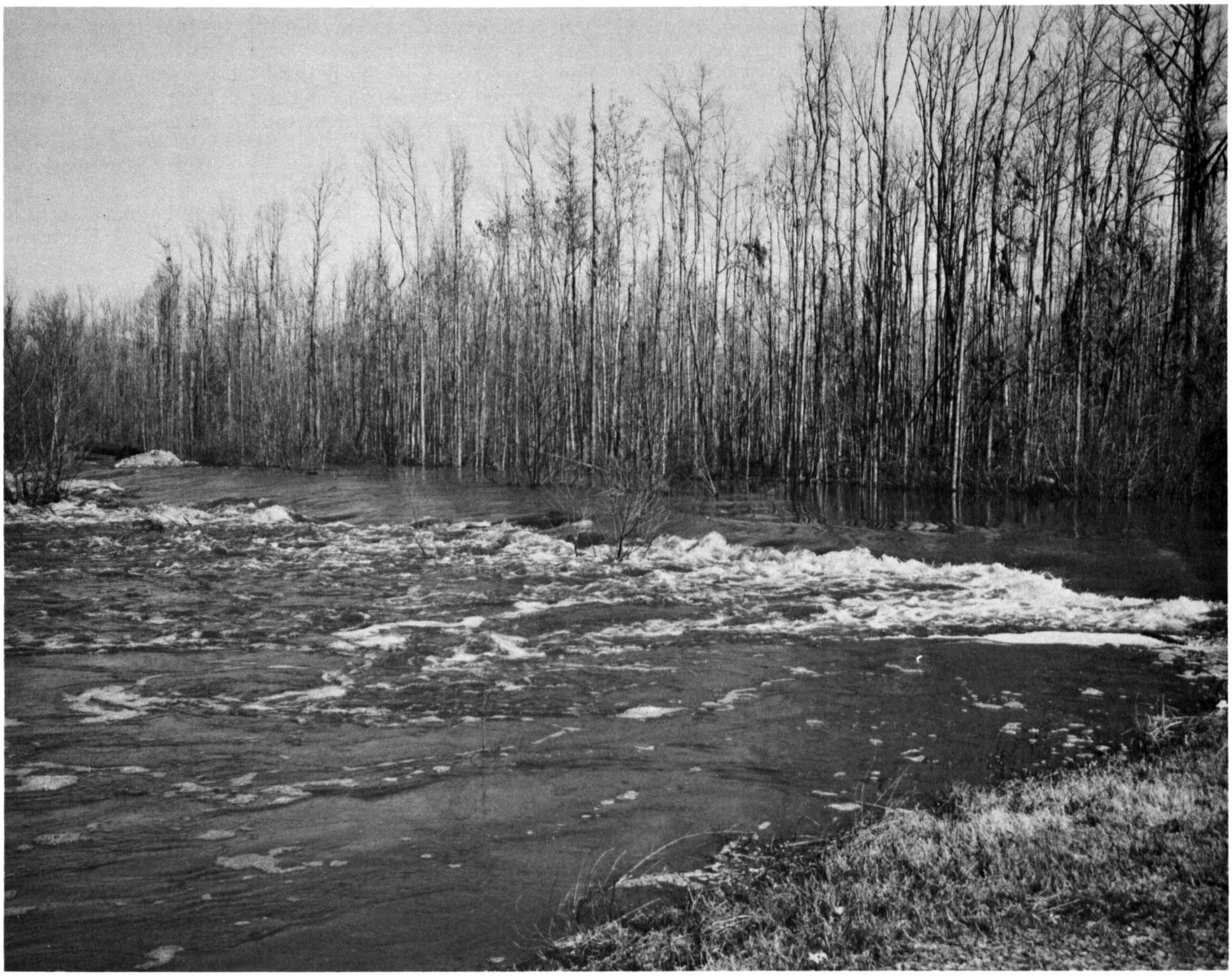


Figure 9.—**Flooding in the Portsmouth-Johnston association after a 5-inch rain.**

brown, and red. It is sandy clay loam or sandy loam. The B3 horizon is 4 to 18 inches thick. It is dominantly gray and has few to many mottles in shades of brown and red. It is sandy loam or sandy clay loam.

Rains soils occur with Fuquay, Dothan, Orangeburg, Clarendon, Lynchburg, and Paxville soils. Rains soils are more poorly drained than Fuquay, Dothan, Orangeburg, Clarendon, and Lynchburg soils. They are better drained than Paxville soils.

Rains sandy loam (Ra).—This soil is in slightly depressed areas.

Included with this soil in mapping are some areas of Paxville, Cantey, Scranton, and Lynchburg soils and a few areas of soils that have a surface layer more than 20 inches thick. Also included are some areas of soils that have a surface layer of fine sandy loam, loam, or loamy sand and a few areas of soils that have a subsoil of firm sandy clay.

About 70 percent of the acreage is woodland. Flooding occurs in some areas (fig. 10). Where drained, this soil is used for corn, soybeans, pasture grasses, and some tobacco and cotton. It is well suited to bahiagrass for pasture and hay.

Drainage is needed for optimum crop production. Open ditches and tile drains are used, and in some larger fields a combination of the two is needed. This soil can be cultivated only within a narrow range of moisture content, but it can be cropped intensively if it is adequately drained. Returning crop residue to the soil and using rotations that include frequent sod crops are necessary to maintain good tilth and productivity. Capability unit IIIw-4 if drained and Vw-1 if not drained; woodland group 2w9.

Red Bay Series

The Red Bay series consists of nearly level to gently sloping, deep, well-drained soils. These soils formed in loamy Coastal Plain sediment.

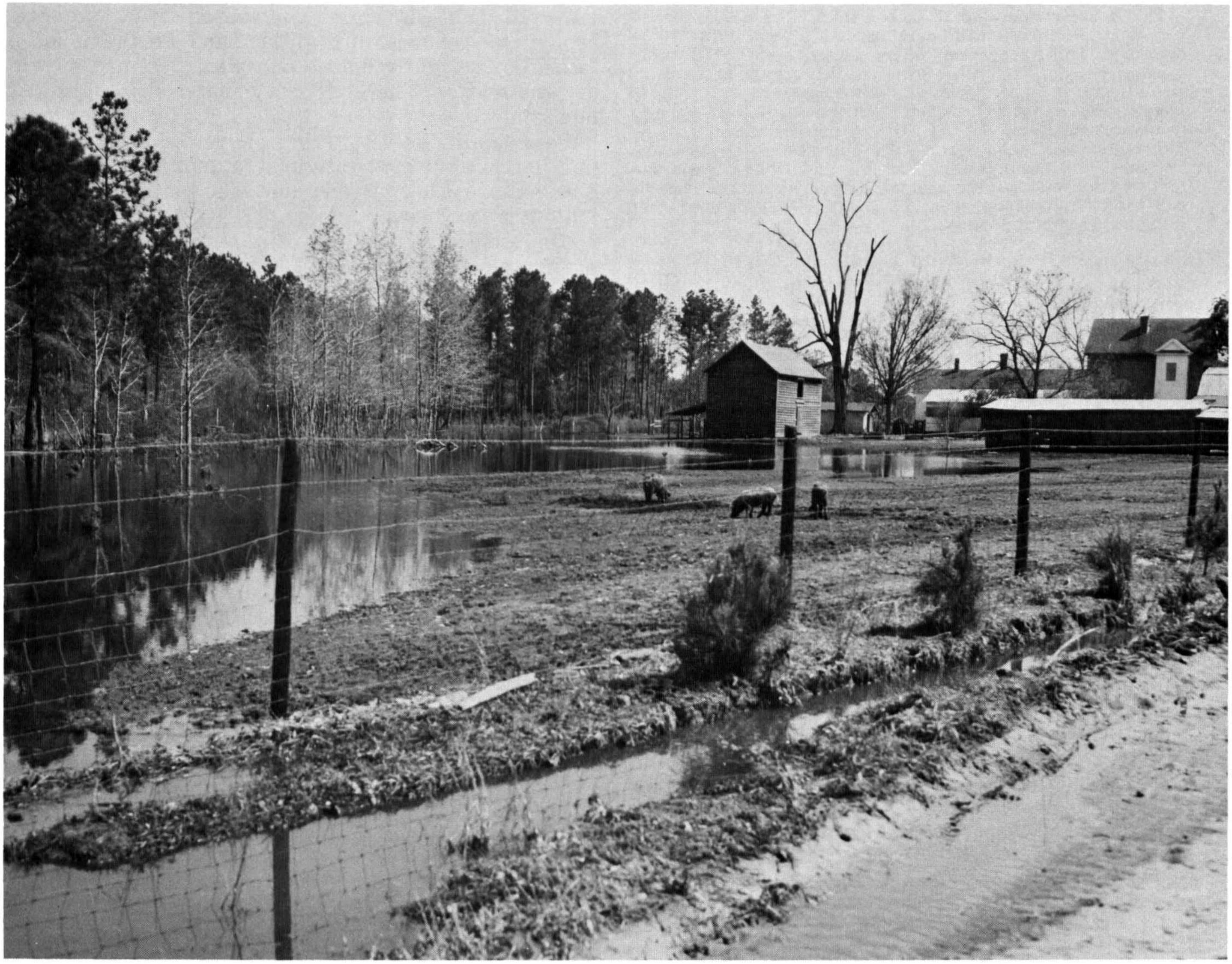


Figure 10.—**Inadequately drained area of Rains sandy loam.**

In a representative profile the surface layer is dark reddish-brown sandy loam about 7 inches thick. The subsoil is sandy clay loam to a depth of 72 inches. The upper 7 inches of the subsoil is dark reddish brown, and the lower 58 inches is dark red.

Permeability is moderate. Runoff is slow. Available water capacity is medium. The content of organic matter is low.

Representative profile of Red Bay sandy loam, 0 to 2 percent slopes, 1.75 miles northwest on secondary State Highway 38 from Goat Island Landing, 2 miles west on dirt road, 30 feet north of road:

Ap—0 to 7 inches, dark reddish-brown (5YR 3/2) sandy loam; weak, medium, granular structure; very friable; many fine and medium roots; few fine pores; medium acid, pH 5.8; clear, smooth boundary.

B21t—7 to 14 inches, dark reddish-brown (2.5YR 3/4) sandy clay loam; weak, medium, subangular blocky structure; friable; sand grains coated and bridged with clay; common fine roots; many fine and medium pores; medium acid, pH 5.7; clear, smooth boundary.

B22t—14 to 22 inches, dark-red (2.5YR 3/6) sandy clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in pores; few fine roots; many fine and medium pores; medium acid, pH 5.6; clear, smooth boundary.

B23t—22 to 62 inches, dark-red (2.5YR 3/6) sandy clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in pores; few fine roots and pores; very strongly acid, pH 4.8; gradual, smooth boundary.

B24t—62 to 72 inches, dark-red (2.5YR 3/6) sandy clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds and in pores; few fine pores; strongly acid, pH 5.3.

The solum ranges from 60 inches to more than 80 inches in thickness. The A horizon and upper part of the Bt horizon are medium acid or strongly acid, and the lower part is strongly acid or very strongly acid.

The A horizon is 4 to 15 inches thick. The Ap horizon is 4 to 8 inches thick and is dark reddish brown, dark brown, or brown. The A2 horizon, where present, is 3 to 10 inches thick and is dark reddish-brown, reddish-brown, or dark-red sandy loam or loamy sand. The B2t horizon ranges from 50 inches to more than 60 inches in thickness. It is sandy clay loam or sandy loam.

The Red Bay soils occur with Summerton, Orangeburg, Persanti, and Cantey soils. Red Bay soils have a coarser-textured subsoil than Summerton soils and a darker red subsoil than Orangeburg soils. They are better drained than Persanti and Cantey soils.

Red Bay sandy loam, 0 to 2 percent slopes (RbA).—This soil is on broad ridges. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Summerton and Orangeburg soils and some areas of soils that have a surface layer of loamy sand. Also included are a few areas of soils that have more than 35 percent clay in the subsoil and small areas of soils that have slopes of 2 to 6 percent. Small, wet, depressed areas that are less than 4 acres in size are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. The soil is suited to tobacco, cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass. It can be tilled throughout a wide range of moisture content.

This soil has very few limitations. It can be cropped intensively without losing soil through erosion, but good management is needed to maintain good tilth and productivity. Capability unit I–1; woodland group 2o1.

Red Bay sandy loam, 2 to 6 percent slopes (RbB).—This soil is on ridges and long slopes. Included with this soil in mapping are a few small areas of Summerton and Orangeburg soils and a few areas of soils that have more than 35 percent clay in the subsoil. Also included are a few areas of soils that have slopes of less than 2 percent or slopes of more than 6 percent. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

Most of the acreage is cultivated. The principal crops are cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are the best suited hay and pasture plants.

Erosion is the chief hazard if this soil is used for crops. Contour tillage and rotations that include frequent sod crops are sufficient to control erosion in some fields. In other places, terraces, grassed waterways, and contour tillage are also needed. Crop residue kept on or near the surface increases infiltration and reduces erosion. Capability unit IIe–1; woodland group 2o1.

Rimini Series

The Rimini series consists of nearly level to gently sloping, deep, excessively drained, sandy soils that have an organic hardpan. These soils formed in sandy Coastal Plain sediment.

In a representative profile the surface layer is very dark gray fine sand about 5 inches thick. The subsurface layer is fine sand about 30 inches thick. The upper 15 inches of the subsurface layer is light gray, and the lower 15 inches is white. The subsoil is dark reddish-brown and yellowish-brown fine sand. In the upper 10 inches it is slightly brittle and weakly cemented with organic matter. The underlying material is light-gray fine sand.

Permeability is very rapid above the organic hardpan horizon but moderate in it. Runoff is slow. Available water capacity is very low. The content of organic matter is very low.

Representative profile of Rimini fine sand, 1.4 miles northwest of Foreston and 700 feet south of U.S. Highway 521 on rim of bay:

A1—0 to 5 inches, very dark gray (N 3/0) fine sand that has many uncoated white sand grains and a salt and pepper appearance; single grained; loose; common fine roots; very strongly acid, pH 4.5; clear, smooth boundary.

A21—5 to 20 inches, light-gray (10YR 7/1) fine sand; few, fine, distinct, light brownish-gray mottles; single grained; loose; uncoated sand grains; few fine roots; strongly acid, pH 5.2; clear, smooth boundary.

A22—20 to 35 inches, white (10YR 8/1) fine sand; single grained; loose; uncoated sand grains; few fine roots; strongly acid, pH 5.5; abrupt, smooth boundary.

B2h—35 to 45 inches, dark reddish-brown (5YR 3/2) fine sand; few, medium, faint, black (10YR 2/1) mottles; single grained; slightly brittle; most sand grains coated with organic matter; strongly acid, pH 5.4; clear, smooth boundary.

B3—45 to 52 inches, yellowish-brown (10YR 5/4) fine sand; single grained; loose; sand grains are uncoated; strongly acid, pH 5.2; clear, smooth boundary.

C—52 and 72 inches, light-gray (10YR 7/2) fine sand; few, fine, distinct, yellowish-brown mottles; single grained; loose; strongly acid, pH 5.5.

These soils are strongly acid or very strongly acid throughout. Depth to a continuous, organic hardpan horizon ranges from 20 to 80 inches. Some profiles have bodies of Bh material within the A2 horizon.

The A1 horizon is 3 to 8 inches thick and is a mixture of white sand grains and black organic material. The A2 horizon is 15 to 70 inches thick and is white or light-gray sand or fine sand.

The B2h horizon is 6 to 20 inches thick and is dark reddish-brown, reddish-brown, dark-brown, or black sand or fine sand. Sand grains are coated with organic matter, and in most places this horizon is slightly brittle and weakly cemented. The C horizon is white, light-gray, or pale-brown sand or fine sand.

In Clarendon County most of the Rimini soils are shallower to a Bh horizon than is defined as the range for the Rimini series, but this difference does not alter their use and behavior.

Rimini soils occur with Troup, Fuquay, Paxville, Rutlege, and Osier soils. Rimini soils have a Bh horizon, or an organic hardpan, whereas all of those soils do not.

Rimini fine sand (Rm).—This soil is on rims around Carolina bays.

Included with this soil in mapping are small areas of Lakeland soils. Also included are some areas of soils that have an organic hardpan horizon below a depth of 80 inches and a few areas of soils that do not have a continuous, organic hardpan horizon.

All the acreage is woodland. Native vegetation is blackjack and turkey oak and a few longleaf pines. The soil is not suited to cultivated crops or pasture. Capability unit VIs–1; woodland group 5s3.

Rutlege Series

The Rutlege series consists of nearly level, deep, very poorly drained soils. These soils formed in sandy Coastal Plain sediment.

In a representative profile the surface layer is black loamy fine sand about 10 inches thick. The next layer is mottled, very dark gray and light brownish-gray fine sand about 11 inches thick. The underlying material is fine sand to a depth of 72 inches. The upper 13 inches of the underlying material is light gray, and the lower 38 inches is grayish brown.

Permeability is rapid, but this soil has a high water table most of the time. Runoff is very slow or ponded. Available water capacity is very low. The content of organic matter is high.

Representative profile of Rutlege loamy fine sand, 7.3 miles east of intersection of U.S. Highway 521 and U.S. Highway 261, 2,800 feet south of State Highway 261, and 300 feet east of farm road:

A1—0 to 10 inches, black (10YR 2/1) loamy fine sand; weak, medium, granular structure; very friable; many fine and medium roots; extremely acid, pH 4.1; clear, smooth boundary.

AC—10 to 21 inches, very dark gray (10YR 3/1) and light brownish-gray (10YR 6/2) fine sand; single grained; loose; few fine roots; very strongly acid, pH 4.9; clear, smooth boundary.

Clg—21 to 34 inches, light-gray (10YR 7/1) fine sand; splotched and mottled with grayish brown (10YR 5/2); single grained; loose; strongly acid, pH 5.3; gradual, smooth boundary.

C2g—34 to 72 inches, grayish-brown (10YR 5/2) fine sand; single grained; loose; strongly acid, pH 5.2.

These soils are strongly acid to extremely acid throughout.

The A horizon ranges from 10 to 22 inches in thickness. It is high in organic matter and is black or very dark gray. The AC horizon, where present, has properties of both the A and C horizons. It is 4 to 12 inches thick and is mixed black or very dark gray and light brownish gray or light gray. It is sand or fine sand.

The C horizon is very dark gray, dark-gray, gray, light-gray, dark grayish-brown, grayish-brown, or light brownish-gray sand or fine sand. Some profiles have few mottles that have a higher chroma.

Rutlege soils occur with Troup, Fuquay, Foreston, Scranton, Rains, Paxville, and Osier soils. Rutlege soils are more poorly drained and have a thicker, dark-colored surface layer than Troup, Fuquay, Foreston, Scranton, and Rains soils. They do not have a Bt horizon, but Troup, Fuquay, Foreston, Rains, and Paxville soils do. Rutlege soils have a thicker, dark-colored surface layer than Osier soils.

Rutlege loamy fine sand (Ru).—This soil is in shallow depressions or oval-shaped bays, on upland flats, and adjacent to small streams and drainageways.

Included with this soil in mapping are small areas of Osier, Paxville, Scranton, and Rains soils and some areas of soils that have a surface layer of loamy sand or sand.

Most of the acreage is woodland that consists of gums, water-tolerant oaks, cypress, and a few pines. This soil generally is not suited to row crops. Areas used for pasture must be drained intensively. Fertilizer and lime leach rapidly. Capability unit Vw–2; woodland group 2w3.

Scranton Series

The Scranton series consists of nearly level, deep, somewhat poorly drained soils. These soils formed in sandy Coastal Plain sediment.

In a representative profile the surface layer is black fine sand about 7 inches thick. The underlying material is fine sand to a depth of more than 72 inches. The upper 11 inches of the underlying material is dominantly dark grayish brown, and the lower 54 inches is dominantly grayish brown.

Permeability is rapid, but these soils have a high water table during wet periods. Runoff is slow. Available water capacity is low. The content of organic matter is low.

Representative profile of Scranton fine sand, 2.6 miles south from Foreston on secondary State Highway 50; 1.4 miles west on dirt road; 50 feet north of road:

A1—0 to 7 inches, black (10YR 2/1) fine sand; weak, fine, granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.5; clear, smooth boundary.

