Series 1947, No. 9 Issued December 1958

SOIL SURVEY

Quitman County Mississippi

OUR SOIL ★ OUR STRENGTH

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

HOW TO USE THE SOIL SURVEY REPORT

THIS SURVEY of Quitman County will help you plan the kind of farming that will protect your soils and provide good yields. It describes the soils; shows their location on the map; and tells what they will do under different kinds of management.

Find Your Farm on the Map

In using this survey, you start with the soil map, which consists of the 38 sheets bound in the back of this report. These sheets, if laid together, make a large photographic map of the county. You can see woods, fields, roads, rivers, and many other landmarks on this map.

To find your farm on the large map, you use the index to map sheets. This is a small map of the county on which numbered rectangles have been drawn to show where each sheet of the large map is located.

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

Suppose you have found on your farm an area marked with the symbol Dg. You learn the name of the soil this symbol represents by looking at the map legend. The symbol Dg identifies Dundee fine sandy loam, nearly level phase.

Learn About the Soils on Your Farm

Dundee fine sandy loam, nearly level phase, and all the other soils mapped are described in the section Soil Descriptions. Soil scientists walked over the fields and through the woodlands. They described and mapped the soils. In doing this they dug holes and examined surface soils and subsoils; measured slopes with a hand level; noted differences in growth of crops, weeds, brush, or trees; and, in fact, recorded all the things about the soils that they believed might affect their suitability for farming.

With help from farmers and many other people, the scientist placed each soil in a capability unit, which is a group of similar soils. Capability units can also be called management groups of soils. Capability units are grouped into capability classes and subclasses.

Dundee fine sandy loam, nearly level phase, is in capability unit 1 (I–1). Turn to the section Capability Units, and read what is said about soils of capability unit 1 (I–1). You will want to study the table which tells you how much you can expect to harvest from the soils in capability unit 1 (I–1), as well as from the soils in all other capability units, under two levels of management. In columns A are yields to be expected under common management, and in columns B are yields to be expected under good management.

Make a Farm Plan

For the soils on your farm, compare your yields and farm practices with those given in this report. Look at your fields for signs of runoff and erosion. Then decide whether you need to change your methods. The choice, of course, must be yours. This survey will aid you in planning new methods, but it is not a plan of management for your farm or any other farm in the county.

If you find that you need help in farm planning, consult the local representative of the Soil Conservation Service or the county agricultural agent. Members of the staff of your State agricultural experiment station and others familiar with farming in your county will also be glad to help you. The fieldwork for this survey was completed in 1947. Unless noted otherwise, all statements refer to conditions at the time of the survey.

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Contents

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SOIL SURVEY OF QUITMAN COUNTY, MISSISSIPPI

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

General Nature of the Area

Since the establishment of Quitman County, agriculture has been the principal occupation of its people and soils their basic wealth. The county's agriculture has developed from typical pioneer farming to its present almost specialized and mechanized status. From the time of the first settlers, cotton has been the leading crop.

The Board of Supervisors in Quitman County recognized the need for additional information on soils. The people of the county approved a special tax appropriation to help pay for a soil survey. This cooperative soil survey was begun in 1942 and completed in 1947. The soils of the county have been classified into phases, types, series, undifferentiated units, and miscellaneous land types. This soil survey report contains a description of each kind of soil and information on how each soil responds when it is used for farming.

Farmers of the county in 1947 organized the Quitman County Soil Conservation District. The district, through its board of commissioners, arranges for farmers to receive technical help from the Soil Conservation Service in planning good use and conservation of the soils on their farms. The soil survey furnishes some of the facts needed for this technical help. The soil survey map and report are also useful to land appraisers, credit agencies, road engineers, and many others who are concerned with properties or uses of soils.

Location and Extent

Quitman County is in the northwestern part of Mississippi (fig. 1). It is bounded on the north by Tunica County, on the east by Panola and Tallahatchie Counties, on the south by Tallahatchie County, and on the west by Coahoma County. The county is irregular in shape and has a maximum length of about 30 miles and a maximum width of about 18 miles. The total land area is 412 square miles or 263,680 acres. Marks is the county seat and principal town.