C1—7 to 18 inches, dark grayish-brown (10YR 4/2) fine sand; common, medium, faint, dark-brown (10YR 3/3) mottles; single grained; very friable; many fine roots; very strongly acid, pH 4.7; gradual, smooth boundary.

C2—18 to 41 inches, grayish-brown (10YR 5/2) fine sand; common, medium, faint, dark grayish-brown (10YR 4/2) mottles and few, fine, faint, light-gray and yellowish-brown mottles; single grained; loose; few fine roots; very strongly acid, pH 4.8; gradual, smooth boundary.

C3—41 to 72 inches, grayish-brown (10YR 5/2) fine sand; many, coarse, distinct, light-gray (10YR 7/1) mottles and few, medium, distinct, dark-brown (10YR 3/3) mottles; single grained; loose; few fine roots; very strongly acid, pH 4.8.

These soils are strongly acid or very strongly acid throughout.

The Ap or A1 horizon is 6 to 10 inches thick and is black or very dark gray. An A12 horizon is present in some profiles. It is 3 to 5 inches thick and is dark-gray or very dark gray loamy sand, sand, or fine sand. Some profiles have an AC horizon that has characteristics of both the A and C horizons rather than an A12 horizon.

The upper part of the C horizon is dark gray, dark grayish brown, or grayish brown and has few to many strong-brown, yellowish-brown, light yellowish-brown, pale-brown, dark-brown, and brown mottles. The amount of gray increases as depth increases, and the lower part of the C horizon is dominantly gray or grayish brown and has yellowish-brown, pale-brown, dark-brown, and brown mottles. The C horizon is loamy sand, fine sand, or sand. Many profiles are loamy sand to a depth of 30 to 50 inches and are underlain by sand.

Scranton soils occur with Clarendon, Foreston, Ocilla, Rains, Paxville, Rutlege, Osier and Lynchburg soils. Scranton soils are more poorly drained than Clarendon, Foreston, and Ocilla soils and are better drained than Rains, Paxville, Rutlege, and Osier soils. They have a coarser textured subsoil than Lynchburg soils.

Scranton fine sand (Sc).—This soil is in broad flat areas.

Included with this soil in mapping are small areas of Foreston, Ocilla, and Lynchburg soils and some areas of soils that have a surface layer of loamy fine sand or loamy sand. Also included are some areas of soils that have a thin horizon of sandy loam and some areas of soils that have matrix colors of more than chroma 2 in the horizon underlying the surface layer. Small, wet, depressed areas of Osier, Rutlege, and Rains soils are shown on the detailed soil map by the symbol for wet spot.

About 60 percent of the acreage is woodland. If adequately drained the soil is suited to tobacco, corn, soybeans, bahiagrass, and Coastal bermudagrass.

Tile drains, open ditches, or a combination of the two can be used to drain this soil. Open ditches, however, are difficult to maintain because of the sloughing action of the subsoil. Returning crop residue to the soil and using soil-improving crops at least 1 year out of 3 are needed to maintain good tilth and the supply of organic matter. Capability unit IIIw-1; woodland group 3w2.

Summerton Series

The Summerton series consists of nearly level to gently sloping, deep, well-drained soils. These soils formed in clayey Coastal Plain sediment.

In a representative profile the surface layer is brown fine sandy loam about 8 inches thick. The subsoil is red clay, is about 64 inches thick, and has strong-brown mottles.

Permeability is moderately slow. Runoff and available water capacity are medium. The content of organic matter is low.

Representative profile of Summerton fine sandy loam, 0 to 2 percent slopes, 16 miles southwest of Manning, 50 feet west of secondary State Highway 257, and 2 miles southwest of St. Paul:

Ap—0 to 8 inches, brown (7.5YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; common fine roots; slightly acid, pH 6.2; abrupt, smooth boundary.

B21t—8 to 17 inches, red (2.5YR 4/6) clay; common, fine and medium, distinct, strong-brown (7.5YR 5/8) mottles and few, medium, faint, yellowish-red (5YR 4/8) mottles; strong, medium, subangular blocky structure; firm; thick prominent clay films on faces of peds; few fine roots and pores; few fine mica flakes; strongly acid, pH 5.4; clear, smooth boundary.

B22t—17 to 48 inches, red (2.5YR 4/6) clay; common, fine and medium, distinct, strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; firm; thick prominent clay films on faces of peds; few fine pores; few fine mica flakes; very strongly acid, pH 4.8; gradual, wavy boundary.

B23t—48 to 72 inches, red (2.5YR 4/8) clay; many, fine and medium, distinct, strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; firm; thin patchy clay films on faces of peds; many fine mica flakes; very strongly acid, pH 4.7.

The solum ranges from 60 inches to more than 80 inches in thickness. The A horizon is slightly acid to strongly acid, and the B horizon is strongly acid or very strongly acid.

The A horizon is 4 to 12 inches thick. The Ap horizon is 4 to 10 inches thick and is brown, light yellowish brown, pale brown, or grayish brown, but in areas where this horizon is thin, it may be yellowish brown. In many cultivated areas the Ap horizon has an abrupt boundary with the Bt horizon. Some profiles have an A2 horizon that is 2 to 4 inches thick and is light yellowish-brown or brownish-yellow fine sandy loam or sandy loam.

The B1 horizon, where present, is 6 to 14 inches thick and is yellowish-brown or brownish-yellow sandy clay loam or clay loam. The B2t horizon ranges from 36 inches to more than 60 inches in thickness. It is yellowish red, red, or dark red and has few to many mottles in varying shades of yellow, brown, and red. The lower part of the B2t horizon is mottled in shades of yellow, brown, and red in places. The B2t horizon is clay or sandy clay, and it is firm or very firm.

Summerton soils occur with Orangeburg, Red Bay, Persanti, and Cantey soils. Summerton soils have a finer textured subsoil than Orangeburg and Red Bay soils. They are better drained than Persanti and Cantey soils.

Summerton fine sandy loam, 0 to 2 percent slopes (SuA).—This soil is on broad ridges. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Red Bay, Faceville, and Persanti soils, some small areas of soils that have slopes of 2 to 6 percent, and some areas of soils that have a surface layer of sandy loam. Small, wet, depressed areas are included and are shown on the detailed soil map by the symbol for wet spot.

About 70 percent of the acreage is cultivated. Cotton, corn, and soybeans are suitable crops. Bahiagrass and Coastal bermudagrass are suitable plants for pasture and hay. Row crops can be grown each year if crop residue is returned to the soil to help maintain the content of organic matter and good tilth. Because water moves moderately slowly through the subsoil, this soil cannot be tilled as soon after rain as more permeable soils. Capability unit I-2; woodland group 3o1.

Summerton fine sandy loam, 2 to 6 percent slopes (SuB).—This soil is on side slopes adjoining small drainageways.

Included with this soil in mapping are small areas of Red Bay, Faceville, and Persanti soils and some areas of soils that have a surface layer of sandy loam. Also included are some areas of soils that have slopes of less than 2 percent or slopes of more than 6 percent. Small, wet, depressed areas are shown on the detailed soil map by the symbol for wet spot.

About 50 percent of the acreage is cultivated. The rest is woodland. Principal crops grown are cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are suitable plants for pasture and hay.

Erosion is the chief hazard. Contour tillage and rotations that include frequent sod crops are sufficient to control erosion in some fields. In other places, terraces, grassed waterways, and contour tillage are also needed. Crop residue kept on or near the surface increases infiltration and helps to reduce erosion. Capability unit IIe-2; woodland group 3o1.

Tawcaw Series

The Tawcaw series consists of nearly level, deep, somewhat poorly drained soils. These soils formed in clayey and silty, alluvial sediment. They are on flood plains and are subject to frequent flooding.

In a representative profile the surface layer is dark-brown silty clay loam about 5 inches thick. The subsoil extends to a depth of more than 72 inches. In sequence from the top, the upper 10 inches of the subsoil is light yellowish-brown silty clay loam; the next 23 inches is mottled yellowish-brown silty clay loam; the next 20 inches is mottled yellowish-brown silty clay; and the lower 14 inches is mottled yellowish-brown clay loam. Gray mottles begin at a depth of about 15 inches and increase as depth increases.

Permeability is slow. Runoff is slow. Available water capacity is high. The content of organic matter is moderate.

Representative profile of Tawcaw silty clay loam, in an area of Tawcaw soils, 2 miles south of the north end of Santee Dam and 0.75 mile east of Santee Dam:

A1—0 to 5 inches, dark-brown (7.5YR 4/4) silty clay loam; weak, fine, granular structure; friable; many fine roots; few fine mica flakes; strongly acid, pH 5.3; clear, smooth boundary.

B21—5 to 15 inches, light yellowish-brown (10YR 6/4) silty clay loam; many, fine, faint, yellowish-brown mottles; weak, medium, subangular blocky structure; friable; many fine roots and pores; few mica flakes; common manganese concretions and soft aggregations; very strongly acid, pH 5.0; gradual, smooth boundary.

B22—15 to 38 inches, mottled yellowish-brown (10YR 5/8) and pale-brown (10YR 6/3) silty clay loam; common, medium, distinct, light-gray (10YR 7/1) mottles and few, fine, distinct, strong-brown mottles; weak, medium, subangular blocky structure; friable; few fine roots; few mica flakes; many manganese concretions and soft aggregations; strongly acid, pH 5.4; gradual, smooth boundary.

B23—38 to 58 inches; mottled yellowish-brown (10YR 5/8) and light brownish-gray (10YR 6/2) silty clay; few, fine, distinct, strong-brown and light-gray mottles; weak, medium, subangular blocky structure; firm; few fine roots; few fine mica flakes; many manganese concretions and soft aggregations; medium acid, pH 5.8; gradual, smooth boundary.

B3—58 to 72 inches, mottled yellowish-brown (10YR 5/8) and light-gray (10YR 6/1) clay loam; common, fine, distinct, strong-brown and pale-brown mottles; massive; firm; few fine mica flakes; many manganese concretions and soft aggregations; medium acid, pH 5.9.

The solum ranges from about 48 inches to more than 72 inches in thickness. The soils are medium acid to very strongly acid throughout.

The A horizon is 3 to 9 inches thick and is brown, dark yellowish brown, dark brown, or dark yellowish brown.

The B horizon is silty clay loam, silty clay, clay loam, or clay. The upper part of the B horizon is yellowish brown, light yellowish brown, pale brown, or brown. Mottles that have a chroma of 2 or less are within 24 inches of the surface. The amount of gray increases as depth increases. The lower part of the B horizon is mottled in varying shades of gray, yellow, and brown.

Few to many mica flakes, manganese concretions, and soft manganese aggregations occur in some profiles.

Tawcaw soils (TA).—This mapping unit consists of Tawcaw soils and of similar somewhat poorly drained alluvial soils that occur on the flood plains of the Santee River. The composition of this mapping unit is slightly more variable than that of most in the survey area, but it has been controlled well enough to allow interpretation for the anticipated uses.

Included in mapping are some areas of soils that are coarser textured throughout the profile than Tawcaw soils. Also included in about 20 percent of the acreage are long, narrow depressions. The soils in these depressions are flooded for longer periods than the other soils, and they are grayer throughout the profile. Some areas of soils that have a surface layer of loam or sandy loam are included.

All of the acreage is woodland. It is not suited to cultivated crops because of frequent flooding. If drained and protected from flooding, these soils could be used for corn and soybeans or for pasture grasses. These soils are better suited to timber than to most other uses. Capability unit VIIw-3; woodland group 1w8.

Troup Series

The Troup series consists of nearly level to sloping, deep, well-drained soils. These soils formed in loamy and sandy Coastal Plain sediment.

In a representative profile the surface layer is very dark gray sand about 4 inches thick. The subsurface layer is sand about 52 inches thick. The upper 3 inches of the subsurface layer is dark grayish brown; the next 43 inches is brownish yellow; and the lower 6 inches is light yellowish brown. The subsoil is yellowish-brown sandy clay loam and extends to a depth of more than 72 inches.

Permeability is rapid in the surface layer and subsurface layer and moderate in the subsoil. Runoff is slow. Available water capacity is low. The content of organic matter is low.

Representative profile of Troup sand, 0 to 6 percent slopes, 6 miles south of Bloomville and 500 feet west of secondary State Highway 48:

A11—0 to 4 inches, very dark gray (10YR 3/1) sand; single grained; loose; many fine and medium roots; salt and pepper appearance because of white sand grains; very strongly acid, pH 4.7; clear, wavy boundary.

A12—4 to 7 inches, dark grayish-brown (10YR 4/2) sand; single grained; loose; many fine and medium roots; very strongly acid, pH 5.0; clear, wavy boundary.

A21—7 to 34 inches, brownish-yellow (10YR 6/6) sand; few, medium, distinct, reddish-yellow (5YR 6/6) mottles; single grained; loose; many fine and medium roots; strongly acid, pH 5.3; gradual, smooth boundary.

A22—34 to 50 inches, brownish-yellow (10YR 6/6) sand; few, medium, distinct, reddish-yellow (5YR 6/6) mottles; single grained; loose; few fine roots; strongly acid, pH 5.4; gradual, smooth boundary.

A23—50 to 56 inches, light yellowish-brown (2.5YR 6/4) sand; few, fine, distinct, yellowish-brown mottles; single grained; loose; strongly acid, pH 5.5; abrupt, smooth boundary.

Bt—56 to 72 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; sand grains coated and bridged with clay; strongly acid, pH 5.2.

The solum is more than 80 inches thick. The soils are strongly acid or very strongly acid throughout.

The A horizon commonly ranges from 42 to 60 inches in thickness. The A1 or Ap horizon is 4 to 9 inches thick and is very dark gray, dark grayish brown, and grayish brown. The A2 horizon is 35 to 55 inches thick and is very pale brown, pale brown, light yellowish brown, brownish yellow, or yellowish brown.

The B1 horizon, where present, is 4 to 10 inches thick and is yellowish-brown, brownish-yellow, or strong-brown sandy loam or loamy sand. The Bt horizon commonly extends to a depth of more than 80 inches. It is yellowish-brown, brownish-yellow, or strong-brown sandy clay loam or sandy loam. The lower part of the Bt horizon commonly has red, yellowish-red, strong-brown, yellowish-brown, pale-brown, gray, and light-gray mottles. In some profiles the Bt horizon contains 2 to 4 percent plinthite nodules.

Troup soils occur with Fuquay, Dothan, Orangeburg, and Ocilla soils. Troup soils have a thicker surface layer and subsurface layer than any of those soils.

Troup sand, 0 to 6 percent slopes (TrB).—This soil is on broad ridges. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Lakeland and Fuquay soils. Also included are a few areas of soils that have slopes of 6 to 8 percent, a few areas that have a surface layer of loamy fine sand or loamy sand, and a few areas that have more than 5 percent plinthite in the subsoil within 60 inches of the surface. Small, wet, slight depressions are shown on the detailed soil map by the symbol for wet spot.

About 75 percent of the acreage is woodland. The rest is cultivated or pastured. Principal crops are cotton, corn, soybeans, watermelons, bahiagrass, Coastal bermudagrass, and sericea lespedeza, but this soil is not well suited to crops. If this soil is used for pasture or hay, Coastal bermudagrass, bahiagrass, and sericea lespedeza are better suited than most other plants.

Soil blowing and maintaining the content of organic matter are concerns if this soil is used for row crops. The soil is also droughty. Wind stripcropping, cover crops, and rotations that include frequent crops of perennial grasses and legumes are needed to control erosion and replenish the organic matter. Rye has proved to be excellent for wind stripcropping systems and as a cover crop where cultivated crops are grown. Because they leach rapidly, fertilizers and lime are more efficient on these soils if they are applied frequently in small amounts. Capability unit IIIs–1; woodland group 3s2.

Troup sand, 6 to 10 percent slopes (TrC).—This soil has smooth slopes. Included with this soil in mapping are small areas of Lakeland and Fuquay soils. Also included are some areas of soils that have slopes of less than 6 percent or slopes of more than 10 percent. Other inclusions are a few areas of soils that have more than 5 percent plinthite in the subsoil within 60 inches of the surface.

Most of the acreage is woodland. This soil is not well suited to row crops. Coastal bermudagrass is a better suited plant for pasture or hay than most others. If pasture and crops are to produce fair yields, intensive conservation practices must be applied to control erosion. This soil is droughty.

Applying fertilizer in split applications is more efficient because of excessive leaching. Even if this soil is well managed, organic matter is rapidly depleted. Organic matter, as well as good tilth, can be maintained by using close-growing crops, soil-improving crops, or crops that produce a large amount of residue 3 years out of every 4 or 5. Bahiagrass or Coastal bermudagrass, in rotation with row crops, is excellent for maintaining the content of organic matter, good tilth, and protection from soil blowing. Capability unit IVs–4; woodland group 3s2.

Use and Management of the Soils

The soils of Clarendon County are used extensively for row crops and close-growing crops as well as some pasture. This section discusses general management for crops and explains the system of capability grouping used by the Soil Conservation Service. Estimates of yields of the principal crops, and the suitability of each soil in capability classes I to IV for specified crops are given. Also discussed are management of woodland and wildlife habitat. The properties and features affecting engineering and recreational uses of soils are listed, mainly in tables.

This section is a general guide to the management of the soils in the county. Suggestions on how each mapping unit can be managed are given in the section "Descriptions of the Soils." For more detailed information about managing the soils, consult the nearest office of the Soil Conservation Service, the Clemson University Extension Service, or the South Carolina Agricultural Experiment Station at Clemson, S.C.

General Management for Crops

Most soils in the county require similar basic or general management practices. These practices include applying the proper fertilizer, maintaining the organic-matter content of the soil, selecting a good cropping system, tilling the soil properly, controlling erosion, and improving drainage.

Fertilizer and lime.—Most soils in Clarendon County are acid and are low in natural fertility. Nearly all require regular applications of lime and fertilizers. The kind of fertilizer and the amount of lime and fertilizer to apply is most efficiently determined by a soil test. The local county agricultural agent accepts samples for testing and makes recommendations based on the test results.

Some of the soils of this county leach rapidly, and lime and fertilizer are soon lost for crop use. Lime and fertilizer are more effective on such soils if they are applied more frequently but in small amounts.

Fertilization should be the maximum that is consistent with economic returns. The grasses and legumes in pasture require regular applications of nitrogen, phophorus, and potash for sustained high production. These same grasses and legumes provide erosion control, and only a minimum of lime and fertilizer is needed.

Organic-matter content. — Most of the soils in this county are low in organic-matter content. It is not practical in most places to raise the level of organic-matter content to what it was when early settlers cleared the land. Maintaining the present level and perhaps increasing it a little over a long period of time is a management goal.

Crop residue, cover crops, and rotations that include sod crops are the primary sources of organic matter in Clarendon County, although manure from livestock is a secondary source. Rye is one of the better cover crops in the county and all the grasses and legumes suited to the county can be used in rotations as sod crops.

Cropping system. — A cropping system should be selected that supplies fresh organic matter to crops. The plowing under of cover crops and crop residue, especially of legumes, is beneficial to crops. Good cropping systems help to control erosion as well as insects, plant diseases, and weeds. The additional organic matter gained through a good cropping system absorbs plant nutrients and releases them to crops over a long period. Without the organic material, fertilizer, especially nitrogen, leaches out if it is not quickly taken up by a growing crop.

The soils of the county are particularly well suited to warm-season plants. However, more cool-season perennials could be grown to increase grazing and the amount of manure. In the current cropping system, small grain or ryegrass is used for winter cover and green manure crops.

Tillage. — Most of the arable soils in Clarendon County can be tilled throughout a wide range of moisture content. Exceptions are Grady, McColl, and Paxville soils, which have a relatively fine textured topsoil and which puddle, pack, and become cloddy if they are tilled when wet. Other soils, especially such soils as those of the Brogdon, Dothan, and Fuquay series form a compacted, restrictive layer called a plowpan or plowsole, if tilled repeatedly at the same depth. Growing sod crops and varying the depth of tillage prevents the formation of a plowpan.

Tillage systems that leave a mulch of crop residue on the surface of the soil have been successful in Clarendon County. These systems disturb the soil the least, return organic matter to the soil, and help to prevent soil losses from soil blowing and water erosion.

Erosion control. — Soil erosion may be caused by wind or water in Clarendon County. In large fields, such soils as those of the Brogdon, Dothan, and Fuquay series, are especially susceptible to soil blowing in spring when they have been freshly plowed and the surface soil is dry. Windbreaks, cover crops, wind stripcropping (fig. 11), and tillage systems that leave crop residue on the surface are used to control soil blowing.