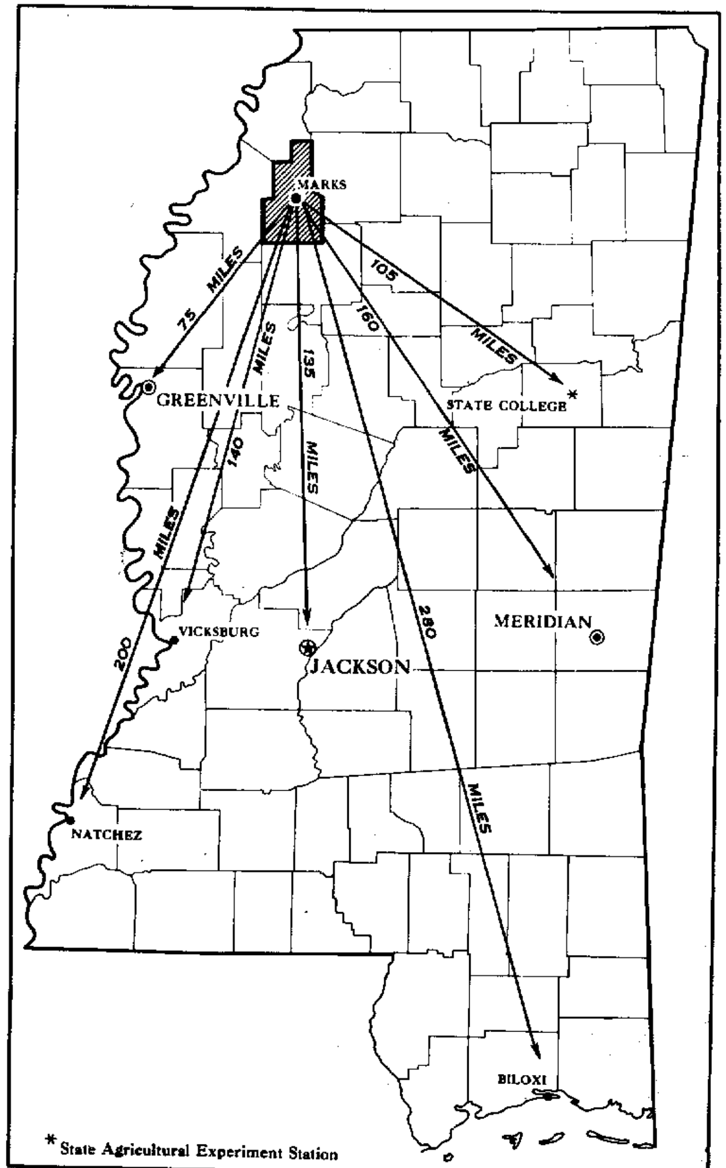

Figure 1.—**Location of Quitman County in Mississippi.**

Climate

The climate of Quitman County is characterized by fairly mild winters, sultry summers, and pleasant spring and fall seasons. The days and nights are usually warm,

[1] Fieldwork was done while Soil Survey was part of the former Bureau of Plant Industry, Soils, and Agricultural Engineering. Soil Survey was transferred to the Soil Conservation Service on November 15, 1952.

humid, and uncomfortable late in spring, in summer, and early in fall. Occasional thundershowers during the summer bring temporary relief from the heat.

Based on Weather Bureau records at Clarksdale, the average frost-free season is approximately 217 days, or from March 28 to November 1. The latest frost in spring was on April 24, and the earliest in fall was on October 13. A variety of legumes and small grains can withstand the winter without much damage from freezing.

The average annual precipitation is about 49 inches (table 1). The heaviest rainfall comes during the winter and spring months, from December through May. In some years farm operations in the spring are hindered because of wet soils. Dry periods are common during the middle and the latter part of the growing season. Yields of corn, soybeans, and hay are low in some years because of dry weather.

TABLE 1.—*Temperature and precipitation at Clarksdale Station, Coahoma County, Miss.*

[Elevation, 177 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1954)	Wettest year (1923)	Average snowfall
	° F.	° F.	° F.	Inches	Inches	Inches	Inches
December	45.8	80	3	5.16	3.24	7.63	0.5
January	44.2	79	−8	4.64	5.61	5.00	1.0
February	47.4	84	1	4.18	1.98	5.16	.7
Winter	45.8	84	−8	13.98	10.83	17.79	2.2
March	55.5	89	17	5.56	1.32	7.09	.5
April	63.6	94	29	4.74	4.59	8.83	(3)
May	71.3	98	34	4.89	4.80	10.03	0
Spring	63.4	98	17	15.19	10.71	25.95	.5
June	79.5	103	48	3.77	2.13	5.38	0
July	81.9	108	53	3.24	2.04	3.79	0
August	81.3	106	52	3.36	.30	3.69	0
Summer	80.9	108	48	10.37	4.47	12.86	0
September	76.1	107	36	2.62	.47	.88	0
October	64.6	96	26	2.87	1.57	4.82	0
November	53.3	87	15	4.01	1.99	3.42	.3
Fall	64.6	107	15	9.50	4.03	9.12	.3
Year	63.7	108	−8	49.04	30.04	65.72	3.0

[1] Average temperature based on a 49-year record, through 1955; highest and lowest temperatures on a 26-year record, through 1930.
[2] Average precipitation based on a 51-year record, through 1955; wettest and driest years based on a 46-year record, in the period 1893–1955; snowfall, based on a 26-year record, through 1930.
[3] Trace.

Severe storms, violent winds, hail, and ice do not occur frequently, but occasionally they may damage trees and overhead wires.

Vegetation

Quitman County originally was entirely covered with forest. The native vegetation consisted predominantly of broadleaf deciduous trees. Cypress was the only native conifer. An undergrowth of canebrakes and vines grew where enough light penetrated the forest cover. In general, differences in native vegetation were associated with differences in drainage, but none of the differences in the soils can be attributed solely to differences in the natural vegetation.

About a third of the county is still in forest. However, unmanaged cutting, fire, and other destructive influences have created a forest that has a high proportion of low-grade and cull trees. Many of the open cutover and fire-razed areas have become a seemingly hopeless snarl or jungle of weeds, vines, and brush. Much of the forest acreage is frequently overflowed.

The following distinct types of bottom-land hardwoods are recognized in the county today (*5*):[2]

1. Sweetgum-water oaks. This type consists of several similar species and occupies the slack-water flats and level and nearly level old natural levees.
2. White oaks-red oaks-other hardwoods. This is a very mixed and variable type, but it can be identified because white and red oaks are in mixed stands with such species as Delta post oak, hickory, and white ash. This type of forest usually occupies the coarser textured soils of the old natural levees.
3. Hackberry-elm-ash. This type includes some bitter pecan, water oaks, and similar species. It usually grows on low ridges and flats, especially following heavy cutting and burning.
4. Overcup oak-bitter pecan. This type includes willow oak, hackberry, waterlocust, persimmon, soft elm, green ash, and similar species. It usually occupies the low, poorly drained slack-water areas; lowest backwater basins; sloughs; and low fine-textured areas on ridges.
5. Willow. This type includes some green ash, waterlocust, cypress, hackberry, and similar species and usually occupies shallow and deep depressions and swamps.
6. Cypress-tupelo-gum. This type includes some willow, swamp blackgum waterlocust, soft elm, bitter pecan, and similar species. It usually occupies the very low slack-water flats, deep sloughs, and swamps (areas that are covered by water all of the year).

Physiography, Relief, and Drainage

Quitman County is entirely within the flood plain of the Mississippi and the Yazoo Rivers. It can be divided into two areas according to source of sediments and physiographic position. One area consists of soils that were derived from sediments deposited by the Mississippi River. The other area consists of soils from sediments deposited by tributaries of the Mississippi River (the Coldwater, the Tallahatchie, and the Yocona Rivers).

In general, the area of soils derived from Mississippi River sediments occupies the highest altitudes in the county and is seldom inundated. It comprises the major part of the county. It is characterized by numerous depressions and bayous, nearly level to sloping old natural levee ridges, and broad, nearly level and level slack-water areas.

The area of soils derived from the tributary sediments occupies the southeastern part of the county and a few

[2] Italic numbers in parentheses refer to Literature Cited, p. 36.

scattered small areas in the central, eastern, and northeastern parts. It is characterized by gently sloping to flat relief and numerous intermittent drains.

The general altitude [3] of the entire county is about 155 feet above the mean gulf level, but the range in altitude is from 192 feet in the extreme northeastern corner of the county to 140 feet in the southeastern part. The altitude at Sledge in the northern part is 168 feet; at Marks in the central part, 162 feet; at Lambert in the south-central part, 157 feet; and at Vance near the southern boundary, 153 feet.

The Mississippi River is some 25 miles west of Quitman County, but the many oxbow lakes and meander scrolls in the county are evidence of its presence at one time. Because the width of the belt of meanders made by a mature stream is roughly eighteen times the mean width of the stream, these old Mississippi River meanders can easily be traced throughout the county.