Most soils in Clarendon County that are used for crops and have slopes of more than 2 percent are subject to damage by water erosion. Water erosion can be controlled by water management systems that include diversions, terraces, contour tillage, and grassed waterways. Cropping systems that include sod crops in the rotation and tillage that leaves protective residue on the surface also help control water erosion.

Drainage. — Drainage is essential for good crop production, especially on such soils as those of the Lynchburg, Scranton, and Rains series.

Drainage ditches and tile drainage systems are used in this county, and they are sometimes used in combination. Land smoothing and bedding systems are sometimes used to provide better surface drainage.

Capability grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when used for field crops, the risk of damage when they are so used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth,

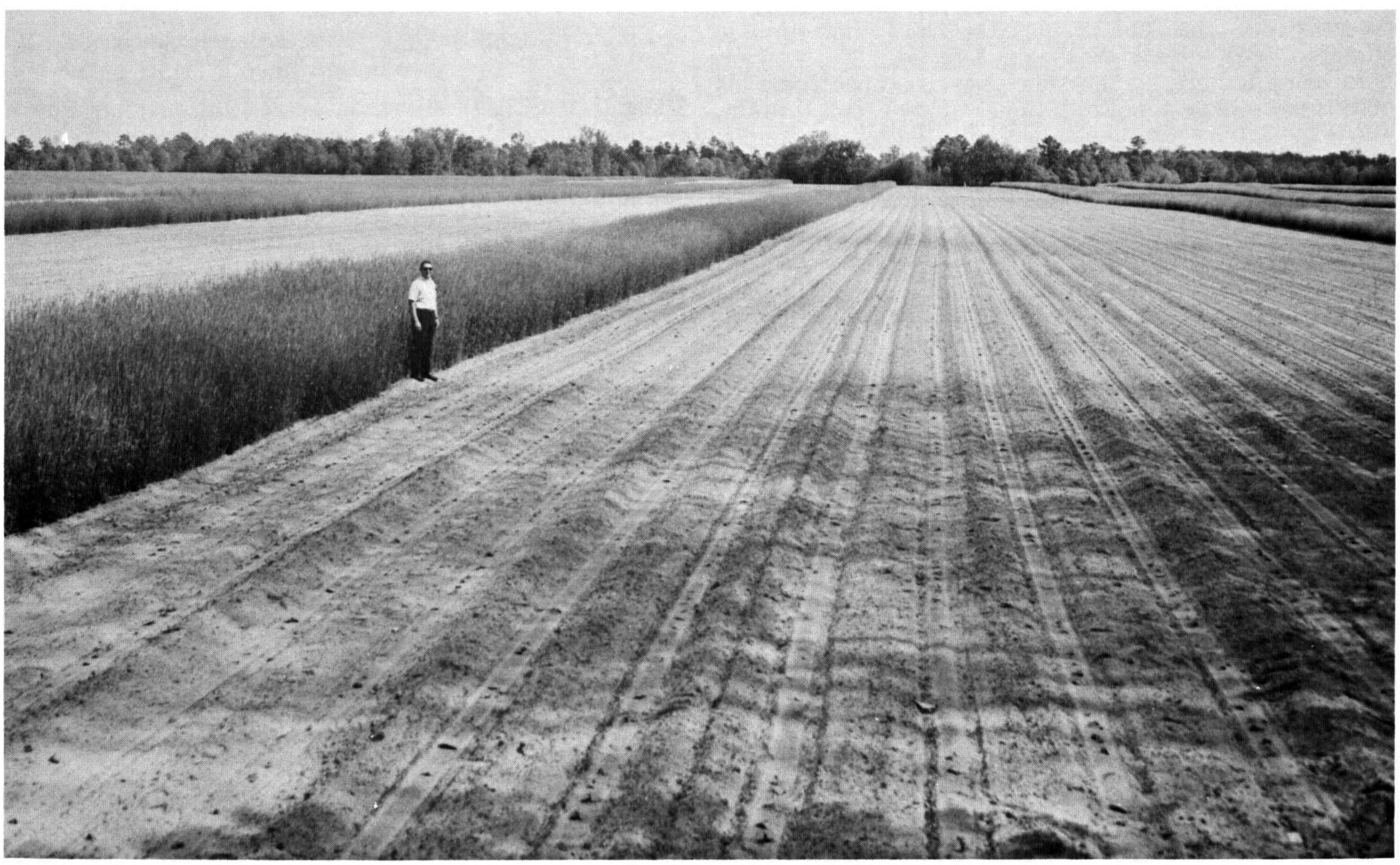


***Figure 11.*—Rye strips protect young cotton stand from soil blowing on Dothan loamy fine sand, 0 to 2 percent slopes.**

or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or engineering.

In the capability system, the kinds of soils are grouped at three levels: the capability class, subclass, and unit. These are discussed in the following paragraphs.

CAPABILITY CLASSES, the broadest groups, are designated by Roman numerals I through XIII. The numerals indicate progressively greater limitations and narrower choices for practical use.

CAPABILITY SUBCLASSES are local soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

The eight classes in the capability classification system and the subclasses and units in Clarendon County are described in the list that follows. Because not all of the capability units in the State are represented in Clarendon County, the numbering of the units is not consecutive throughout.

Class I. Soils that have few limitations that restrict their use.
- Capability unit I-1.—Nearly level, well-drained soils that have a loamy subsoil.
- Capability unit I-2.—Nearly level, well-drained soils that have a clayey subsoil.

Class II. Soils that have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- Subclass IIe. Soils subject to moderate erosion if they are not protected.
  - Capability unit IIe-1.—Gently sloping, well-drained soils that have a loamy subsoil.
  - Capability unit IIe-2.—Gently sloping, well-drained soils that have a clayey subsoil.
  - Capability unit IIe-5.—Gently sloping, well-drained soils that have a loamy subsoil that restricts roots and movement of water.
- Subclass IIw. Soils that have moderate limitations because of excess water.
  - Capability unit IIw-2.—Nearly level, moderately well drained to somewhat poorly drained soils that have a loamy subsoil.
  - Capability unit IIw-5.—Nearly level, moderately well drained soils that have a clayey subsoil.
- Subclass IIs. Soils that have moderate limitations because of low moisture capacity, restrictive layers, or both.
  - Capability unit IIs-2.—Nearly level or gently sloping, slightly droughty soils that have a loamy subsoil that restricts roots and movement of water.
  - Capability unit IIs-3.—Nearly level, slightly droughty soils that have a loamy subsoil.

Class III. Soils that have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Subclass IIIe. Soils subject to severe erosion if they are cultivated and not protected.
  - Capability unit IIIe-5.—Sloping, slightly droughty soils that have a loamy subsoil.
- Subclass IIIw. Soils that have severe limitations because of excess water.
  - Capability unit IIIw-1.—Nearly level, moderately well drained to somewhat poorly drained soils that are sandy throughout.
  - Capability unit IIIw-2.—Nearly level, poorly drained soils that have a clayey subsoil.
  - Capability unit IIIw-4.—Nearly level, poorly drained to very poorly drained soils that have a loamy subsoil.
- Subclass IIIs. Soils that have severe limitations because of low moisture capacity.
  - Capability unit IIIs-1.—Nearly level to gently sloping, droughty soils that have a thick, sandy surface layer and a loamy subsoil.

Class IV. Soils that have very severe limitations that reduce the choice of plants, require very careful management, or both.
- Subclass IVw. Soils that have very severe limitations because of excess water.
  - Capability unit IVw-2.—Nearly level, poorly drained to very poorly drained soils that have a loamy surface layer and a clayey subsoil through which water moves slowly.

Subclass IVs. Soils that have very severe limitations because of low moisture capacity.

Capability unit IVs–1.—Nearly level to gently sloping, droughty sandy soils.

Capability unit IVs–4.—Sloping, droughty soils that have a thick, sandy surface layer and a loamy subsoil.

Class V. Soils that are not likely to erode, but that have other limitations, impractical to remove, that limit their use largely to pasture, woodland, or wildlife habitat.

Subclass Vw. Soils too wet for cultivation.

Capability unit Vw–1.—Nearly level, poorly drained to very poorly drained soils that have a loamy or clayey subsoil.

Capability unit Vw–2.—Nearly level, very poorly drained, sandy soils in ponded areas and along drainageways.

Class VI. Soils that have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, woodland, or wildlife habitat.

Subclass VIs. Soils generally unsuitable for cultivation that are limited to other uses by their low moisture capacity.

Capabality unit VIs–1.—Nearly level, sandy soils that are excessively drained, droughty, and unproductive.

Class VII. Soils that have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture, woodland, or wildlife habitat.

Subclass VIIw. Soils very severely limited by excess water.

Capability unit VIIw–1.—Nearly level, very poorly drained soils in large bays and on flood plains of the Pocotaligo and Black Rivers that are subject to flooding.

Capability unit VIIw–3.—Nearly level, somewhat poorly drained soils on the flood plains of the Santee River that are subject to flooding.

Class VIII. Soils and landforms that have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife habitat, water supply, or to esthetic purposes. (There are no Class VIII soils in Clarendon County.)

Estimated yields

The estimated average acre yields of the principal crops grown under a high level of management on soils in Clarendon County are given in table 2. The yields are based largely on observations by members of the soil survey party, on information obtained from farmers and other agricultural workers who have had experience with the soils and crops of the county, and on comparison with crop yields obtained on similar soils in other counties of South Carolina.

The practices used under high level management vary according to the soils. The following practices are necessary for obtaining the yields in table 2: proper choice and rotation of crops; correct use of fertilizer, lime, and manure; correct methods of tillage; return of organic matter to the soils; adequate control of water; maintenance or improvement of workability; and conservation of soil material, plant nutrients, and soil moisture.

The soils of Clarendon County are responsive to good management and fertilization. Higher yields can be obtained on nearly all soils in the county through improved management.

Soil suitability for crops

Table 3 (p. 38) shows the suitability of soils in capability classes I through IV to the principal crops grown in the county. *Well suited* indicates that soil hazards are few, intensive management is not needed, and favorable yields are likely. *Fairly well suited* indicates that growth is limited by excessive moisture, too little moisture, low fertility, or some other undesirable soil characteristic. *Not well suited* indicates that favorable yields are likely only when intensive management is practiced. Generally, this management is not economically feasible. *Poorly suited* indicates that the soil is poorly suited to the crop and that attempting to grow the crop on it would not be practical.

Use of the Soils for Woodland[4]

Originally, Clarendon County was mainly wooded, but now trees cover about 59 percent of the county. Good stands of commercial trees are produced in the woodlands. Needleleaf forest trees occur most frequently on the uplands (fig. 12), and broadleaf trees generally are dominant on the bottoms along the rivers and creeks.

The value of wood products in the county is substantial. Wooded areas can also be used for grazing, wildlife habitat, recreation, conservation of soil and water, and for their natural beauty. This section explains how soils affect growth and management of trees in the county.

In table 4 potential productivity and species suitable for planting in Clarendon County are listed. The first column gives the woodland suitability group and a brief description of that group (*7*). Each group is made up of soils that are suited to the same kinds of trees, that need about the same kind of management to produce these trees, and that have about the same potential productivity. The management concerns of equipment limitations and seedling mortality are evaluated in the brief description of the woodland suitability groups given in this column.

Each woodland suitability group is identified by a three part symbol. The first part of the symbol indicates the relative productivity of the soils: 1 indicates very high; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the important soil property that imposes a moderate or severe hazard or limitation in managing the soils for wood production. The letter *w* shows that excessive water in or on the soil is the chief limitation; *s* shows the soils are sandy; and *o* shows the soils have no significant restrictions or limitations for woodland use or management. The third element in the symbol indicates

[4] By GEORGE E. SMITH, JR., woodland conservationist, Soil Conservation Service.

***Figure 12.*—Natural pine forest on Clarendon loamy sand.**

the degree of management concern and the general suitability of the soils for certain kinds of trees.

Equipment limitation ratings reflect the soil conditions that restrict the use of equipment normally used in woodland management or harvesting. *Slight* ratings indicate equipment use is not limited to kind or time of year. A rating of *moderate* indicates a seasonal limitation or need for modification in methods or equipment. *Severe* limitations indicate the need for specialized equipment or operations.

Seedling mortality ratings indicate the degree of expected mortality of planted seedlings when plant competition is not a limiting factor. Normal rainfall, good planting stock, and proper planting are assumed. A *slight* rating indicates expected mortality is less than 25 percent. *Moderate* rating indicates a 25 to 50 percent loss; and *severe* indicates over 50 percent loss of seedlings.

The second column is a list of some of the commercially important trees that are adapted to the soil. These

TABLE 2.—*Estimated average yields per acre of the principal crops under a high level of management*

[Absence of data indicates that the crop is not suited to the specified soil or generally is not grown on it]

Soils	Tobacco	Cotton (lint)	Corn	Soybeans	Pasture	
					Bahiagrass	Coastal bermuda-grass
	Lb	*Lb*	*Bu*	*Bu*	*AUM* [1]	*AUM* [1]
Brogdon loamy sand, 0 to 2 percent slopes	2,200	650	75	32	8.0	10.0
Cantey loam			80	35	8.5	
Clarendon loamy sand	3,000	700	100	40	10.0	10.5
Dothan loamy fine sand, 0 to 2 percent slopes	2,800	750	90	40	9.0	11.0
Dothan loamy fine sand, 2 to 6 percent slopes	2,700	700	85	40	9.0	11.0
Faceville loamy sand, 0 to 2 percent slopes	2,200	900	90	40	8.5	10.5
Faceville loamy, sand, 2 to 6 percent slopes	2,200	900	85	40	8.5	10.5
Foreston fine sand	2,500	700	90	35	8.0	9.0
Fuquay fine sand, 0 to 6 percent slopes	2,100	650	80	28	7.5	9.0
Fuquay fine sand, 6 to 10 percent slopes	2,000	550	70	25	6.5	8.0
Grady loam			75	30	8.5	
Johnston soils						
Lakeland sand, 0 to 6 percent slopes		400	50	22		6.0
Lynchburg loamy sand	2,600	650	90	40	9.0	7.5
Marlboro loamy sand, 0 to 2 percent slopes	2,300	900	90	40	8.5	10.5
Marlboro loamy sand, 2 to 6 percent slopes	2,300	900	85	40	8.5	10.5
McColl loam			75	30	9.0	
Ocilla loamy sand	2,200	600	65	28	8.0	8.0
Orangeburg loamy sand, 0 to 2 percent slopes	2,600	750	90	40	9.0	11.0
Orangeburg loamy sand, 2 to 6 percent slopes	2,500	700	90	40	9.0	11.0
Osier loamy fine sand						
Paxville loam			80	30	10.0	
Persanti very fine sandy loam, 0 to 2 percent slopes	2,200	650	90	35	8.0	8.5
Ponzer mucky loam						
Portsmouth-Johnston association						
Rains sandy loam	2,200	500	80	32	10.0	
Red Bay sandy loam, 0 to 2 percent slopes	2,300	750	85	40	9.0	11.0
Red Bay sandy loam, 2 to 6 percent slopes	2,200	700	85	40	9.0	11.0
Rimini fine sand						
Rutlege loamy fine sand						
Scranton fine sand	2,100	500	75	28	10.0	8.0
Summerton fine sandy loam, 0 to 2 percent slopes	2,200	850	90	40	8.0	10.0
Summerton fine sandy loam, 2 to 6 percent slopes	2,000	800	85	35	8.0	10.0
Tawcaw soils						
Troup sand, 0 to 6 percent slopes	1,600	500	60	20	7.0	7.5
Troup sand, 6 to 10 percent slopes		400	55	15	6.5	7.5

[1] AUM is animal-unit-months, a term used to express the carrying capacity of pasture. It is the number of months during the year that 1 acre will provide grazing for 1 animal unit (1 cow, 1 horse, 1 mule, 5 hogs, or 7 sheep) without damage to the pasture.

are the trees that woodland managers generally favor in intermediate or improved cuttings.

The potential productivity of these trees in terms of site index is given in the third column. The site index is the average height of dominant trees, in feet, at age 30 for cottonwood, at age 35 for sycamore, and at age 50 for all other kinds.

In the last column is a list of trees that are suitable for commercial wood production.

Woodland yields

Data on growth and yields of unmanaged stands are not a true measure of potential productivity of stands that are managed, but such information permits a comparison of productivity between soils or between species on the same site. Also, a comparison of the potential yields of wood crops and the potential yields of other crops on a site can help to determine the best use of land.

Average annual growth for natural unmanaged stands of southern pines and southern hardwoods by site indexes at 50 years are shown in figures 13 and 14. This growth is measured according to the Scribner log rule and, for southern pines, includes all stems 8 inches or larger in diameter (*5, 4*). Merchantable volume for loblolly pine plantations by site indexes at 25 years are shown in figure 15. The stocking rate for loblolly pines was 700 trees per acre (*3*).

Use of the Soils for Wildlife Habitat [5]

Soils directly influence kinds and amounts of vegetation and amounts of water available, and in this way indirectly influence the kinds of wildlife that can live in an area. Soil properties that affect the growth of wildlife habitat are thickness of soil useful to crops, surface texture, available water capacity to a 40-inch depth, wetness, surface stoniness or rockiness, flood hazard, slope, and permeability of the soil to air and water.

[5] By WILLIAM W. NEELY, biologist, Soil Conservation Service.

TABLE 3.—*Suitability of soils in capability*

[Soils in subclass w are

Soil	Tobacco	Cotton
Brogdon loamy sand, 0 to 2 percent slopes	Fairly well suited	Fairly well suited
Cantey loam	Poorly suited	Poorly suited
Clarendon loamy sand	Well suited	Well suited
Dothan loamy fine sand, 0 to 2 percent slopes	Well suited	Well suited
Dothan loamy fine sand, 2 to 6 percent slopes	Well suited	Well suited
Faceville loamy sand, 0 to 2 percent slopes	Fairly well suited	Well suited
Faceville loamy sand, 2 to 6 percent slopes	Fairly well suited	Well suited
Foreston fine sand	Well suited	Well suited
Fuquay fine sand, 0 to 6 percent slopes	Fairly well suited	Fairly well suited
Fuquay fine sand, 6 to 10 percent slopes	Not well suited	Fairly well suited
Grady loam	Poorly suited	Poorly suited
Lakeland sand, 0 to 6 percent slopes	Poorly suited	Not well suited
Lynchburg loamy sand	Well suited	Fairly well suited
Marlboro loamy sand, 0 to 2 percent slopes	Fairly well suited	Well suited
Marlboro loamy sand, 2 to 6 percent slopes	Fairly well suited	Well suited
McColl loam	Poorly suited	Poorly suited
Ocilla loamy sand	Fairly well suited	Fairly well suited
Orangeburg loamy sand, 0 to 2 percent slopes	Well suited	Well suited
Orangeburg loamy sand, 2 to 6 percent slopes	Well suited	Well suited
Paxville loam	Poorly suited	Poorly suited
Persanti very fine sandy loam, 0 to 2 percent slopes	Fairly well suited	Fairly well suited
Rains sandy loam	Fairly well suited	Not well suited
Red Bay sandy loam, 0 to 2 percent slopes	Fairly well suited	Well suited
Red Bay sandy loam, 2 to 6 percent slopes	Fairly well suited	Well suited
Scranton fine sand	Fairly well suited	Not well suited
Summerton fine sandy loam, 0 to 2 percent slopes	Fairly well suited	Well suited
Summerton fine sandy loam, 2 to 6 percent slopes	Not well suited	Well suited
Troup sand, 0 to 6 percent slopes	Not well suited	Not well suited
Troup sand, 6 to 10 percent slopes	Poorly suited	Not well suited

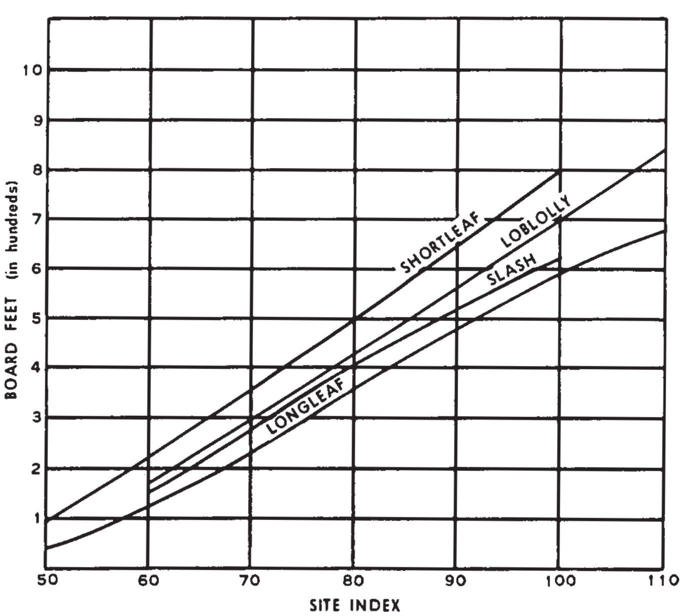


Figure 13.—**Average yearly growth per acre in board feet for 50-year-old, well-stocked stands of southern pines.**

Table 5 (p. 42) shows the suitability rating of each soil in the survey area for seven elements of wildlife habitat and for three kinds of wildlife. The suitability ratings take into account mainly the characteristics of the soils and closely related natural factors of the environment. They do not take into account climate, present use of soils, or present distribution of wildlife and people. For this reason, selection of a site for development as a habitat for wildlife requires inspection at the site. The suitability ratings for kinds of wildlife are related to the ratings made for the elements of habitat. For example, soils rated poor for shallow water developments are rated poor for wetland wildlife.