Near the southeastern part of the county the Coldwater, the Tallahatchie, and the Yocona Rivers converge and continue southward out of the county as the Tallachatchie River, which forms the headwaters of the Yazoo River. All of the surface runoff water from Quitman County drains into the Tallahatchie River after traveling through depressions, bayous, creeks, and rivers that make up the natural drainage system of the county. In many places landlocked depressions and swamps have to be drained artificially to prevent backwater flooding of large areas.

The main natural drainageway is the Coldwater River, which flows from north to south through the center of the county. Cassidy, Opossum, Bobo, and Burrell Bayous are other important natural drainageways. The Panola-Quitman Overflow Channel now diverts all the headwater of the Tallahatchie River and Yocona River through Panola County. In this way large areas of land in the southeastern part of the county are protected from overflow during floods. Some large areas of land in the central and southeastern parts of the county, however, are flooded annually.

Soils of Quitman County

Parent materials, conditioned by relief and drainage, account for more of the differences in Quitman County soils than temperature, rainfall, and vegetation. As a result of this dominating influence of parent materials, the soils have a wide range in characteristics. They range from very strongly to slightly acid in reaction, from low to very high in exchangeable bases, and from low to relatively high in organic matter. The surface soils or plow layers of Quitman County soils range from loose to very firm in consistence and from loamy sand to clay in texture. The subsoils range in color from mottled light gray and dark gray to mottle-free brown, yellowish brown, and dark brown; in texture they range from loamy sand to clay; and in natural drainage they range from very poor to excessive. The third layer, which is just below the subsoil and usually considered a part of the subsoil transitional to the parent material, has the same range in characteristics as the surface soil and subsoil.

[3] Altitude data taken from quadrangle maps prepared by the Mississippi River Commission and the Corps of Engineers, U. S. Army, Vicksburg District.

Approximately 60 percent of the soils of the county are high in natural fertility, compared with the soils of the United States as a whole. Forty percent of this naturally fertile group, however, have physical characteristics that tend to limit production of several locally grown crops.

The soil parent materials from the Mississippi River vary widely. Along the natural levee formations where the flooding was fast, the parent materials are composed of silty clay loams, sandy clay loams, silt loams, very fine sandy loams, fine sandy loams, and loamy sands. In the large slack-water areas and depressions of the Mississippi River flood plain where the floodwater stood, the parent materials are composed of clays and silty clays. The soil parent materials derived from the tributaries of the Mississippi are fairly uniform in texture. They are either silt loams or silty clay loams. They have a very high silt content because all of the tributaries flow through the nearby Loess Hills.

The silty clay and clay soils are tough and plastic and have massive to well-defined blocky structure. The rest of the soils are more friable and have structure ranging from weak subangular blocky to single grain. Under some of the silty soils, alkaline layers (pH 7.5–8.0) have been found at a depth of 40 inches or more. Very few of the soils of the county have had harmful erosion.

The method of classifying soils on the basis of their characteristics is explained in the section, Soil Survey Methods and Definitions. By these methods the soils of Quitman County have been classified into series, types, and phases. Mapping units shown on the soil map are types, phases, complexes, undifferentiated groups, and miscellaneous land types.

A convenient approach to an understanding of the soils is to think about the soil series in relation to the source of parent sediments and the position normally occupied on the broad landscape. Accordingly, the soil series of Quitman County have been placed in the following four groups.

Soils of the recent natural levees (first bottoms).—These soils are adjacent to active streams. They were derived from silty sediments that were washed from the nearby Loess Hills and deposited by the swiftly moving waters of the Coldwater, Tallahatchie, and Yocona Rivers. Their surface soils are predominantly silt loam, but some are silty clay loam. Because they are subject to frequent overflow, these soils have little or no profile development.

Soils of the recent natural levees are classified into two series: Collins and Falaya. Their aggregate acreage is less than 2 percent of the total area of the county.

Soils of the depressions.—These soils occur in meandering depressions throughout the county and are a part of the natural drainage pattern. Water accumulates on them from the adjacent higher land after a heavy rain. The soils of the depressions were formed under excessive moisture and, even now, are inundated a large part of the time. They are often advantageously used as locations for secondary and primary drainageways.

Parent materials of the soils of the depressions include (1) Mississippi River alluvium, (2) sediments washed from adjacent higher soils, and (3) tributary stream alluvium washed from nearby Loess Hills. These soils have little or no profile development and range in surface textures from clay and silty clay to silt loam and silty clay loam. They range from moderately well drained to very poorly drained.

The soils of the depressions are of the Ark, Souva, Waverly, and Dowling series. Their aggregate acreage is about 17 percent of the county's total area.

Soils of the slack-water areas.—These soils are in the low broad flats. They receive water that has backed out of or overflowed from the associated depressions and larger drainageways. As the floodwaters come to a halt for long periods in the slack-water areas, fine-textured sediments are dropped. These clayey sediments form soils in these poorly drained areas. Some of these areas are still subject to local flooding.

The soils of the slack-water areas range from somewhat poorly drained to poorly drained. The somewhat poorly drained soils are the most productive. Those that are poorly drained are limited in production of some crops. In surface soil texture, the soils of the slack-water areas are clays, silty clays, sandy clays, and silt loams.

The soil series in the slack-water areas are the Alligator, Crowder, Sharkey, and Tunica. They occupy more than 38 percent of the county's total area.

Soils on the old natural levee formations.—All of these soils were deposited by relatively swiftly moving water and are along channels of both active and inactive streams. They are above the normal overflow level and have become partially leached. They have various degrees of profile development.

The soils on the old natural levee formations of the Mississippi River range from poorly and somewhat poorly drained soils with silty clay loam and silt loam surface layers to excessively drained soils with sandy loam and loamy sand surface layers. The second layer of the soils of this subgroup is the finest textured in the profile and ranges from near clays to loamy sands. These old natural levee soils occupy about 32 percent of the total area in Quitman County. Six soil series are in this subgroup: Forestdale, Dundee, Dubbs, Bosket, Beulah, and Clack. Together the Forestdale and Dundee series make up about 96 percent of the subgroup.

The soils on the old natural levee formations of the tributary streams (Coldwater, Tallahatchie, and Yocona Rivers) range from poorly and somewhat poorly drained soils with silt loam and silty clay loam surface soil textures to somewhat poorly and moderately well drained soils with silty clay loam to very fine sandy loam surface soil textures. The second layer of the soils of this subgroup is usually slightly finer textured than the other layers and may be a silt loam or silty clay loam. The soils formed from tributary sediments are usually lower in natural fertility than soils formed from Mississippi River sediments and may require a complete fertilizer for maximum production. The soils of the old natural levee formations of the tributary streams are of the Brittain and Pearson series. They occupy about 7 percent of the total area of Quitman County.

Soil Descriptions

A brief discussion of the soil series and mapping units follows. Easy and quick comparisons may be made of the outstanding characteristics for any of the soil series by turning to the supplement at the back of this report. Table 2 gives estimated acreage and proportionate extent of the soils mapped.

Alligator series

The Alligator series consists of grayish-brown to dark-gray, very plastic, poorly drained, clayey soils that have highly mottled clay subsurface layers. These soils were derived from thick beds of clayey alluvium deposited by the Mississippi River. They occur in slack-water areas that are well distributed throughout the county and are usually called gumbo or buckshot land. These slowly permeable, slightly to very strongly acid soils are associated with the Sharkey, Dowling, Crowder, and Forestdale soils. They have lighter colored subsurface layers than the Sharkey soils. They differ from the Dowling soils in not occupying depression areas, in having a lighter colored upper profile, and usually in being more acid in reaction. From the Crowder soils they differ in having little or no sand in their profile. The Alligator soils are usually at lower altitudes, are finer textured throughout the profile, and have less horizon differentiation than the Forestdale soils. The Alligator series is in the Alligator-Sharkey-Dowling soil association.

Alligator clay, level phase (less than ½ percent slopes) (Aa).—This soil is extensive throughout the county.

Modal profile from cultivated field (moist):

0 to 3 inches, dark-gray (10YR 4/1)[4] granular clay; very plastic, very firm, very hard; strongly acid; ranges in thickness from 2 to 4 inches, and in color from dark gray to gray and grayish brown.

3 to 30 inches, gray (10YR 5/1) clay highly mottled with yellowish brown and brown; very plastic, very firm, very hard to extremely hard; massive when wet, moderate to weak coarse subangular blocky structure when dry; strongly acid; ranges in thickness from 21 to 28 inches, in color from gray to light gray, and in mottlings from yellowish red to yellowish brown.