A rating of *good* means that the specified element of wildlife habitat is easily created, improved, and maintained. Few or no limitations affect management in this category, and satisfactory results can be expected.

A rating of *fair* means that the element of wildlife habitat can be created, improved, or maintained in most places. Moderate intensity of management and fairly frequent attention may be required for the satisfactory results.

A rating of *poor* means that the soil limitations for this element or designated use are rather severe. Habitats can be created, improved, or maintained in most places, but management is difficult and requires intensive effort.

A rating of *very poor* means that the soil limitations for the element of wildlife habitat are very severe and *classes I through IV for principal crops*

considered as being drained]

Corn	Soybeans	Pasture	
		Bahiagrass	Coastal bermudagrass
Fairly well suited	Fairly well suited	Fairly well suited	Well suited.
Fairly well suited	Well suited	Fairly well suited	Poorly suited.
Well suited	Well suited	Well suited	Well suited.
Well suited	Well suited	Well suited	Well suited.
Well suited	Well suited	Well suited	Well suited.
Well suited	Well suited	Fairly well suited	Well suited.
Well suited	Well suited	Fairly well suited	Well suited.
Well suited	Well suited	Fairly well suited	Well suited.
Fairly well suited	Fairly well suited	Fairly well suited	Well suited.
Fairly well suited	Fairly well suited	Not well suited	Fairly well suited.
Fairly well suited	Fairly well suited	Fairly well suited	Poorly suited.
Not well suited	Not well suited	Poorly suited	Not well suited.
Well suited	Well suited	Well suited	Fairly well suited.
Well suited	Well suited	Fairly well suited	Well suited.
Well suited	Well suited	Fairly well suited	Well suited.
Fairly well suited	Fairly well suited	Well suited	Poorly suited.
Fairly well suited	Fairly well suited	Fairly well suited	Fairly well suited.
Well suited	Well suited	Well suited	Well suited.
Well suited	Well suited	Well suited	Well suited.
Fairly well suited	Fairly well suited	Well suited	Poorly suited.
Well suited	Well suited	Fairly well suited	Fairly well suited.
Fairly well suited	Fairly well suited	Well suited	Poorly suited.
Well suited	Well suited	Well suited	Well suited.
Well suited	Well suited	Well suited	Well suited.
Fairly well suited	Fairly well suited	Well suited	Fairly well suited.
Well suited	Well suited	Fairly well suited	Well suited.
Well suited	Well suited	Fairly well suited	Well suited.
Not well suited	Not well suited	Not well suited	Fairly well suited.
Not well suited	Not well suited	Not well suited	Fairly well suited.

that unsatisfactory results are to be expected. The element is either impossible or impractical to create, improve, or maintain.

The headings in table 5 are briefly explained in the following paragraphs.

Grain and seed crops are annual grain-producing plants, such as corn, sorghum, millet, and soybeans.

Grasses and legumes are domestic grasses and legumes that are established by planting. They provide food and cover for wildlife. Among the grasses are bahiagrass, ryegrass, and panicgrass, and among the legumes are annual lespedeza, shrub lespedeza, and clovers.

Wild herbaceous plants consist of native or introduced perennial grasses, forbs, and weeds that provide food and cover for upland wildlife. Beggarweed, perennial lespedeza, wild bean, pokeweed, and cheatgrass are typical examples. On range, typical plants are bluestem, grama, and perennial forbs and legumes.

Hardwood trees and shrubs are nonconiferous trees, shrubs, and woody vines that produce wildlife food in the form of fruits, nuts, buds, catkins, or browse. Such plants commonly grow in their natural environment, but they may be planted and developed through wildlife management programs. Typical examples are oak, beech, cherry, dogwood, maple, viburnum, grape, honeysuckle, greenbrier, and silverberry.

Coniferous plants are cone-bearing trees and shrubs that provide cover and frequently furnish food in the form of browse, seeds, or fruitlike cones. They commonly grow in their natural environment, but they may be planted and managed. Typical coniferous plants are pines, cedars, and ornamental trees and shrubs.

Wetland food and cover plants are annual and perennial herbaceous plants that grow wild on moist and wet sites. They furnish food and cover mostly for wetland wildlife. Typical examples of these plants are smartweed, wild millet, spikerush and other rushes, sedges, burreed, tearthumb, and aneilema. Submerged and floating aquatics are not included.

Shallow water developments are impoundments or excavations for controlling water, generally not more than 5 feet deep, to create habitats that are suitable for waterfowl. Some are designed to be drained, planted, and then flooded; others are permanent impoundments where submerged aquatics grow.

Openland wildlife are birds and mammals that normally live in meadows, pastures, and open areas where grasses, herbs, and shrubby plants grow. Quail, doves, meadowlarks, field sparrows, cottontail rabbits, and foxes are typical examples.

Woodland wildlife are birds and mammals that normally live in wooded areas of hardwood trees, coniferous trees, and shrubs. Woodcocks, thrushes, vireos, wild turkeys, deer, squirrels, and raccoons are typical examples.

Wetland wildlife are birds and mammals that normally live in wet areas, marshes, and swamps. Ducks, geese, rails, shore birds, herons, minks, and muskrats are typical examples of wetland wildlife.

TABLE 4.—*Woodland suitability groups and factors affecting management*

Woodland suitability group and map symbols	Potential productivity		Species suitable for planting
	Trees	Site class	
Group 1w8. Seasonally wet soils that have very high potential productivity; moderate equipment restrictions; and slight to moderate seedling mortality; suited to broadleaf trees or needleleaf trees, or both. TA.	Loblolly pine Slash pine Sweetgum Yellow-poplar Green ash Red oaks White oaks	100 100 100 110 (2) (2) (2)	Slash pine [1], loblolly pine [1], yellow-poplar [1], sycamore [1], cherrybark oak [1].
Group 1w9. Excessively wet soils that have very high potential productivity; severe equipment restrictions and seedling mortality in areas without adequate surface drainage; suited to needleleaf trees or broadleaf trees, or both. JS, Pa, PT.	Slash pine [3] Loblolly pine [3] Water oaks [3] Tupelos Pond pine	100 100 90–100 (2) 80	Loblolly pine [1], slash pine [1], sweetgum [1], sycamore [1], water tupelo [1], Shumard oak [1].
Group 2o1. Well-drained soils that have high potential productivity; no serious management concerns; better suited to needleleaf trees than to other kinds of trees. BrA, DoA, DoB, OrA, OrB, RbA, RbB.	Loblolly pine Slash pine Longleaf pine	90 90 70	Slash pine, loblolly pine.
Group 2w2. Seasonally wet soil that has high potential productivity; moderate equipment restrictions; and slight to moderate seedling mortality; better suited to needleleaf trees than to other kinds of trees. Fo.	Loblolly pine Slash pine Longleaf pine	90 90 70	Loblolly pine, slash pine.
Group 2w3. Excessively wet soil that has high potential productivity; severe equipment limitations and seedling mortality in areas without adequate surface drainage; better suited to needleleaf trees than to other kinds of trees. Ru.	Loblolly pine Slash pine Longleaf pine	90 90 70	Slash pine [1], loblolly pine [1].
Group 2w8. Seasonally wet soils that have high potential productivity; moderate equipment restrictions; and slight to moderate seedling mortality; suited to needleleaf trees or broadleaf trees, or both. Cd, Ly, PeA.	Loblolly pine Slash pine Sweetgum Yellow-poplar Water oak Tupelos Red oaks White oaks	90 90 90 100 90 (2) (2) (2)	Loblolly pine [1], slash pine [1], yellow-poplar [1], sycamore [1], sweetgum [1].
Group 2w9. Excessively wet soils that have high potential productivity; severe equipment restrictions and seedling mortality in areas without adequate surface drainage; suited to broadleaf trees or needleleaf trees, or both. Ca, Gr, Mc, Ra.	Loblolly pine [3] Slash pine [3] Tupelos Cypress Sweetgum [3] Green ash Red oaks White oaks	90 90 (2) (2) 90 (2) (2) (2)	Loblolly pine [1], slash pine [1], sweetgum [1], sycamore [1], water tupelo, Shumard oak [1], water oak [1].
Group 3o1. Well-drained soils that have moderately high productivity; no serious management concerns; better suited to needleleaf trees than other kinds of trees. FaA, FaB, MaA, MaB, SuA, SuB.	Loblolly pine Slash pine Longleaf pine	80 80 60–70	Loblolly pine, slash pine.
Group 3s2. Sandy soils that have moderately high productivity; moderate equipment restrictions and seedling mortality; better suited to needleleaf trees than other kinds of trees. FuB, FuC, TrB, TrC.	Slash pine Loblolly pine Longleaf pine	80 80 60–70	Slash pine, longleaf pine.
Group 3w2. Seasonally wet soils that have moderately high potential productivity; moderate equipment restrictions and slight to moderate seedling mortality; better suited to needleleaf trees than other kinds of trees. Oc, Sc.	Loblolly pine Slash pine Longleaf pine	80 80 70	Slash pine [1], loblolly pine [1].
Group 3w3. Excessively wet soil that has moderately high potential productivity; severe equipment restrictions and seedling mortality without adequate surface drainage; better suited to needleleaf trees than other kinds of trees. Os.	Loblolly pine [3] Slash pine [3] Longleaf pine [3]	80 80 70	Slash pine [1], loblolly pine [1].
Group 4s2. Sandy soils that have moderate productivity; moderate equipment restriction and seedling mortality; better suited to needleleaf trees than other kinds of trees. LaB.	Slash pine Loblolly pine Longleaf pine	70 70 60	Longleaf pine, sand pine, slash pine.
Group 4w3. Excessively wet soil that has moderate productivity; severe equipment restrictions and seedling mortality; suited to needleleaf trees. Po.	Slash pine [3] Loblolly pine [3] Tupelos	70 70 (2)	Slash pine [1], loblolly pine [1].
Group 5s3. Sandy soil that has low productivity; moderate equipment restrictions and severe seedling mortality; better suited to needleleaf trees than other kinds of trees. Rm.	Longleaf pine Slash pine	50 60	Longleaf pine, sand pine, slash pine.

[1] Tree planting is feasible only in areas that have adequate surface drainage.
[2] Valid site index data are not available at this time.
[3] Potential productivity attainable only in areas that have adequate surface drainage.

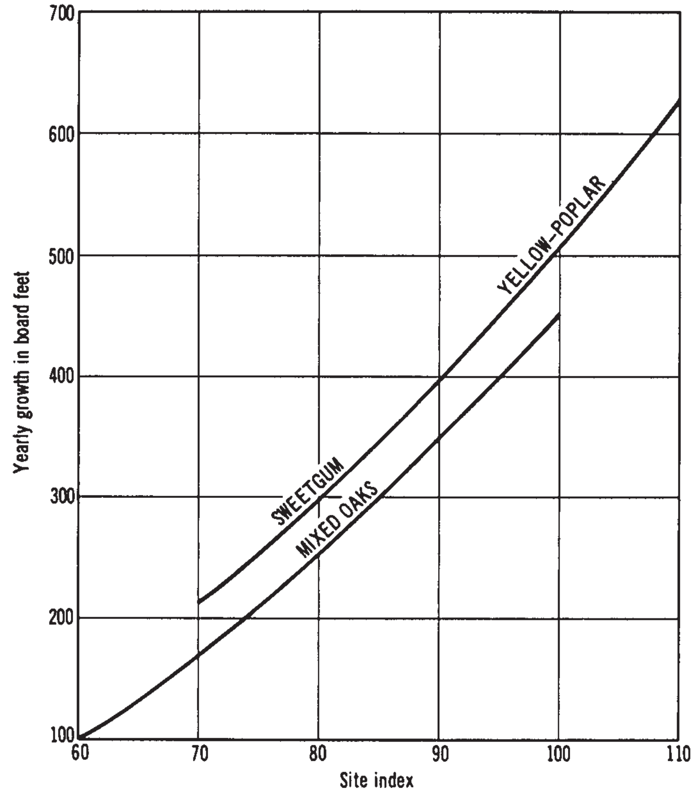


Figure 14.—**Average yearly growth per acre in board feet for well-stocked, even-aged southern hardwood stands to age 60.**

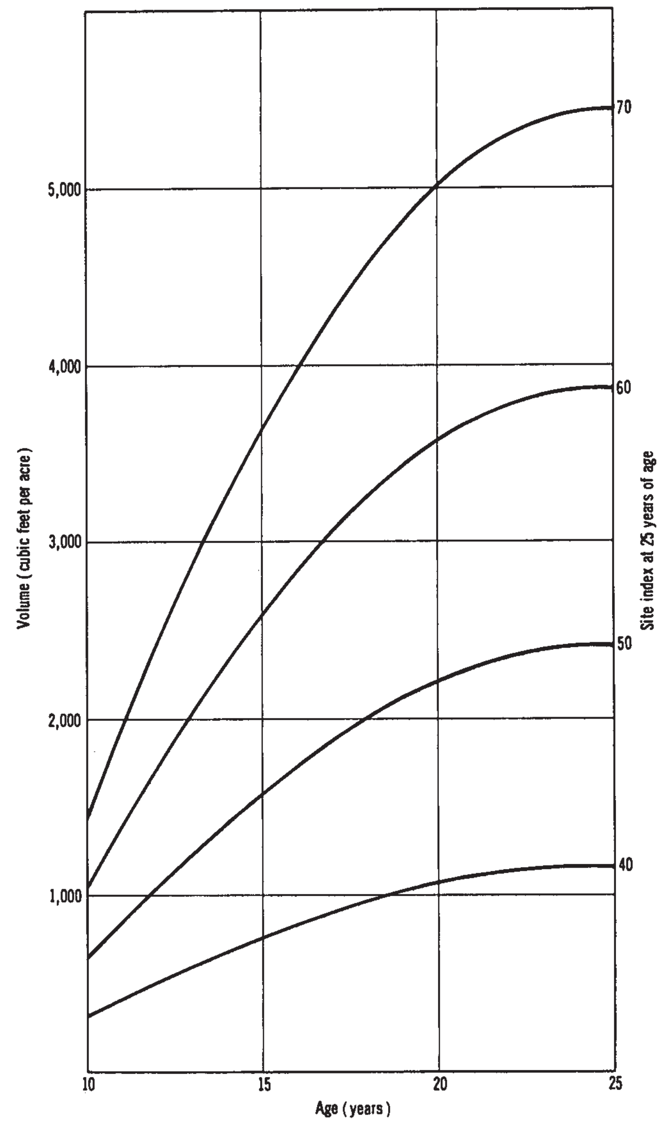


Figure 15.—**Merchantable volume (inside bark) to 3-inch top per acre for loblolly pine plantations.**

Engineering Uses of the Soils [6]

This section is useful to those who need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

Among properties of soils highly important in engineering are permeability, strength, compaction characteristics, soil drainage condition, shrink-swell potential, grain size, plasticity, and soil reaction. Also important are depth to the water table, depth to bedrock, and soil slope. These properties, in various degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

Information in this section of the soil survey can be useful to those who—

1. Select potential residential, industrial, commercial, and recreational areas.
2. Evaluate alternate routes for roads, highways, pipelines, and underground cables.
3. Seek sources of gravel, sand, or clay.
4. Plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for controlling water and conserving soil.
5. Correlate performance of structures already built with properties of the kinds of soil on which they are built, for the purpose of predicting performance of structures on the same or similar kinds of soil in other locations.
6. Predict the trafficability of soils for cross-country movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

Most of the information in this section is presented in tables. Table 6 shows the results of engineering laboratory tests on soil samples; table 7 shows several esti-

[6] By CALVIN B. DERRICK, civil engineer, Soil Conservation Service.

TABLE 5.—*Suitability of soils for elements*

[Soils are rated for natural conditions without

Soil	Elements of wildlife habitat			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees and shrubs
Brogdon loamy sand, 0 to 2 percent slopes	Fair	Fair	Fair	Fair
Cantey loam	Very poor	Very poor	Poor	Good
Clarendon loamy sand	Fair	Fair	Fair	Fair
Dothan loamy fine sand, 0 to 2 percent slopes	Fair	Fair	Fair	Fair
Dothan loamy fine sand, 2 to 6 percent slopes	Fair	Fair	Fair	Fair
Faceville loamy sand, 0 to 2 percent slopes	Good	Good	Good	Good
Faceville loamy sand, 2 to 6 percent slopes	Fair	Fair	Good	Good
Foreston fine sand	Fair	Fair	Fair	Fair
Fuquay fine sand, 0 to 6 percent slopes	Fair	Fair	Fair	Fair
Fuquay fine sand, 6 to 10 percent slopes	Poor	Poor	Fair	Fair
Grady loam	Very poor	Very poor	Very poor	Poor
Johnston soils	Very poor	Very poor	Very poor	Fair
Lakeland sand, 0 to 6 percent slopes	Poor	Poor	Poor	Poor
Lynchburg loamy sand	Fair	Fair	Fair	Good
Marlboro loamy sand, 0 to 2 percent slopes	Good	Good	Good	Good
Marlboro loamy sand, 2 to 6 percent slopes	Good	Good	Good	Good
McColl loam	Very poor	Very poor	Very poor	Fair
Ocilla loamy sand	Poor	Poor	Fair	Fair
Orangeburg loamy sand, 0 to 2 percent slopes	Good	Good	Good	Good
Orangeburg loamy sand, 2 to 6 percent slopes	Good	Good	Good	Good
Osier loamy fine sand	Very poor	Very poor	Very poor	Fair
Paxville loam	Very poor	Very poor	Very poor	Fair
Persanti very fine sandy loam, 0 to 2 percent slopes	Fair	Fair	Good	Good
Ponzer mucky loam	Very poor	Very poor	Very poor	Fair
Portsmouth-Johnston association	Very poor	Very poor	Very poor	Fair
Rains sandy loam	Very poor	Very poor	Poor	Fair
Red Bay sandy loam, 0 to 2 percent slopes	Good	Good	Good	Good
Red Bay sandy loam, 2 to 6 percent slopes	Good	Good	Good	Good
Rimini fine sand	Very poor	Very poor	Very poor	Poor
Rutlege loamy fine sand	Very poor	Very poor	Very poor	Poor
Scranton fine sand	Poor	Poor	Poor	Fair
Summerton fine sandy loam, 0 to 2 percent slopes	Good	Good	Good	Good
Summerton fine sandy loam, 2 to 6 percent slopes	Good	Good	Good	Good
Tawcaw soils	Very poor	Very poor	Very poor	Fair
Troup sand, 0 to 6 percent slopes	Poor	Poor	Poor	Poor
Troup sand, 6 to 10 percent slopes	Very poor	Very poor	Poor	Poor

of wildlife habitat and for kinds of wildlife

any conservation improvements. See text for explanation of the ratings]

Elements of wildlife habitat—*Continued*			Kinds of wildlife		
Coniferous plants	Wetland food and cover plants	Shallow water developments	Openland	Woodland	Wetland
Fair	Very poor	Very poor	Fair	Fair	Very poor.
Fair	Fair	Fair	Very poor	Good	Fair.
Fair	Poor	Poor	Fair	Fair	Poor.
Fair	Very poor	Very poor	Fair	Fair	Very poor.
Fair	Very poor	Very poor	Fair	Fair	Very poor.
Good	Very poor	Poor	Good	Good	Poor.
Good	Very poor	Very poor	Fair	Good	Very poor.
Good	Poor	Very poor	Fair	Fair	Very poor.
Fair	Very poor	Very poor	Poor	Fair	Very poor.
Fair	Very poor	Very poor	Poor	Fair	Very poor.
Poor	Fair	Fair	Very poor	Poor	Fair.
Poor	Fair	Fair	Very poor	Fair	Fair.
Fair	Very poor	Very poor	Poor	Poor	Very poor.
Fair	Poor	Poor	Fair	Good	Poor.
Good	Poor	Poor	Good	Good	Poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Poor	Fair	Fair	Very poor	Fair	Fair.
Fair	Very poor	Poor	Poor	Fair	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Fair	Poor	Poor	Very poor	Fair	Poor.
Fair	Fair	Fair	Very poor	Fair	Fair.
Good	Poor	Poor	Good	Good	Poor.
Poor	Fair	Fair	Very poor	Fair	Fair.
Fair	Fair	Fair	Very poor	Fair	Fair.
Fair	Fair	Fair	Very poor	Fair	Fair.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Poor	Very poor	Very poor	Very poor	Poor	Very poor.
Poor	Poor	Very poor	Very poor	Poor	Very poor.
Fair	Poor	Poor	Poor	Fair	Poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Fair	Fair	Fair	Very poor	Fair	Fair.
Fair	Very poor	Very poor	Poor	Poor	Very poor.
Fair	Very poor	Very poor	Very poor	Poor	Very poor.

mated soil properties significant in engineering; table 8 gives interpretations for various engineering uses; and table 9 shows limitations of soils used in town and country planning.

This information, along with the soil map and other parts of this publication, can be used to make interpretations in addition to those given in tables 8 and 9, and it also can be used to make other useful maps. It can be used to supplement information obtained from other previously published maps, reports, and aerial photographs to make more current maps and reports that can be used readily by engineers, architects, and designers.

This information, however, does not eliminate need for further investigations at sites selected for engineering works, especially works that involve heavy loads or that require excavations to depths greater than those shown in the tables, generally depths greater than 6 feet. Also, inspection of sites, especially the small ones, is needed because many delineated areas of a given soil mapping unit may contain small areas of other kinds of soil that have strongly contrasting properties and different suitability or limitations for soil engineering. Even in these situations, the soil map is useful for planning more detailed field investigations and for suggesting the kinds of problems that may be expected.

Some of the terms used in this soil survey have special meaning to soil scientists. The Glossary defines many of these terms.

Engineering soil classification systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system (*8*) used by the SCS engineers, Department of Defense, and others, and the AASHO system (*1*) adopted by the American Association of State Highway Officials.

In the Unified system soils are classified according to particle-size distribution, plasticity, liquid limit, and content of organic matter. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes; for example, CL-ML.

The AASHO system is used to classify soils according to those properties that affect use in highway construc-

TABLE 6.—*Engineering test data*

[Tests performed by the South Carolina State Highway Department in cooperation with the U. S. Department of Commerce, Bureau of Public Roads, according to standard procedures of the American Association of State Highway Officials (AASHO) (*1*)]

Soil name and location	South Carolina report No.	Depth	Mechanical analysis [1]: Percentage passing sieve—No. 10 (2.0 mm) [4]	No. 40 (0.42 mm)	No. 200 (0.074 mm)	Percentage smaller than—0.005 mm	Liquid limit	Plasticity index	Classification: AASHO [2]	Unified [3]
		Inches								
Brogdon loamy sand:										
Near the intersection of Interstate Highway 95 and secondary State Highway 50; 100 feet south of Interstate Highway 95 and 300 feet west of secondary State Highway 50. (Modal)	H–17272	0–9	99	65	20	11	([5])	([5])	A–2–4(0)	SM
	H–17273	9–31	98	65	26	16	([5])	([5])	A–2–4(0)	SM
	H–17274	48–57	96	61	18	6	([5])	([5])	A–2–4(0)	SM
	H–17275	60–72	97	60	35	27	33	14	A–2–6(1)	SC
Marlboro loamy sand:										
0.5 mile north of Davis Crossroads; 600 feet east of State Highway 38. (Modal)	H–17276	0–9	97	80	29	11	([5])	([5])	A–2–4(0)	SM
	H–17277	19–39	98	84	55	43	43	13	A–7–5(6)	ML
	H–17278	39–50	98	84	55	43	42	14	A–7–6(6)	ML
Red Bay sandy loam:										
1.75 miles northwest of Goat Island Landing on State Highway 38; 2 miles west on dirt road; 30 feet north of road. (Modal)	H–17269	0–7	100	76	35	19	([5])	([5])	A–2–4	SM
	H–17270	14–22	100	81	47	36	33	10	A–4(2)	SC
	H–17271	22–62	99	80	46	36	34	12	A–6(3)	SC

[1] Mechanical analysis according to AASHO Designation T 88-57 (*1*). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method, and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for naming textural classes for soils.

[2] Based on AASHO Designation M145-49 (*1*).

[3] Based on the Unified soil classification system (*8*).

[4] Material retained on the No. 10 sieve is smaller than 1½ inches in diameter.

[5] Nonplastic.

tion and maintenance. In this system, a soil is placed in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and that are the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A-1, A-2, and A-7 groups are divided as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHO classification for tested soils, with group index numbers in parentheses, is shown in table 6; the estimated classification, without group index numbers, is given in table 7 for all soils mapped in the survey area.

Soil test data

Table 6 contains engineering test data for three of the major soil series in Clarendon County. These tests were made to help evaluate the soils for engineering purposes. Since each soil profile was sampled to a depth of 6 feet, the data are not adequate for estimating the characteristics of soil material in cuts deeper than 6 feet. The engineering classifications given are based on data obtained by mechanical analyses and by tests to determine liquid limits and plastic limits. The mechanical analyses were made by combined sieve and hydrometer methods.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic. If the moisture content is further increased, the material changes from a plastic to a liquid. The plastic limit is the moisture content at which the soil material changes from the semisolid to plastic; and the liquid limit, from a plastic to a liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic.

Soil properties significant in engineering

Several estimated soil properties significant in engineering are given in table 7. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in other counties. Following are explanations of some of the columns in table 7.

Depth to seasonal high water table is distance from the surface of the soil to the highest level that ground water reaches in the soil in most years.

Soil texture is described in table 7 in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, as for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used in USDA textural classifications are defined in the Glossary of this soil survey.

Permeability is that quality of a soil that enables it to transmit water or air. It is estimated on the basis of those soil characteristics observed in the field, particularly structure and texture. The estimates in table 7 do not take into account lateral seepage of such transient soil features as plowpans and surface crusts.

Available water capacity is the ability of soils to hold water for use by most plants. It is commonly defined as the difference between the amount of water in the soil at field capacity and the amount at the wilting point of most crop plants.

Reaction is the degree of acidity or alkalinity of a soil, expressed in pH values. The pH value and terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is the relative change in volume to be expected of soil material with changes in moisture content, that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils causes much damage to building foundations, roads, and other structures. A *high* shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material having this rating.

Engineering interpretations

Table 8 (p. 50) gives the soil characteristics most likely to affect engineering practices. These characteristics are evaluated on the basis of test data shown in table 6, estimates given in table 7, or on actual field experience and performance.

Highway engineering.—The suitability of the soils for highway location and construction can be determined using data in tables 6, 7, and 8. Table 8 shows the suitability of each soil as a source of borrow material to be used as road fill or topsoil. Table 7 gives the physical and chemical properties also of interest to engineers.

In this county, bedrock presents no problem in road building and cannot be used as a footing for highway foundations. Depth to bedrock is not shown as a column in table 7 since it is at such depth under most soils that it has little effect on most uses of the soils.

Shoulders and cut and fill slopes that erode are some of the concerns in highway construction. Data shown in tables 6, 7, and 8 are useful in planning erosion control measures for these sites.

Sanitary engineering.—Sanitary engineering planners will find soil information useful when designing facilities for sewage disposal or sanitary landfill. The suitability of a soil as a site for sanitary landfills, sewage lagoons, or septic tank absorption fields depends on the permeability of the soil, the depth to the water

TABLE 7.—*Estimated soil*

[An asterisk in the first column indicates that at least one mapping unit in that series is made up of two or more kinds of soil. to other series as indicated in the first

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	USDA texture
	Feet	*Inches*	
Brogdon: BrA	>6	0–9	Loamy sand
		9–31	Sandy loam, sandy clay loam
		31–57	Loamy sand, sand
		57–72	Sandy clay loam, sandy loam
Cantey: Ca	[1]0–1	0–6	Loam
		6–72	Clay, sandy clay
Clarendon: Cd	1½ to 2½	0–16	Loamy sand
		16–39	Sandy clay loam
		39–72	Sandy clay loam
Dothan: DoA, DoB	>6	0–16	Loamy fine sand
		16–36	Sandy clay loam, sandy loam
		36–70	Sandy clay loam, sandy loam
Faceville: FaA, FaB	>6	0–9	Loamy sand
		9–14	Sandy clay loam
		14–74	Sandy clay, clay, clay loam
Foreston: Fo	2–3	0–7	Fine sand
		7–46	Fine sandy loam, sandy loam
		46–72	Loamy fine sand, fine sand
Fuquay: FuB, FuC	>6	0–27	Fine sand
		27–39	Sandy loam
		39–52	Sandy clay loam, sandy loam
		52–72	Sandy clay loam, sandy clay
Grady: Gr	[1]0–1	0–5	Loam
		5–64	Clay, clay loam, sandy clay
		64–72	Clay loam, sandy clay, sandy clay loam
Johnston: JS	[1]0–1	0–26	Loam, silty loam, sandy loam, fine sandy loam
		26–52	Sandy loam, fine sandy loam, loamy sand
		52–75	Sandy loam, sandy clay loam, sand, loamy sand
Lakeland: LaB	>6	0–72	Sand, fine sand
Lynchburg: Ly	1–2	0–9	Loamy sand
		9–16	Sandy loam
		16–72	Sandy clay loam, sandy loam
Marlboro: MaA, MaB	>6	0–9	Loamy sand
		9–39	Sandy clay, clay, clay loam
		39–72	Sandy clay, clay, clay loam
McColl: Mc	[1]0–1	0–9	Loam
		9–28	Sandy clay, clay loam
		28–72	Sandy clay, clay loam, sandy clay loam
Ocilla: Oc	2½–5	0–23	Loamy sand
		23–74	Sandy loam, sandy clay loam
Orangeburg: OrA, OrB	>6	0–10	Loamy sand
		10–16	Sandy loam
		16–72	Sandy clay loam, sandy loam
Osier: Os	[1]0–1	0–5	Loamy fine sand
		5–72	Fine sand, sand
Paxville: Pa	[1]0–1	0–15	Loam, fine sandy loam
		15–48	Sandy loam, sandy clay loam
		48–72	Fine sand, sand, loamy sand

properties significant in engineering

The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to refer column of this table. The symbol > means more than; the symbol < means less than]

Classification		Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
Unified	AASHO	No. 10 (2.0mm)	No. 40 (0.42mm)	No. 200 (0.074mm)				
					Inches per hour	*Inches per inch of soil*	*pH*	
SM	A-2	99–100	60–75	13–25	2.0–6.0	0.04–0.08	5.1–6.0	Low.
SM, SC	A-2, A-4	98–100	60–70	20–40	0.6–2.0	0.11–0.14	4.5–5.5	Low.
SM	A-2	96–100	60–75	13–20	2.0–6.0	0.07–0.09	4.5–5.5	Low.
SC, SM	A-2, A-4, A-6	97–100	60–75	25–45	0.6–2.0	0.12–0.15	4.5–5.5	Low.
ML, CL	A-4, A-6	100	85–95	51–75	0.6–2.0	0.12–0.15	4.5–5.5	Low.
CL, CL-ML, CH	A-7	100	90–100	75–95	0.06–0.2	0.12–0.15	4.5–5.5	Low.
SM	A-2	100	55–75	15–30	2.0–6.0	0.10–0.14	4.5–6.5	Low.
SC, CL	A-4, A-6	100	75–90	36–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SC, CL	A-4, A-6	100	57–90	36–55	0.2–0.6	0.09–0.12	4.5–5.5	Low.
SM	A-2, A-4	100	75–90	20–40	2.0–6.0	0.08–0.13	5.1–6.5	Low.
SM-SC, SC, CL	A-2, A-4, A-6	100	75–90	30–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SM-SC, SC, CL	A-2, A-4, A-6	100	75–90	30–55	0.2–0.6	0.10–0.12	4.5–5.5	Low.
SM	A-2	100	50–75	15–30	2.0–6.0	0.06–0.10	4.5–5.5	Low.
CL, SC	A-4, A-6	100	85–95	45–60	0.6–2.0	0.12–0.15	4.5–5.5	Low.
CL, ML	A-6, A-7	100	85–95	51–70	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SM, SP-SM	A-2	100	60–100	10–25	6.0–20	0.05–0.09	5.1–6.0	Low.
SM	A-2	100	70–100	18–35	2.0–6.0	0.09–0.12	4.5–5.5	Low.
SM, SP-SM	A-2	100	50–98	10–25	6.0–20	0.05–0.09	4.5–5.5	Low.
SM, SP-SM	A-2	100	65–90	10–25	6.0–20	0.05–0.08	5.1–6.0	Low.
SM, SC	A-2, A-4	100	70–90	20–40	2.0–6.0	0.12–0.15	4.5–5.5	Low.
SC, CL, SM	A-2, A-4, A-6	98–100	80–90	30–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SC, CL, SM	A-2, A-4, A-6	98–100	80–90	30–55	0.06–0.2	0.10–0.12	4.5–5.5	Low.
ML-CL	A-4	100	85–95	55–70	0.6–2.0	0.12–0.15	4.5–5.5	Low.
CL	A-7, A-6	100	85–98	55–90	0.06–0.2	0.12–0.15	4.5–5.5	Low to moderate.
CL, SC	A-4, A-7, A-6	100	85–98	36–80	0.2–0.6	0.12–0.15	4.5–5.5	Low.
ML	A-4	100	80–90	60–75	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SM, SC, SP-SM	A-2, A-4	100	55–85	10–40	2.0–6.0	0.12–0.15	4.5–5.5	Low.
SP-SM, SM	A-3, A-2	100	65–80	5–15	6.0–20	0.05–0.07	4.5–5.5	Low.
SP-SM	A-3	100	55–70	5–10	6.0–20	0.05–0.08	4.5–5.5	Low.
SM	A-2	100	51–75	15–30	2.0–6.0	0.06–0.10	4.5–6.0	Low.
SM	A-2, A-4	100	60–70	30–40	2.0–6.0	0.10–0.14	4.5–6.0	Low.
SC, CL, SM	A-2, A-4, A-6	100	80–90	30–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SM	A-2	95–100	65–90	15–30	2.0–6.0	0.06–0.12	5.1–6.5	Low.
CL, ML	A-6, A-7	98–100	75–95	51–65	0.6–2.0	0.12–0.15	5.1–6.5	Low.
CL, ML	A-6, A-7	98–100	75–95	51–65	0.6–2.0	0.12–0.15	4.5–5.5	Low.
ML, ML-CL	A-4	100	70–95	51–70	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SC, CL	A-6, A-7	100	75–95	45–55	0.2–0.6	0.12–0.15	4.5–5.5	Low.
CL, SC	A-4, A-6, A-7	100	70–95	36–55	0.06–0.2	0.09–0.12	4.5–5.5	Low.
SM	A-2	100	65–80	15–30	6.0–20	0.05–0.08	5.1–6.0	Low.
SM, CL, SC	A-2, A-4, A-6	100	70–85	30–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SM	A-2	100	70–85	15–35	2.0–6.0	0.06–0.10	5.1–6.0	Low.
SM	A-2, A-4	100	60–75	20–45	2.0–6.0	0.12–0.15	4.5–6.0	Low.
SC, CL, SM	A-2, A-4, A-6	100	72–90	30–55	0.6–2.0	0.12–0.15	4.5–6.0	Low.
SM, SP-SM	A-2	100	75–90	10–15	6.0–20	0.05–0.08	4.5–5.5	Low.
SP-SM	A-3	100	70–85	5–10	6.0–20	< 0.05	4.5–5.5	Low.
ML, SM	A-2, A-4	100	85–95	30–60	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SM, ML, SC, CL	A-2, A-4, A-6	100	85–95	30–60	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SP-SM, SM	A-2, A-3	100	70–90	5–20	6.0–20	0.05–0.08	4.5–5.5	Low.

TABLE 7.—*Estimated soil properties*

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	USDA texture
	Feet	*Inches*	
Persanti: PeA	[1]0–1	0–6	Very fine sandy loam
		6–60	Clay
		60–72	Clay, sandy clay, clay loam
Ponzer: Po	[1]0–1	0–20	Mucky loam
		20–75	Fine sandy loam, sandy loam, loam, clay loam
			Sand, loamy sand
*Portsmouth: PT For Johnston part, see Johnston series.	[1]0–1	0–18	Loam
		18–30	Sandy clay loam
		30–72	Loamy sand, sand, sandy loam, clay loam
Rains: Ra	[1]0–1	0–7	Sandy loam
		7–72	Sandy clay loam, sandy loam
Red Bay: RbA, RbB	>6	0–7	Sandy loam
		7–22	Sandy clay loam, sandy loam
		22–72	Sandy clay loam, sandy loam
Rimini: Rm	4–6	0–35	Fine sand
		35–45	Fine sand, sand
		45–72	Fine sand, sand
Rutlege: Ru	[1]0–1	0–10	Loamy fine sand
		10–72	Fine sand, sand
Scranton: Sc	1–2	0–7	Fine sand
		7–72	Fine sand, sand, loamy sand
Summerton: SuA, SuB	4–6	0–8	Fine sandy loam
		8–72	Clay, sandy clay
Tawcaw: TA	[1]1½–4	0–58	Silty clay loam to silty clay
		58–72	Clay loam, clay
Troup: TrB, TrC	>6	0–56	Sand
		56–72	Sandy clay loam, sandy loam

[1] Soils are subject to flooding or ponding.

significant in engineering—Continued

Classification		Percentage passing sieve—			Permeability	Available water capacity	Reaction	Shrink-swell potential
Unified	AASHO	No. 10 (2.0mm)	No. 40 (0.42mm)	No. 200 (0.074mm)				
					Inches per hour	*Inches per inch of soil*	*pH*	
SM, ML, CL	A-4, A-6	97–100	85–100	40–60	0.6–2.0	0.12–0.15	4.5–5.5	Low.
CH	A-7	100	90–100	75–95	0.06–0.2	0.12–0.15	4.5–5.5	Low.
CH, CL	A-6, A-7	100	85–100	60–85	0.06–0.2	0.12–0.15	4.5–5.5	Low.
OL	A-4	100	95–100	80–100	0.6–2.0	0.20–0.25	4.0–5.5	Moderate.
SM-SC	A-2, A-4	100	70–85	30–40	0.6–2.0	0.10–0.12	4.0–5.5	Low.
SP-SM, SM	A-2, A-3	100	65–85	5–20	6.0–20	0.05–0.08	4.0–5.5	Low.
ML, ML-CL	A-4	100	80–90	51–70	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SC, ML, CL, SM	A-4, A-6, A-2	100	75–95	30–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SP-SM	A-2, A-3	100	51–70	5–12	6.0–20	0.05–0.08	4.5–5.5	Low.
SM	A-2	100	65–80	20–35	2.0–6.0	0.10–0.14	4.5–5.5	Low.
SC, CL, SM	A-6, A-2, A-4	99–100	65–85	30–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SM	A-2	100	51–80	15–35	2.0–6.0	0.10–0.12	5.1–6.0	Low.
SM, SC, CL	A-4, A-6	98–100	65–85	36–55	0.6–2.0	0.12–0.15	5.1–6.0	Low.
SM, SC, CL	A-4, A-6	98–100	65–85	36–55	0.6–2.0	0.12–0.15	4.5–5.5	Low.
SP	A-3	100	51–85	<5	>20	<.05	4.5–5.5	Low.
SP	A-3	100	60–85	<5	0.6–2.0	<.05	4.5–5.5	Low.
SP	A-3	100	60–85	<5	>20	<.05	4.5–5.5	Low.
SM, SP-SM	A-2	100	55–85	10–15	6.0–20	0.05–0.08	4.0–5.5	Low.
SP-SM	A-3	100	51–85	5–10	6.0–20	<.05	4.0–5.5	Low.
SM, SP-SM	A-2	100	80–95	10–25	6.0–20	0.06–0.10	4.5–5.5	Low.
SM, SP-SM	A-2	100	75–90	10–25	6.0–20	0.05–0.08	4.5–5.5	Low.
SM, ML	A-2, A-4	95–100	80–95	30–60	0.6–2.0	0.10–0.14	5.1–6.5	Low.
CL	A-7, A-6	100	90–100	60–80	0.2–0.6	0.12–0.15	4.5–5.5	Low.
CL, ML, MH	A-6, A-7	100	85–100	75–95	0.06–0.2	0.15–0.18	4.5–6.0	Low to moderate.
CL, ML	A-6, A-7	100	90–99	60–90	0.2–0.6	0.14–0.17	4.5–6.0	Low to moderate.
SM, SP-SM	A-2, A-3	100	60–75	5–15	6.0–20	<.05	4.5–5.5	Low.
SC, SM	A-2, A-6	100	75–90	25–45	0.6–2.0	0.10–0.14	4.5–5.5	Low.