30 to 40 inches +, gray (10YR 5/1) clay mottled with yellowish brown; very plastic, very firm, very hard to extremely hard; massive when wet, weak subangular blocky structure when dry; medium acid; ranges in color from gray to light gray and in mottling from yellowish red to yellowish brown.

Location: SW¼SE¼ sec. 2, T. 9 S., R. 10 W.

This soil develops deep, wide cracks during long dry seasons. Farming practices on this poorly drained clayey soil are influenced by the weather. Usually moisture conditions are right for tillage for only a short period. The soil varies from too plastic and sticky when wet to too hard when dry. Where this soil occurs in ridge and depression areas or in areas adjacent to small bayous rather than in large uniform areas with slightly less than one-half percent slope, its capabilities for growing most row crops are much higher.

The organic-matter content is fairly high when this soil is first cleared, although it disappears rather rapidly. This soil requires drainage and additions of nitrogen in order to produce maximum yields of most local crops. Addition of organic matter is beneficial when feasible. Any of the local crops can be grown; but probably rice, pasture crops, hay crops, and soybeans are the most suitable. This soil is in capability unit 13 (IIIw–11).

Alligator clay, gently sloping phase (2 to 5 percent slopes) (Ab).—This soil differs from Alligator clay, level phase, mainly in having much stronger and more variable relief. Some small areas are moderately eroded because of the faster surface runoff caused by the stronger

[4] Symbols in parenthesis are Munsell coordinates (hue, value, and chroma) of the colors observed.

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

Soil	Acres	Percent
Alligator clay:		
Level phase	16, 252	6. 2
Gently sloping phase	1, 625	. 6
Alligator silty clay:		
Nearly level phase	21, 940	8. 3
Gently sloping phase	813	. 3
Alligator and Dowling clays	23, 378	9. 0
Alligator and Sharkey clays:		
Nearly level phases	14, 632	5. 6
Gently sloping phases	1, 620	. 6
Ark silt loam	320	. 1
Beulah sandy loam:		
Nearly level phase	128	([1])
Gently sloping phase	382	. 1
Bosket sandy loam:		
Nearly level phase	1, 224	. 5
Gently sloping phase	816	. 3
Brittain silt loam:		
Nearly level phase	4, 575	1. 7
Gently sloping phase	220	. 1
Brittain silty clay loam:		
Nearly level phase	5, 630	2. 1
Gently sloping phase	231	. 1
Brittain soils-Waverly soils, local alluvium phases	7, 604	3. 0
Clack sandy loam, nearly level phase	60	([1])
Clack loamy sand, nearly level phase	30	([1])
Clay and sand banks:		
Sloping	192	. 1
Strongly sloping	128	([1])
Collins silt loam	2, 822	1. 1
Collins silty clay loam	58	([1])
Collins-Falaya silt loams:		
Nearly level phases	4, 325	1. 6
Gently sloping phases	125	([1])
Collins soils and Waverly soils, local alluvium phases	550	. 2
Crowder sandy clay	2, 560	1. 0
Dowling clay and silty clay	36, 860	14. 0
Dubbs fine sandy loam:		
Nearly level phase	1, 955	. 7
Gently sloping phase	105	([1])
Dubbs silt loam:		
Nearly level phase	978	. 4
Gently sloping phase	52	([1])
Dundee silt loam:		
Nearly level phase	8, 576	3. 3
Gently sloping phase	317	. 1
Dundee fine sandy loam:		
Nearly level phase	11, 095	4. 2
Gently sloping phase	634	. 2
Dundee silty clay loam:		
Nearly level phase	9, 827	3. 7
Gently sloping phase	951	. 4
Falaya silt loam	1, 016	. 4
Falaya silty clay loam	904	. 3
Forestdale silt loam:		
Nearly level phase	17, 495	6. 6
Gently sloping phase	921	. 3
Forestdale silty clay loam:		
Nearly level phase	25, 743	10. 0
Gently sloping phase	1, 881	. 7
Pearson silt loam:		
Nearly level phase	689	. 3
Gently sloping phase	31	([1])
Pearson silty clay loam:		
Nearly level phase	547	. 2
Gently sloping phase	29	([1])
Pearson very fine sandy loam:		
Nearly level phase	130	([1])
Gently sloping phase	14	([1])
Sand banks, strongly sloping	640	. 2
Sharkey silty clay:		
Nearly level phase	13, 720	5. 2
Gently sloping phase	430	. 2
Sharkey silt loam, nearly level overwash phase	190	. 1
Souva silt loam:		
Nearly level phase	768	. 3
Gently sloping phase	192	. 1
Tunica silty clay:		
Nearly level phase	2, 957	1. 1
Gently sloping phase	563	. 2
Tunica and Dundee soils:		
Nearly level phases	225	. 1
Gently sloping phases	75	([1])
Waverly soils, depressional phases	2, 160	. 8
Miscellaneous:		
Swamps	5, 120	2. 0
Other (Pits, made land, intermittent streams and lakes, ditches, water, etc.)	3, 650	1. 3
Total	263, 680	100. 0

[1] Less than 0.1 percent.

slope. Erosion control such as contour tillage, rotation of row crops with close-growing crops, or seeding of permanent cover should be practiced. This soil has a small total acreage. It is in capability unit 15 (IIIs–4).

Alligator silty clay, nearly level phase (less than 2 percent slopes) (Ac).—This soil differs from Alligator clay, level phase, mainly in having slightly stronger relief and more silt and less clay in the surface layer. Because of the difference in slope, this soil requires less surface drainage. Suitable crops and required management are similar for both soils. The moderately large aggregate acreage of this soil is well distributed throughout the county. It is in capability unit 15 (IIIs–4).

Alligator silty clay, gently sloping phase (2 to 5 percent slopes) (Ad).—This soil is in narrow bands and has stronger and more variable relief than Alligator silty clay, nearly level phase. Some small areas are moderately eroded because of the increased surface runoff caused by the stronger relief. Contour tillage, rotation of row crops with close-growing crops, seeding to permanent cover crops, or other erosion control practices should be applied. This soil is in capability unit 15 (IIIs–4).

Alligator and Dowling clays

Alligator and Dowling clays (0 to 2 percent slopes) (Ae).—This undifferentiated soil group consists of large areas of poorly drained Alligator clay soils in slack-water flats, which are cut by a network of low swags that contain poorly and very poorly drained Dowling clay soils. All of the soils are in forests, and accurate separations are impractical. Usually, the Alligator clay soils comprise 75 to 90 percent of these undifferentiated areas, and the Dowling clay soils comprise 10 to 25 percent. Small areas of Sharkey clay, Alligator silty clay, Forestdale silty clay (not mapped in the county), and Forestdale silty clay loam soils are included in some of these delineations. This is one of the larger mapping units in aggregate acreage in the county. Most areas have slopes of less than 1 percent. This undifferentiated soil group is in the Alligator-Sharkey-Dowling soil association.

Unless artificial drainage is provided, these soils are best suited to timber production and to wildlife. They are in capability unit 13 (IIIw-11).

Alligator and Sharkey clays

Alligator and Sharkey clays, nearly level phases (less than 2 percent slopes) (Ag).—This undifferentiated soil group consists of poorly drained clayey soils in slack-water flats. Most areas have slopes of less than 1 percent. In parts of the county, these soils occur in such close association that separation is not practical. Generally, the Alligator clay soils comprise 60 to 90 percent of the mapping unit, and Sharkey clay soils comprise 10 to 40 percent. Small areas of Alligator and Sharkey silty clays are included in some delineations. This undifferentiated soil group has one of the larger aggregate acreages in the county. It is in the Alligator-Sharkey-Dowling soil association.

These soils develop deep, wide cracks during long dry seasons. They require drainage and additions of nitrogen in order to produce maximum yields of most locally grown crops. Probably rice, pastures, hay crops, soybeans, and oats (when the surface drainage is adequate) are some of the better suited crops. These undifferentiated soils are in capability unit 15 (IIIs-4).

Alligator and Sharkey clays, gently sloping phases (2 to 5 percent slopes) (Ah).—This undifferentiated soil group differs from Alligator and Sharkey clays, nearly level phases, mainly in occupying stronger and more variable slopes. As a result, surface runoff is faster and some small areas have moderate erosion. The soils occupy a relatively small aggregate acreage and are in the Alligator-Sharkey-Dowling soil association.

Contour tillage, rotation of row crops with close-growing crops (fig. 2), seeding of a permanent cover crop, or other erosion-control practices should be applied. This undifferentiated soil group is in capability unit 15 (IIIs-4).