TABLE 8.—*Interpretations of*

[An asterisk in the first column indicates that at least one mapping unit in this series
ent properties and limitations, and for this reason it is necessary to follow carefully the

Soil series and map symbols	Suitability as a source of—		Soil features affecting—
	Topsoil	Road fill	Drainage for crops and pasture
Brogdon: BrA	Fair: sandy surface layer	Good to fair: good to fair traffic-supporting capacity.	Well drained
Cantey: Ca	Poor: poorly drained; thin layer of suitable material.	Poor: poorly drained; poor traffic-supporting capacity.	Slow permeability; high water table; low strength and stability; flooding.
Clarendon: Cd	Fair: sandy surface layer	Fair: fair traffic-supporting capacity.	Moderately high water table; moderately slow permeability below a depth of about 39 inches.
Dothan: DoA, DoB	Fair: sandy surface layer	Fair: fair traffic-supporting capacity.	Well drained
Faceville: FaA, FaB	Fair: sandy surface layer	Fair: fair traffic-supporting capacity.	Well drained
Foreston: Fo	Poor: sandy surface layer	Good	Moderately high water table; unstable sand at a depth of about 3 feet.
Fuquay: FuB, FuC	Poor: sandy surface layer	Good to fair: good to fair traffic-supporting capacity.	Well drained
Grady: Gr	Poor: poorly drained; thin layer of suitable material.	Poor: poorly drained; poor traffic-supporting capacity.	High water table; flooding; slow permeability.
Johnston: JS	Poor: very poorly drained	Poor: very poorly drained	High water table; flooding
Lakeland: LaB	Poor: sandy surface layer	Good	Excessively drained
Lynchburg: Ly	Fair: sandy surface layer	Fair: somewhat poorly drained; fair traffic-supporting capacity.	High water table
Marlboro: MaA, MaB	Fair: sandy surface layer	Fair: fair traffic-supporting capacity.	Well drained
McColl: Mc	Poor: poorly drained; thin layer of suitable material.	Poor: poorly drained	High water table; flooding; slow permeability.
Ocilla: Oc	Poor: sandy surface layer	Fair: fair traffic-supporting capacity.	Moderately high water table
Orangeburg: OrA, OrB	Fair: sandy surface layer	Fair: fair traffic-supporting capacity.	Well drained
Osier: Os	Poor: poorly to very poorly drained; sandy surface layer.	Poor: poorly to very poorly drained.	High water table; flooding; unstable sand.
Paxville: Pa	Poor: very poorly drained	Poor: very poorly drained	High water table; flooding
Persanti: PeA	Fair to poor: thin layer of suitable material.	Poor: poor traffic-supporting capacity.	Slow permeability; moderately high water table.
Ponzer: Po	Poor: very poorly drained	Poor: very poorly drained	Organic material; high water table; flooding.

engineering properties of the soils

**is made up of two or more kinds of soil. The soils in such mapping units may have differ-
instructions for referring to other series that appear in the first column of this table]**

Soil features affecting—*Continued*			
Sprinkler irrigation	Farm pond		Grassed waterways
	Reservoir areas	Embankments	
Medium to low available water capacity.	Moderate to moderately rapid permeability.	Medium to high susceptibility to piping.	Medium to low available water capacity.
Slow infiltration; high water table; flooding.	All features favorable.	Medium to low shear strength; medium to high compressibility; fair to poor compaction characteristics.	Poorly drained; flooding.
All features favorable.	Moderate permeability in upper part of soil.	Medium to low shear strength.	All features favorable.
All features favorable.	Moderate permeability in upper part of soil.	Medium to low shear strength.	All features favorable.
All features favorable.	Moderate permeability.	Medium to low shear strength; medium compressibility.	All features favorable.
Moderately rapid permeability.	Moderately rapid permeability.	Medium to high susceptibility to piping.	All features favorable.
Rapid infiltration; low to medium available water capacity.	All features favorable.	Medium to low shear strength; medium susceptibility to piping.	Sandy to a depth of about 27 inches; low to medium available water capacity; slopes to as much as 10 percent.
Slow infiltration; high water table; flooding.	All features favorable.	Medium to low shear strength; medium compressibility.	Poorly drained; flooding.
Flooding; high water table.	Moderately rapid permeability.	Medium to low shear strength; medium to high susceptibility to piping.	Very poorly drained; flooding.
Very rapid infiltration; low available water capacity; rapid permeability.	Rapid permeability.	High permeability when compacted; medium to high susceptibility to piping.	Sandy throughout; low available water capacity.
High water table.	Moderate permeability.	Medium to low shear strength.	Somewhat poorly drained.
All features favorable.	Moderate permeability.	Medium to low shear strength; medium compressibility.	All features favorable.
Slow infiltration; high water table; flooding.	All features favorable.	Medium to low shear strength; medium compressibility.	Poorly drained; flooding.
Rapid infiltration; low to medium available water capacity.	Moderate permeability.	Medium to low shear strength; medium susceptibility to piping.	Sandy to a depth of about 23 inches; low to medium available water capacity.
All features favorable.	Moderate permeability.	Medium to low shear strength.	All features favorable.
Rapid permeability; very low available water capacity; high water table.	Rapid permeability.	High permeability when compacted; medium to high susceptibility to piping.	Poorly to very poorly drained; sandy throughout; very low available water capacity; flooding.
High water table; flooding.	Moderate permeability.	Medium to low shear strength; medium compressibility; medium to high susceptibility to piping.	Very poorly drained; flooding.
Slow infiltration.	All features favorable.	Medium to low shear strength; high compressibility; fair to poor compaction characteristics.	All features favorable.
High water table; flooding.	Unstable material.	Medium to low shear strength; medium to high compressibility; medium to high susceptibility to piping.	Organic material to a depth of about 20 inches; very poorly drained; flooding.

TABLE 8.—*Interpretations of engineering*

Soil series and map symbols	Suitability as a source of—		Soil features affecting—
	Topsoil	Road fill	Drainage for crops and pasture
*Portsmouth: PT. For Johnston part, see Johnston series.	Poor: very poorly drained.	Poor: very poorly drained.	High water table; flooding; unstable sand at a depth of about 30 inches.
Rains: Ra	Poor: poorly drained.	Poor: poorly drained.	High water table; flooding.
Red Bay: RbA, RbB	Fair: thin layer of suitable material.	Fair: fair traffic-supporting capacity.	Well drained.
Rimini: Rm	Poor: sandy surface layer.	Good	Excessively drained.
Rutlege: Ru	Poor: very poorly drained; sandy surface layer.	Poor: very poorly drained.	High water table; unstable sand; flooding.
Scranton: Sc	Poor: sandy surface layer.	Fair: somewhat poorly drained.	High water table; unstable sand; flooding.
Summerton: SuA, SuB	Fair: thin layer of suitable material.	Fair to poor: fair to poor traffic-supporting capacity.	Well drained.
Tawcaw: TA	Fair: clayey surface layer.	Poor: poor traffic-supporting capacity.	High water table; slow permeability; flooding.
Troup: TrB, TrC	Poor: sandy surface layer.	Good	Well drained.

properties of the soils—Continued

Soil features affecting—*Continued*			
Sprinkler irrigation	Farm Pond		Grassed waterways
	Reservoir areas	Embankments	
High water table; flooding	Moderate permeability; pervious sand below a depth of about 30 inches.	Medium to low shear strength; low to medium compressibility; medium to high susceptibility to piping.	Very poorly drained; flooding.
High water table; flooding	Moderate permeability	Medium to low shear strength	Poorly drained; flooding.
All features favorable	Moderate permeability	Medium to low shear strength	All features favorable.
Very low available water capacity; very rapid infiltration; very rapid permeability.	Very rapid permeability	High permeability when compacted; medium to high susceptibility to piping.	Sandy throughout; very low available water capacity.
Rapid permeability; high water table; very low available water capacity; flooding.	Rapid permeability	High permeability when compacted; medium to high susceptibility to piping.	Very poorly drained; sandy throughout; very low available water capacity; flooding.
Rapid infiltration; high water table; low available water capacity; flooding; rapid permeability.	Rapid permeability	Medium to high permeability when compacted; medium to high susceptibility to piping.	Somewhat poorly drained; sandy throughout; low available water capacity; flooding.
Moderately slow infiltration	Some slopes to as much as 6 percent.	Medium to low shear strength; medium compressibility.	All features favorable.
Slow infiltration; flooding; high water table.	All features favorable	Medium to low shear strength; medium to high compressibility.	Somewhat poorly drained; flooding.
Rapid infiltration; low available water capacity; rapid permeability.	Rapid permeability to a depth of about 56 inches.	Medium to high permeability when compacted; medium to high susceptibility to piping.	Low available water capacity; sandy to a depth of about 56 inches.

TABLE 9.—*Limitations of the soils*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The instructions for referring to other series that

Soil series and map symbols	Foundations for dwellings	Septic tank absorption fields	Sewage lagoons	Sites for light industries
Brogdon: BrA	Slight	Slight	Severe: moderate to moderately rapid permeability.	Slight
Cantey: Ca	Severe: wetness; flooding; poor load-supporting capacity.	Severe: slow permeability; high water table; flooding.	Slight	Severe: wetness; flooding; poor load-supporting capacity.
Clarendon: Cd	Moderate: wetness	Severe: high water table.	Severe: high water table.	Moderate: wetness
Dothan: DoA, DoB	Slight	Moderate: somewhat restricted permeability below a depth of about 36 inches.	Moderate: possible lateral seepage.	Slight
Faceville: FaA, FaB	Slight	Slight	Moderate: moderate permeability.	Slight
Foreston: Fo	Moderate: wetness	Severe: high water table.	Severe: moderately rapid permeability; high water table.	Moderate: wetness
Fuquay: FuB, FuC	Slight	Moderate: slow permeability below a depth of about 52 inches.	Severe: rapid permeability in surface layer to a depth of 27 inches.	Slight for FuB. Moderate for FuC: slope.
Grady: Gr	Severe: wetness; flooding.	Severe: slow permeability; high water table; flooding.	Moderate: organic-matter content more than 2 percent in most areas.	Severe: wetness; flooding.
Johnston: JS	Severe: wetness; flooding.	Severe: high water table; flooding.	Severe: moderately rapid permeability; high organic-matter content in surface; high water table.	Severe: wetness; flooding.
Lakeland: LaB	Slight	Slight [1]	Severe: rapid permeability.	Slight
Lynchburg: Ly	Severe: wetness; flooding.	Severe: high water table; flooding.	Severe: high water table.	Severe: wetness; flooding.
Marlboro: MaA, MaB	Moderate: fair load-supporting capacity.	Slight	Moderate: moderate permeability.	Moderate: fair load-supporting capacity.
McColl: Mc	Severe: wetness; flooding.	Severe: high water table; flooding; slow permeability.	Slight	Severe: wetness; flooding.
Ocilla: Oc	Slight	Severe: high water table.	Moderate: moderate permeability.	Slight
Orangeburg: OrA, OrB	Slight	Slight	Moderate: moderate permeability.	Slight
Osier: Os	Severe: wetness; flooding.	Severe:[1] high water table; flooding.	Severe: rapid permeability; high water table.	Severe: wetness; flooding.
Paxville: Pa	Severe: wetness; flooding.	Severe: high water table; flooding.	Severe: high water table.	Severe: wetness; flooding.
Persanti: PeA	Severe: poor load-supporting capacity.	Severe: slow permeability; high water table.	Slight	Severe: poor load-supporting capacity.
Ponzer: Po	Severe: wetness; flooding; surface is organic and unstable.	Severe: high water table; flooding.	Severe: surface is organic and unstable; high water table.	Severe: wetness; flooding; surface is organic and unstable.

for town and country planning

soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the appear in the first column of this table]

Local roads and streets	Recreation sites			
	Camp areas	Intensive play areas	Golf fairways	Picnic areas
Slight	Slight	Slight	Slight	Slight.
Severe: wetness; flooding; poor traffic-supporting capacity.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Moderate: fair traffic-supporting capacity.	Moderate: wetness	Moderate: wetness	Moderate: wetness	Slight.
Moderate: fair traffic-supporting capacity.	Slight	Slight for DoA. Moderate for DoB: slope.	Slight	Slight.
Moderate: fair traffic-supporting capacity.	Slight	Slight for FaA. Moderate for FaB: slope.	Slight	Slight.
Slight	Moderate: sandy surface layer.	Moderate: wetness; sandy surface layer.	Moderate: wetness; sandy surface layer.	Moderate: sandy surface layer.
Moderate: fair traffic-supporting capacity.	Moderate: sandy surface layer.	Severe: sandy surface layer	Moderate for FuB: sandy surface layer. Severe for FuC: slope; sandy surface layer.	Moderate: sandy surface layer.
Severe: wetness; flooding; poor traffic-supporting capacity.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Slight	Severe: loose sand	Severe: loose sand	Severe: loose sand	Severe: loose sand.
Severe: flooding	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Moderate: wetness; flooding.
Moderate: fair traffic-supporting capacity.	Slight	Slight for MaA. Moderate for MaB: slope.	Slight	Slight.
Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Moderate: fair traffic-supporting capacity.	Moderate: sandy surface layer.	Moderate: sandy surface layer.	Moderate: sandy surface layer.	Moderate: sandy surface layer.
Moderate: fair traffic-supporting capacity.	Slight	Slight for OrA. Moderate for OrB: slope.	Slight	Slight.
Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Severe: poor traffic-supporting capacity.	Moderate: slow permeability.	Moderate: slow permeability.	Moderate: slow permeability.	Slight.
Severe: wetness; flooding; poor traffic-supporting capacity.	Severe: wetness; flooding; surface is organic and unstable.	Severe: wetness; flooding; surface is organic and unstable.	Severe: wetness; flooding; surface is organic and unstable.	Severe: wetness; flooding; surface is organic and unstable.

TABLE 9.—*Limitations of the soils*

Soil series and map symbols	Foundations for dwellings	Septic tank absorption fields	Sewage lagoons	Sites for light industries
*Portsmouth: PT For Johnston part, see Johnston series.	Severe: wetness; flooding.	Severe: high water table; flooding.	Severe: high water table.	Severe: wetness; flooding.
Rains: Ra	Severe: wetness; flooding.	Severe: high water table; flooding.	Severe: high water table.	Severe: wetness; flooding.
Red Bay: RbA, RbB	Slight	Slight	Moderate: moderate permeability.	Slight
Rimini: Rm	Slight	Slight [1]	Severe: very rapid permeability.	Slight
Rutlege: Ru	Severe: wetness; flooding.	Severe [1]: high water table; flooding.	Severe: rapid permeability; high water table.	Severe: wetness; flooding.
Scranton: Sc	Severe: wetness; flooding.	Severe:[1] high water table; flooding.	Severe: rapid permeability; high water table.	Severe: wetness; flooding.
Summerton: SuA, SuB	Moderate: fair load-supporting capacity.	Severe: high water slow permeability.	Slight for SuA. Moderate for SuB: slope.	Moderate: fair load-supporting capacity.
Tawcaw: TA	Severe: flooding	Severe: high water table; flooding; slow permeability.	Slight [2]	Severe: flooding
Troup: TrB, TrC	Slight	Slight [1]	Severe: rapid permeability to a depth of about 56 inches.	Slight for TrB. Moderate for TrC: slope.

[1] Pollution may be a hazard to water supplies.

[2] When protected from flooding.

for town and country planning—Continued

Local roads and streets	Recreation sites			
	Camp areas	Intensive play areas	Golf fairways	Picnic areas
Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Moderate: fair traffic-supporting capacity.	Slight	Slight for RbA. Moderate for RbB: slope.	Slight	Slight.
Slight	Severe: loose sand	Severe: loose sand	Severe: loose sand	Severe: loose sand.
Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Severe: flooding	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Moderate: wetness.
Moderate: fair traffic-supporting capacity.	Moderate: moderately slow permeability.	Moderate: moderately slow permeability.	Slight	Slight.
Severe: flooding; poor traffic-supporting capacity.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.
Slight	Moderate: sandy surface layer.	Severe: sandy surface layer.	Moderate for TrB: sandy surface layer. Severe for TrC: slope; sandy surface layer.	Moderate: sandy surface layer.

table, the hazard of flooding, and the depth to hard rock, if any. In addition, suitability for a sanitary landfill also depends on texture and workability of the soil when used as backfill cover.

Sources used for water supply and the water in streams can be polluted by seepage or drainage that comes from areas of septic tank absorption fields, garbage or trash dumps, and animal waste disposal, if the soils in those areas are highly permeable. The information and data given in tables 6, 7, and 8 help in locating sites as well as in designing treatment plants for these areas. Table 9 gives the limitations for each soil when used for a septic tank absorption field or sewage lagoon.

Conservation engineering.—Conservation engineering includes the construction of farm ponds and terraces, land grading and smoothing, and the establishment of drainage and irrigation systems. The engineering tables in this section help in planning, designing, and laying out any of these structures or systems. Table 8 gives useful interpretation of soils for these practices.

Drainage engineers may use several of the columns of table 8 in planning farm drainage systems, storm runoff channels, diversion ditches, or waterways for disposing of surface water. In designing any of these water disposal systems in which vegetation is to be used to control water velocity or erosion, the descriptions of individual mapping units may be useful. These descriptions indicate the suitability of the soils for certain grasses and other vegetation. Since adequate outlets are essential for the effective operation of any drainage system, the detailed maps at the back of this publication should also be useful. The natural drainageway patterns and outlets are shown on these maps along with the soils.

Conservation engineering information and assistance can be obtained from the local representative of the Soil Conservation Service.

Town and country planning

This section is of greatest interest to county officials or others responsible for community planning, and it is of interest to individuals who plan to build a house or to others who are concerned with the selection of a site for a building, an industry, a school, or a park.

Table 9 gives the limitations of the soils when they are used as foundations for dwellings, septic tank absorption fields, sewage lagoons, sites for light industries, roads and streets, and recreation sites. The degree of limitation is designated as slight, moderate, or severe. Along with degree of limitation are given the soil properties that mainly determine it.

Slight means that the soils have few or no limitations, or that the limitations can be easily overcome; *moderate* indicates that the limitations should be recognized but that they can be overcome by practical means; *severe* indicates that suitability of the soils for the specified use is questionable because the limitations are either difficult to overcome or are so restrictive that overcoming them may not be practical.

In the following paragraphs, some of the columns in table 9 are discussed.

Foundation for dwellings.—The limitations are those for soils that are used as the foundations for dwellings of three stories or less and that have public or community sewage systems. The factors used in determining the degree of limitations are wetness, hazard of flooding, relative load-supporting capacity based on a classification according to the Unified system, shrink-swell potential, and slope.

Septic tank absorption fields.—The properties considered are those that affect the absorption of effluent and the construction and operation of the tile system. The properties considered are permeability, depth to water table, hazard of flooding, slope, and depth to rock, if applicable. It should be noted that extremely rapid permeability in some sands results in inadequate filtration and a risk of contamination to nearby water supplies, lakes, or streams.

Sewage lagoons.—The properties considered are those that affect the pond floor as well as the embankment. Among these are permeability, slope, classification according to the Unified system, content of organic matter, and depth to bedrock, if applicable.

Sites for light industries.—These are sites on undisturbed soils used to support foundations for buildings of three stories or less. Public or community facilities for sewage disposal are assumed to be available. The factors considered are wetness, hazards of flooding, relative load-supporting capacity based on classification according to the Unified system, shrink-swell potential, slope, and depth to bedrock, if applicable.

Local roads and streets.—The limitations given apply to use of soils for construction and maintenance of improved local roads and streets that have all-weather surfacing and that are expected to carry automobile traffic all year. A slight limitation or no limitations are shown for sites where construction requires only small cuts or fills and little preparation of subgrade. The factors considered are traffic-supporting capacity and shrink-swell potential (indicated by the AASHO and Unified classifications), wetness, hazard of flooding, slope, and depth to rock, if applicable.

Recreation sites.—Camp areas are to be used intensively for tents and small camp trailers and the accompanying activities of outdoor living. Intensive play areas are used for organized games, such as baseball, football, and badminton. Golf fairways are the areas on golf courses used for golfing and associated play areas. Picnic areas consist of land used for park-type picnics. The chief factors considered for recreation sites are wetness, hazard of flooding, permeability, slope, and texture of the surface layer.

Formation, Morphology, and Classification of the Soils

This section discusses the factors of soil formation, the morphology of the soils, and the classification of soils. The classification of each soil series in the county according to the current system is shown in table 10.

Factors of Soil Formation

Soil is the natural medium for the growth of plants and is the product of soil-forming processes acting on accumulated or deposited geologic materials. The five important factors in soil formation are parent material, climate, living organisms (plants and animals), relief, and time.

Climate and living organisms are the active forces of soil formation. Their effect on the parent material is modified by relief and by the length of time the parent material has been in place. The relative importance of each factor differs from place to place. In some places one factor dominates in the formation and fixes most of the properties of the soil formed, but normally the interaction of all five factors determine what kind of soil is formed at any given place.

Although soil formation is complex, some understanding of the soil-forming processes may be gained by considering each of the five factors separately. Each of the five factors, however, is affected by and also affects each of the other factors.

Parent material

Parent material is the unconsolidated mass from which a soil is formed. It has much to do with the mineral and chemical composition of the soils. In Clarendon County the parent materials of the soils are marine or fluvial deposits. These deposits have varying amounts of sand, silt, and clay.

The five main geologic terraces in this county were formed during the Pleistocene or glacial epoch (*2*). These are the Coharie terrace, the Sunderland terrace, the Wicomico terrace, the Penholoway terrace, and the Talbot terrace (fig. 16).

The Coharie terrace ranges from about 170 feet to 215 feet above sea level. Dothan, Fuquay, Rains, and Paxville soils are the dominant soils that formed in this material.

The Sunderland terrace ranges from about 100 feet to 170 feet above sea level. Dothan, Orangeburg, Fuquay, Troup, Clarendon, Lynchburg, Rains, Paxville, and Rutlege soils are the dominant soils that formed in this material.

The Wicomico terrace ranges from about 70 feet to 100 feet above sea level. Summerton, Red Bay, Dothan, Fuquay, Persanti, Rains, Cantey, and Paxville soils are the dominant soils that formed in this material.

The Penholoway terrace ranges from 42 feet to 70 feet above sea level. Most of this terrace is covered by Lake Marion which was the flood plains of the Santee River. The Penholoway terrace extends part way up the flood plains of the Black River and Pocotaligo River where Paxville, Portsmouth, and Johnston soils are the dominant soils.

The Talbot terrace ranges from 25 feet to 42 feet above sea level. The flood plains of the Santee River, east of the Santee Dam, are on this terrace. Tawcaw soils are the dominant soils that formed in this material.

Climate

Clarendon County has a temperate climate. Rainfall is well distributed throughout the year. The climate is fairly uniform throughout the county. For this reason, climate does not account for significant differences among the soils.

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. Water dissolves minerals, aids chemical and biological activity, and transports the dissolved mineral and organic material through the soil profile. Large amounts of rainwater promotes the leaching of the soluble bases and the translocation of the less soluble and fine-textured soil material downward through the soil profile. The amount of water that percolates through the soil depends on the amount of rainfall, the length of frost-free season, relief, and the permeability of the soil material.

Moist conditions and warm temperatures speed the weathering of parent material as well as increasing the growth and activity of living organisms. Thus, the high rainfall, warm temperatures, and long freeze-free growing season in Clarendon County have had a marked effect both on the soils directly and on some of the other factors that affect the soils.

Living organisms

The number and kinds of plants and animals that live in and on the soil are determined mainly by the climate but, to a lesser extent, by parent material, relief, and age of the soil.

Bacteria, fungi, and other micro-organisms are indispensable in soil formation. They hasten the weathering of minerals and the decomposing of organic matter. Larger plants alter the soil microclimate, furnish organic matter, and transfer chemical elements from the subsoil to the surface soil.

Most of the fungi, bacteria, and other micro-organisms in the soils of Clarendon County are in the upper few inches of the soil. Earthworms and other small invertebrates are active chiefly in the A horizon and upper part of the B horizon, where they slowly but continuously mix the soil material. Bacteria and fungi decompose organic matter and release nutrients for plant use. Other animals play a secondary role in soil formation, but their influence is great. By eating plants they perform one step in returning plant material to the soil.

In Clarendon County the native vegetation in the better drained areas was chiefly loblolly pine, longleaf pine, oak, and hickory. In the wetter areas it was mainly sweetgum, black gum, yellow poplar, maple, tupelo, ash, and cypress. Large trees affect soil formation by bringing nutrients up from deep in the soil, by bringing soil material up from varying depths when blown over, and by providing large openings to be filled by material from above as large roots decay.

Relief

Relief, or lay of the land, influences soil formation because of its effect on moisture, temperature, and erosion. Because of this, several different kinds of soil may form in similar parent material.

Most of Clarendon County is nearly level to gently sloping. There are, however, three general landscapes in the county that affect the formation of soils. These

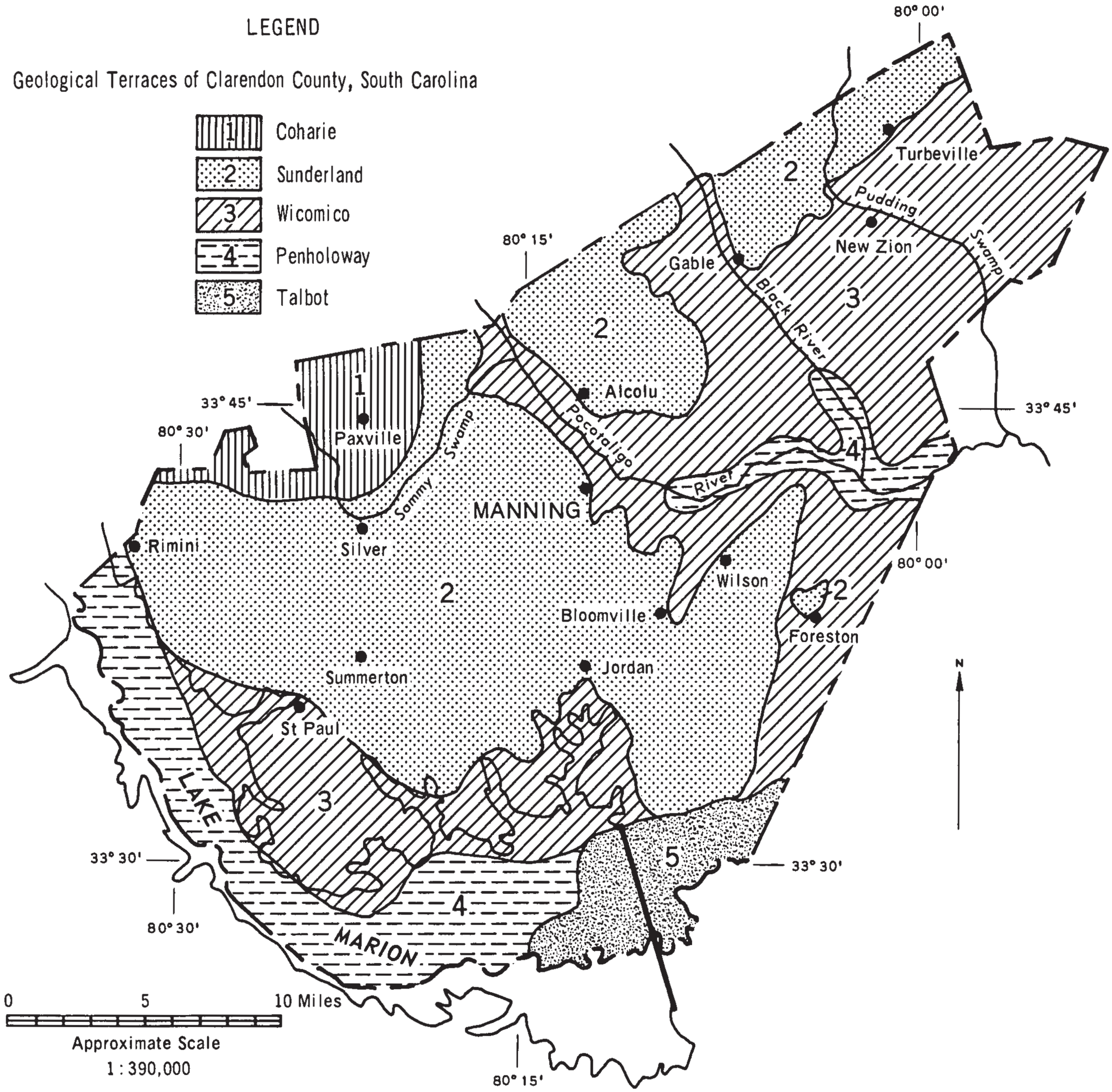


Figure 16.—**Geologic terraces of Clarendon County.**

landscapes are nearly level to gently sloping areas that are moderately dissected by streams and where the soils are mainly well drained and deep; broad, slightly dissected, nearly level areas between streams where most of the soils are yellow to gray, many are distinctly mottled, and all are deep and moderately well drained to poorly drained; and areas on stream bottoms and low terraces where the soils are young, are predominantly gray, and have poorly defined genetic layers.

Time

The length of time required for a soil to form depends largely on the intensity of other soil-forming factors. The soils of Clarendon County range from immature, or young, to mature. On the higher elevations of the uplands, most of the soils have well-formed horizons that are easily recognized. However, where the parent materials are very sandy, little horizonation has taken place, and where the relief is very low and the soils are permanently saturated, horizons are only moderately distinct. On the first bottoms of the streams, the soil material has not been in place long enough for soil horizons to form.

Morphology of the Soils

If a vertical cut is dug into a soil, several layers or horizons are evident. The differentiation of horizons is the result of many soil forming processes. These include the accumulation of organic matter, the leaching of soluble salts, reduction and translocation of iron, the formation of soil structure, physical weathering, such as freezing and thawing, and chemical weathering of primary minerals or rocks.

Some of these processes are continually taking place in all soils, but the number of active processes and the degree of their activity vary from one soil to another.

Most soils have three major horizons called A, B, and C (*7*). These major horizons may be further subdivided by the use of subscripts and letters to indicate changes within one horizon. An example would be the B2t horizon that represents a layer within the B horizon that has translocated clay illuviated from the A horizon.

The A horizon is the surface layer. The layer with the largest accumulation of organic matter is called an A1 horizon. If the soils are cleared and plowed, the surface layer becomes an Ap horizon. The Lynchburg and Rains soils are examples of soils that have a distinctive, dark-colored A1 or Ap horizon. The A horizon is also the layer of maximum leaching or eluviation of clay and iron. When considerable leaching has taken place, an A2 horizon is formed just below the surface layer. Normally, it is the lightest colored horizon in the soil. It is well expressed in such soils as Clarendon and Ocilla soils.

The B horizon is beneath the A horizon and is commonly called the subsoil. It is the horizon of maximum accumulation, or illuviation of clay, iron, aluminum, or other compounds, leached from the A horizon. Dothan, Marlboro, and Faceville soils are among the soils that have a well-expressed B horizon.

The C horizon is below the A or B horizons. Some soils, such as Scranton and Rutlege, have not formed a B horizon, and the C horizon is immediately below the A horizon. The C horizon consists of materials that are little altered by the soil-forming processes, but may be modified by weathering.

Well drained and moderately well drained soils in Clarendon County have a yellowish-brown or reddish B horizon. These colors are mainly due to thin coatings of iron oxides on the sand, silt, and clay particles. A soil is considered well drained if it is free of gray (a chroma of 2 or less) mottles to a depth of at least 30 inches. Among the well-drained soils in this county are Dothan, Orangeburg, and Fuquay soils. Moderately well drained soils are wet for short periods and are generally free of gray mottles to a depth of about 15 to 20 inches. Clarendon and Foreston soils are examples of moderately well drained soils.

The reduction and transfer of iron is associated with the wetter, more poorly drained soils. This process is called gleying. Poorly drained to very poorly drained soils, such as the Rains and Paxville soils, have a subsoil and underlying material that are grayish colored. These colors indicate that reduction and transfer of iron have taken place. Moderately well drained to somewhat poorly drained soils have yellowish-brown and gray mottles. These colors indicate that the segregation of iron has taken place. Lynchburg soils are among the somewhat poorly drained soils in this county.

Classification of the Soils

Soils are classified so that we can more easily remember their significant characteristics. Classification enables us to assemble knowledge about the soils, to see their relationship to one another and to the whole environment, and to develop principles that help us to understand their behavior and their response to manipulation. First through classification, and then through use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

The narrow categories of classification, such as those used in detailed soil surveys, allow us to organize and apply knowledge about soils in managing farms, fields, and woodlands; in developing rural areas; in engineering work; and in many other ways. Soils are placed in broad classes to facilitate study and comparison in large areas, such as countries and continents.

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965 and is called the Soil Taxonomy.[7] Because this system is under continual study, readers interested in developments of the current system should search the latest literature available.

The current system has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. In this system the criteria used as a basis for classification are soil properties that are observable and meas-

[7] Unpublished working document used in the Soil Conservation Service: "Soil Taxonomy of the National Cooperative Soil Survey." Copy available in the SCS State office.

urable. The properties are chosen, however, so that the soils of similar genesis, or mode of origin, are grouped. In table 10, the soil series of Clarendon County are placed in three categories of the current system. Classes of this system, current in July 1972, are briefly defined in the following paragraphs.

Order.—Ten soil orders are recognized. The properties used to differentiate among soil orders are those that tend to give broad climatic groupings of soils. The two exceptions to this are the Entisols and Histosols, which occur in many different climates. Each order is named with a word of three or four syllables ending in *sol.*

Suborder.—Each order is divided into suborders that are based primarily on those soil characteristics that seem to produce classes with the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of water-logging, or soil differences resulting from the climate or vegetation. The names of suborders have two syllables. The last syllable indicates the order.

Great group.—Soil suborders are separated into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The horizons used to make separations are those in which clay, iron, or humus have accumulated; those that have pans that interfere with growth of roots, movement of water, or both; and thick, dark-colored surface horizons. The features used are the self-mulching properties of clay, soil temperature, major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium), dark-red and dark-brown colors associated with basic rocks, and the like. The names of great groups have three or four syllables and are made by adding a prefix to the name of the suborder.

Subgroup.—Great groups are divided into subgroups, one representing the central (typic) segment of the group and others called intergrades that have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside of the range of any other great group, suborder, or order. The names of subgroups are derived by placing one or more adjectives before the name of the great group.

Family.—Soil families are separated within a subgroup primarily on the basis of properties important to the growth of plants or on the behavior of soils when used for engineering. Among the properties considered are texture, mineralogy, reactions, soil temperature, permeability, thickness of horizons, and consistence. A family name consists of a series of adjectives preceding the subgroup name. The adjectives are the class names for texture, mineralogy, and so on, that are used to differentiate families.

Series.—The series consists of a group of soils that formed in a particular kind of parent material and have genetic horizons that, except for texture of the

TABLE 10.—*Soil series classified according to current system of classification*

Series	Family	Subgroup	Order
Brogden	Coarse-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Cantey	Clayey, kaolinitic, thermic	Typic Albaquults	Ultisols.
Clarendon	Fine-loamy, siliceous, thermic	Plinthaquic Paleudults	Ultisols.
Dothan	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Faceville	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Foreston	Coarse-loamy, siliceous, thermic	Aquic Paleudults	Ultisols.
Fuquay	Loamy, siliceous, thermic	Arenic Plinthic Paleudults	Ultisols.
Grady	Clayey, kaolinitic, thermic	Typic Paleaquults	Ultisols.
Johnston	Coarse-loamy, siliceous, acid, thermic	Cumulic Humaquepts	Inceptisols.
Lakeland	Thermic, coated	Typic Quartzipsamments	Entisols.
Lynchburg	Fine-loamy, siliceous, thermic	Aeric Paleaquults	Ultisols.
Marlboro	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
McColl [1]	Clayey, kaolinitic, thermic	Typic Fragiaquults	Ultisols.
Ocilla	Loamy, siliceous, thermic	Aquic Arenic Paleudults	Ultisols.
Orangeburg	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Osier	Siliceous, thermic	Typic Psammaquents	Entisols.
Paxville	Fine-loamy, siliceous, thermic	Umbric Paleaquults	Ultisols.
Persanti	Clayey, kaolinitic, thermic	Aquic Paleudults	Ultisols.
Ponzer [1]	Loamy, mixed, dysic, thermic	Terric Medisaprists	Histosols.
Portsmouth	Fine-loamy, siliceous, thermic	Typic Umbraquults	Ultisols.
Rains	Fine-loamy, siliceous, thermic	Typic Paleaquults	Ultisols.
Red Bay	Fine-loamy, siliceous, thermic	Rhodic Paleudults	Ultisols.
Rimini	Sandy, siliceous, thermic	Entic Haplohumods	Spodosols.
Rutlege	Sandy, siliceous, thermic	Typic Humaquepts	Inceptisols.
Scranton	Siliceous, thermic	Mollic Psammaquents	Entisols.
Summerton	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Tawcaw	Fine, kaolinitic, thermic	Fluvaquentic Dystrochrepts	Inceptisols.
Troup	Loamy, siliceous, thermic	Grossarenic Paleudults	Ultisols.

[1] In this county, these soils are taxadjuncts to the series for which they are named:
In McColl soils the depth to a fragipan is slightly greater than is within the range defined for the series.
Ponzer soils have slightly less organic matter content than is within the range defined for the series.
These differences do not alter the usefulness and behavior of these soils.

surface layer, are similar to differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, thickness, structure, reaction, consistence, and mineralogical and chemical composition.

Additional Facts About the County

Hunters, trappers, and dealers in furs and skins were the first to be attracted to the area that is now Clarendon County. Those who came a little later collected or herded cattle and drove them to Charleston and other distant markets. As permanent settlers came, these earlier enterprises gave way to farming as the chief means of livelihood. The farming was restricted almost entirely to well-drained soils. The extensive wet soils were not considered of any value until later when the manufacture of such forest products as turpentine, lumber, shingles, and staves became important industries.

The system of farming that the first settlers developed prevailed for many years without many changes. Corn and wheat were the main crops, but hogs, cows, and sheep were raised for home use. Some indigo was grown and was a profitable crop until the bounty on it was removed during the Revolution. Corn was an export crop, but after the cotton gin was introduced in 1794, corn production declined until hardly enough was produced for local use.

After 1794 the growing of cotton became extensive, and about the time of the Civil War cotton was the only crop that farmers were growing. As a result the soils declined in productiveness until yields were very low, and the use of commercial fertilizer was begun on an extensive scale. About 1890 the price of cotton fell below the cost of production. This paved the way for diversification of crops. The growing of tobacco was begun and proved to be profitable. Today, tobacco is the main cash crop produced in the county.

Climate [8]

Clarendon County is in the central part of the inner Coastal Plain of South Carolina. The climate is mild and temperate, and rainfall is well distributed throughout the year. Lake Marion, the surface of which has a normal elevation of 77 feet above sea level, lies along the entire southwestern border of Clarendon County and it exerts a slightly moderating effect on the climate of the area adjacent to it. Winters are mild, and summers are rather hot. The day-to-day weather from the middle of autumn to the middle of spring is controlled largely by the west-to-east motion of fronts, cyclones, and air masses. Air mass exchanges are infrequent in the warmer half of the year, and maritime tropical air persists in the area for extended periods.

Table 11 shows temperature and precipitation data, and table 12 shows the probabilities of low temperatures in spring and fall.

[8] By HOLBROOK LANDERS, climatologist for South Carolina, National Weather Service, U.S. Department of Commerce.

In the rather hot and humid summers, an average of 82 days can be expected to have temperatures of 90° F or higher and 5 days to have recorded temperatures of 100°. Autumn begins warm and humid, but a change to warm, dry, pleasant, Indian summer weather takes place in October and continues into November. Winters are short and not too cold. Freezing temperatures can be expected on about 47 days and temperatures as low as 20° F on 5 days.

Rainfall is ample. It averages 45 to 49 inches a year, depending on the location. The annual rainfall has ranged from 34 inches in 1951 and 1954 to 72 inches in 1964. Rainfall of 4½ to 6½ inches a month can be expected during June through September, a wet period, but only 2½ to 3 inches a month can be expected during October through January, a relatively dry period. Precipitation measuring one-tenth of an inch or more falls on 70 to 80 days a year. Of these days, 10 can be expected in July, 10 in August, 4 in October, and 4 in November.

In spring about one-fifth of the annual precipitation is received. It is associated with fronts, cyclones, and air-mass thunderstorms. April and May are relatively dry, but March is wet and has typical winter rains. Thunderstorm activity that is typical of summer begins in late May. In summer, the wettest season, about one-third of the annual rainfall is received. It comes in the form of frequent showers and thunderstorms and is associated with the warm, moist, relatively unstable, maritime tropical air that is generally present. Infrequent tropical storms or hurricanes bring some rain. In autumn one-fourth of the annual rainfall is received. Summer showers still persist, and the frequency of tropical storms is a little higher than in summer. In winter about one fifth of the annual precipitation is received. It is associated with fronts and traveling cyclones. Snow has fallen during each of the months in the period December to March, but the average annual snowfall is less than one-half inch.

The average length of the freeze-free period is 227 days. The first freezing temperature in fall can be expected about November 5 and the last freezing temperature in spring about March 23.

At nearby Florence, the average relative humidity in winter is 51 percent at midday and 81 percent in early morning, in spring is 47 percent at midday and 80 percent in early morning, in summer is 56 percent at midday and 87 percent in early morning, and in autumn is 51 percent at midday and 87 percent in early morning.

The prevailing wind is from the northeast from late August to late January and from the southwest for the rest of the year. The average windspeed is between 7 and 10 miles an hour.

Severe weather can occur in the form of tornado activity and as tropical storms and hurricanes. Tornadoes are more frequent in spring than in any other season. Of the five tornadoes in the county in 59 years, one has occurred in each of the months of April, May, June, July, and September. The tornado frequency is only one in 12 years. The tropical storm season is mainly July through October. Hurricanes are rare in the county, but tropical storms that bring heavy rain

TABLE 11.—*Temperature and precipitation data*

Month	Temperature				Precipitation				
	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Average total	1 year in 10 will have—		Days with snow cover of 1.0 inch or more	Average depth of snow on days with snow cover
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—		
	°F	°F	°F	°F	*Inches*	*Inches*	*Inches*	*Number*	*Inches*
January	60	36	75	18	2.9	1.3	4.9	(1)	0.5
February	62	38	76	19	3.6	.9	6.2	(1)	.4
March	69	44	81	24	4.3	2.0	6.5	0	.1
April	77	52	87	37	3.5	.9	6.6	0	0
May	85	60	93	46	3.0	.8	6.2	0	0
June	91	68	96	56	4.5	1.3	7.0	0	0
July	91	71	97	62	6.0	3.6	10.2	0	0
August	91	70	95	59	6.8	3.0	10.5	0	0
September	86	65	92	45	5.2	2.0	9.7	0	0
October	78	53	87	31	2.6	.2	6.3	0	0
November	69	42	80	21	2.5	.8	5.0	0	0
December	60	35	74	16	3.2	1.2	5.2	0	0
Year	77	53	[2]98	[3]14	48.1	39.0	61.9	0.5	1.0

[1] Less than one-half day.
[2] Average annual highest temperature.
[3] Average annual lowest temperature.

TABLE 12.—*Probabilities of low temperature in spring and fall*

Probability	Dates for given probability and temperature		
	24° F or lower	28° F or lower	32° F or lower
Spring:			
1 year in 10 later than	March 18	March 29	April 15.
2 years in 10 later than	March 13	March 24	March 31.
5 years in 10 later than	February 21	March 9	March 23.
Fall:			
1 year in 10 earlier than	November 8	October 30	October 23.
2 years in 10 earlier than	November 21	November 4	October 26.
5 years in 10 earlier than	December 1	November 12	November 5.

and winds of as much as 40 miles per hour occur, on the average, once in 2 or 3 years. The last hurricane in the area was in September 1959, and its center moved inland near Beaufort, some 60 or 70 miles to the southwest.

Physiography, Drainage, and Geology

Clarendon County is made up of two broad, physiographic areas. They are the Southern Coastal Plain and the Atlantic Coast Flatwoods. The soils of both areas formed in sedimentary material that was transported from other areas by the ocean or streams and was deposited in its present position.

The western part of the county, west and south of Black River, is in the Southern Coastal Plain area. In this area the soils are predominantly nearly level to gently sloping, and the steeper areas are adjacent to the streams and drainageways. Drainage is generally good. However, there are many shallow, oval-shaped depressions that lack natural surface outlets, which are commonly called Carolina bays.

The eastern part of the county east and north of Black River is in the Atlantic Coast Flatwoods area. The soils in this area are predominantly nearly level and moderately well drained to poorly drained, but large, flat areas of somewhat poorly drained and poorly drained soils also occur. Broad areas of nearly level flood plains are along the major streams.

The elevation of Clarendon County ranges from a high of about 188 feet above sea level in the Paxville area to a low of about 38 feet above sea level in the flood plains of the Santee River near the Williamsburg County Line. In most of the county the elevation is between 75 and 175 feet above sea level.

Clarendon County is drained by three rivers. The Black River crosses the northeastern part of the county. The Pocotaligo River is approximately 10 miles southwest of the Black River, but it turns eastward and flows into the Black River near the Williamsburg

County line. The Santee River forms the western and southern boundaries of the county. Approximately 30 miles of the Santee River is flooded by Lake Marion. The main tributaries to these rivers are Pudding Swamp, Douglas Swamp, Horse Branch, Newman Branch, Tearcoat Branch, Swampy Swamp, Big Branch, Ox Swamp, Bear Creek, Deep Creek, Spring Grove Creek, Jack's Creek, Tawcaw Creek, Potato Creek, and Bennetts Branch. These rivers and their tributaries form a somewhat dendritic pattern and flow mainly toward the southeast.

In Clarendon County four of the five geologic formations are Black Creek Formation that is of Upper Cretaceous age and that underlies the area from Rimini to Jacks Creek, which is now flooded by Lake Marion; Black Mingo Formation that is of Lower Eocene age and underlies the area south of the Black River to St. Paul; Santee Limestone Formation that is of Middle Eocene age and underlies the area from Jack's Creek to Santee Dam and extends northward to St. Paul, which is an area now partly flooded by Lake Marion; and Duplin Marl Formation that is of Upper Miocene age and underlies the area north of Black River. The materials making up these formations were deposited at different periods when alternating transgression and recession of the sea were taking place (*2*).

The fifth formation covers the other four. It is a relatively thin Pleistocene deposit that makes up the material of five terraces in Clarendon County. These terraces are the Cohaire terrace at an elevation of about 170 to 215 feet above sea level; the Sunderland terrace at an elevation of about 100 to 170 feet; the Wicomico terrace at an elevation of about 70 to 100 feet; the Penholoway terrace at an elevation of 42 to 70 feet; and the Talbot terrace at an elevation of about 25 to 42 feet.

Recreation

Much of the recreation in this county is provided by Lake Marion (110,600 acres, of which 60,800 acres is in Clarendon County) and Lake Moultrie (60,400 acres). These lakes were created by the Santee-Cooper Authority, mainly for navigation and electrical power, but only limited navigation was ever done and only about 11 percent of the electric power sold in the State is produced here. Although now one of the main uses, recreation was fifth out of the seven priorities when construction of these lakes was approved. These lakes are ideal for swimming, boating (fig. 17), and skiing.

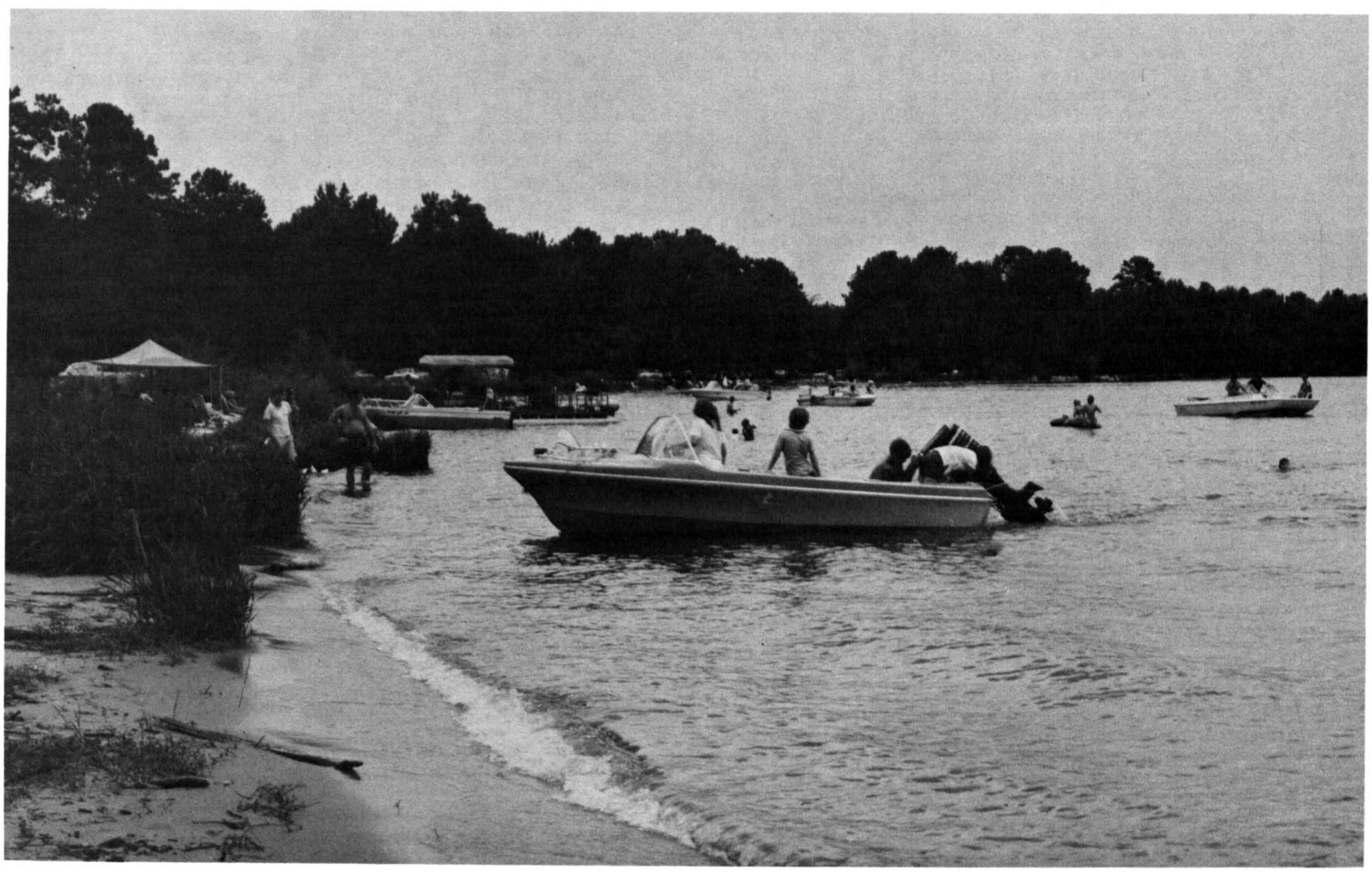


Figure 17.—**Recreation activities on Lake Marion. A natural pine forest on Lakeland sand, 0 to 6 percent slopes, is in the background.**

Thousands of summer homes and cottages surround the lakes, and there are 800 permanent campsites at various locations around the lakes.

These lakes are considered one of the top five fishing spots in America. They are the home of the world's only landlocked striped bass, also known as rockfish. The fishing for bass, crappie, and bream is also excellent. Several world-record catches have been caught here.

Santee-Cooper is now one of the top areas in the State for the hunting of wildfowl. Hunting preserves have been opened to provide land for the hunting of geese, ducks, doves, and quail. Santee-Cooper has made land available to the U.S. Fish and Wildlife Service for the attraction and wintering of waterfowl. Also, the north-south Atlantic flyway, one of the four major flyways in the United States, passes over this area.

Literature Cited

(1) American Association of State Highway Officials. 1970. Standard specifications for highway materials and methods of sampling and testing. Ed. 10, 2 vol., illus.

(2) Cooke, C. Wythe. 1936. Geology of the coastal plain of South Carolina. U.S. Dep. Inter., Geol. Surv. Bull. 867, 196 pp., illus.

(3) Goebel, N. B. and Warner, J. R. 1969. Volume yields of loblolly pine plantations for a variety of sites in the South Carolina Piedmont, S.C. Agric. Exp. Stn., Forest Res. Series 13, Revised, Clemson, S.C., 17 pp., illus.

(4) Putnam, John A., Furnival, George M., and McKnight, J. S. 1960. Management and inventory of southern hardwoods. U.S. Dep. Agric. Handb. 181, 102 pp., illus.

(5) United States Department of Agriculture. 1929. Volume, yield, and stand tables for second-growth southern pines. Forest Serv. Off. Forest Exp. Stn., Misc. Publ. 50. 202 pp. [Out of print.]

(6) ________. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. [Supplement issued in May 1962]

(7) ________. 1970. Soil survey interpretations for woodlands in the southern Coastal Plains and associated areas of Georgia, North Carolina, and South Carolina. Soil Conserv. Serv. Prog. Rep. W-16. Fort Worth, Tex., 25 pp.

(8) United States Department of Defense. 1968. Unified soil classification system for roads, airfields, embankments and foundations. MIL-STD-619B, 30 pp., illus.

Glossary

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Bisequal profile. See Sequum.

Carolina bay. A swampy depression in which water-tolerant plants grow.

Chroma. See Munsell notation.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation 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 caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and some soils commonly have mottling at a depth below 6 to 16 inches.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other growth factors such as light, moisture, temperature, and the physical condition of the soil are favorable.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic-matter content and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick: they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Hue. See Munsell notation.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is the movement of water through soil layers or material.

Leaching. The removal of soluble materials from soils or other material by percolating water.

Lime. Chemically, lime is calcium oxide (CaO), but its meaning has been extended to include all limestone-derived materials applied to neutralize acid soils. Agricultural lime can be obtained as ground limestone, hydrated lime, or burned lime, with or without magnesium in minerals. Basic slag, oyster-shells, and marl also contain calcium.

Loam. A soil not definitely sandy or clayey; one not strongly coherent, mellow, and well-supplied with organic matter. Technically, a soil which contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Mineral soil. Soil composed mainly of inorganic (mineral) material and low in content of organic material. Its bulk density is greater than that of organic soil.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Muck. An organic soil consisting of fairly well decomposed organic material that is relatively high in mineral content, finely divided, and dark in color.

Munsell notation. A system for designating color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil and carbon, hydrogen, and oxygen obtained largely from the air and water, are plant nutrients.

Organic hardpan. A hardened soil layer, in the lower part of the A horizon or in the B horizon, caused by cementation of the soil particles with illuvial organic matter.

Organic matter. A general term for plant and animal material, in or on the soil, in all stages of decomposition. Readily decomposed organic matter is often distinguished from the more stable forms that are past the stage of rapid decomposition.

Organic soil. A general term applied to a soil or to a soil horizon that consists primarily of organic matter, such as peat soils, muck soils, and peaty soil layers. In chemistry, organic refers to the compounds of carbon.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Percolation. The downward movement of water through the soil.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly shows as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to hardpan or to irregular aggregates upon repeated wetting and drying, or it is the hardened relicts of the soft, red mottles. It is a form of laterite.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Runoff (hydraulics). The part of the precipitation upon a drainage area that is discharged from the area in stream channels. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. If two sequa are present in a single soil profile it is said to have a bisequum.

Series, soil. A group of soils developed from a particular type of parent material and having genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the profile.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or *subangular*), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Value. See Munsell notation.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks at or near the earth's surface by atmospheric agents. These changes result in more or less complete disintegration and decomposition of the rock.

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and the description of the soil series to which it belongs. In referring to a capability unit, read the introduction to the section it is in for general information about its management. Suggestions for management are also given in the description of each mapping unit. Other information is given in tables as follows:

Acreage and extent, table 1, page 8.
Estimated yields, table 2, page 37.
Suitability for crops, table 3, page 38.
Woodland, table 4, page 40.
Wildlife, table 5, page 42.
Engineering uses of the soils, table 6, page 44; 7 and 8, pages 46 through 53.
Town and country planning, table 9, page 54.

Map symbol	Mapping unit	Page	Capability unit Symbol	Woodland suitability group Number
BrA	Brogdon loamy sand, 0 to 2 percent slopes	9	IIs-3	2o1
Ca	Cantey loam	10	IVw-2 Drained	2w9
			Vw-1 Undrained	2w9
Cd	Clarendon loamy sand	10	IIw-2	2w8
DoA	Dothan loamy fine sand, 0 to 2 percent slopes	11	IIs-2	2o1
DoB	Dothan loamy fine sand, 2 to 6 percent slopes	11	IIe-5	2o1
FaA	Faceville loamy sand, 0 to 2 percent slopes	13	I-2	3o1
FaB	Faceville loamy sand, 2 to 6 percent slopes	13	IIe-2	3o1
Fo	Foreston fine sand	14	IIw-2	2w2
FuB	Fuquay fine sand, 0 to 6 percent slopes	14	IIs-2	3s2
FuC	Fuquay fine sand, 6 to 10 percent slopes	15	IIIe-5	3s2
Gr	Grady loam	16	IVw-2 Drained	2w9
			Vw-1 Undrained	2w9
JS	Johnston soils	16	VIIw-1	1w9
LaB	Lakeland sand, 0 to 6 percent slopes	17	IVs-1	4s2
Ly	Lynchburg loamy sand	18	IIw-2	2w8
MaA	Marlboro loamy sand, 0 to 2 percent slopes	19	I-2	3o1
MaB	Marlboro loamy sand, 2 to 6 percent slopes	19	IIe-2	3o1
Mc	McColl loam	20	IIIw-2 Drained	2w9
			Vw-1 Undrained	2w9
Oc	Ocilla loamy sand	21	IIIw-1	3w2
OrA	Orangeburg loamy sand, 0 to 2 percent slopes	22	I-1	2o1
OrB	Orangeburg loamy sand, 2 to 6 percent slopes	22	IIe-1	2o1
Os	Osier loamy fine sand	22	Vw-2	3w3
Pa	Paxville loam	23	IIIw-4 Drained	1w9
			Vw-1 Undrained	1w9
PeA	Persanti very fine sandy loam, 0 to 2 percent slopes	24	IIw-5	2w8
Po	Ponzer mucky loam	24	VIIw-1	4w3
PT	Portsmouth-Johnston association	25	VIIw-1	1w9
Ra	Rains sandy loam	26	IIIw-4 Drained	2w9
			Vw-1 Undrained	2w9
RbA	Red Bay sandy loam, 0 to 2 percent slopes	28	I-1	2o1
RbB	Red Bay sandy loam, 2 to 6 percent slopes	28	IIe-1	2o1
Rm	Rimini fine sand	28	VIs-1	5s3
Ru	Rutlege loamy fine sand	29	Vw-2	2w3
Sc	Scranton fine sand	29	IIIw-1	3w2
SuA	Summerton fine sandy loam, 0 to 2 percent slopes	30	I-2	3o1
SuB	Summerton fine sandy loam, 2 to 6 percent slopes	30	IIe-2	3o1
TA	Tawcaw soils	31	VIIw-3	1w8
TrB	Troup sand, 0 to 6 percent slopes	31	IIIs-1	3s2
TrC	Troup sand, 6 to 10 percent slopes	32	IVs-4	3s2

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