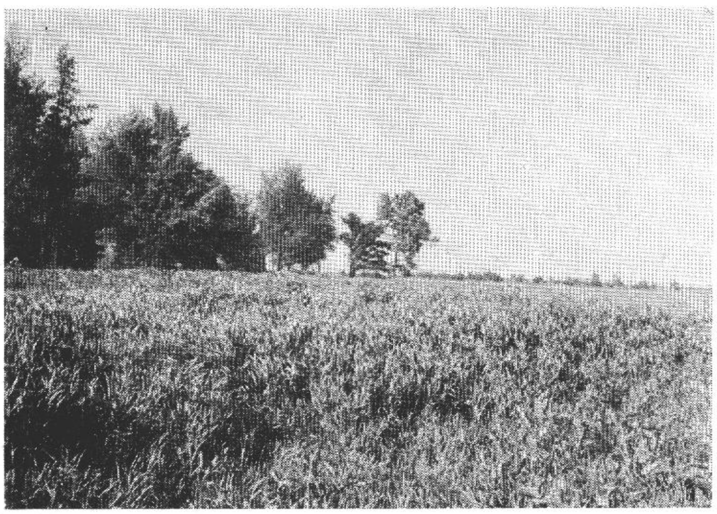

***Figure 2.*—Wild winter peas on Alligator and Sharkey clay soils; these soils are well suited to winter legumes.**

Ark series

The moderately well drained, medium or slightly acid soils of the Ark series have a light brownish-gray to dark-brown surface layer and a light brownish-gray to dark-brown silty clay loam subsurface layer. These soils occur in depressions and were derived largely from alluvium washed and sloughed down from the surrounding Beulah, Bosket, and Dubbs soils. Ark soils are associated with Souva soils. They differ from Souva soils in having a browner, less mottled, and better drained profile. Because of their low position, these Ark soils are frequently covered by water for short periods after heavy rains. Some improvised surface drainage is needed. The Ark series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association. Ark silt loam is the only soil of the Ark series mapped in this county.

Ark silt loam (less than 2 percent slopes) (Ak).—This moderately permeable soil has slow runoff. Included with it are small areas that have a loam and very fine sandy loam surface soil. This soil has a small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 7 inches, light brownish-gray to dark-brown (10YR 6/2 to 4/3) friable silt loam; medium acid; ranges in thickness from 6 to 10 inches.

7 to 20 inches, light brownish-gray to dark-brown (10YR 6/2 to 4/3) silty clay loam; friable to moderately friable; medium acid; ranges in thickness from 12 to 18 inches, in texture from sandy clay loam to silty clay, and in mottlings from none to few.

20 to 40 inches +, yellowish-brown to pale-brown (10YR 5/4 to 6/3) sandy loam to coarse sandy clay loam; slightly mottled with shades of brown and gray; friable to very friable; slightly acid.

Location: NW¼NW¼ sec. 30, T. 28 N., R. 1 W.

Most of this soil has been cleared of its native vegetation and is in cultivation. When the surface is adequately drained, the soil is very productive. The content of organic matter is fairly high, the tilth is good, and plant roots penetrate readily into the subsurface layers. Cotton and corn are the chief crops. This soil is in capability unit 6 (IIw-3).

Beulah series

The soils of the Beulah series are somewhat excessively drained and are strongly to slightly acid. They are dark grayish-brown to light brownish-gray, sandy soils that show little horizon differentiation. They have mottle-free, dark-brown to yellowish-brown, sandy subsurface layers. The Beulah soils were derived from coarse-textured Mississippi River alluvium. They occur in association with Bosket soils on old natural levees. The Beulah soils differ from the Bosket soils in having been derived from coarser textured material and in having a coarser textured profile; in having less horizon differentiation; and in being slightly more droughty. Also the characteristic sandy clay loam second layer in the Bosket soils is absent in the Beulah soils.

The Beulah soils are productive when an abundant moisture supply is available, but crops usually are damaged when the rainfall is below normal or is not well distributed during the growing season. The Beulah series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association.

Beulah sandy loam, nearly level phase (less than 2 percent slopes) (Ba).—This soil has a very small aggregate acreage. Included with it are small circular areas of Clack soils from 5 to 30 feet in diameter.

Modal profile from cultivated field (moist):

0 to 6 inches, grayish-brown (10YR 5/2) loose sandy loam; medium acid; ranges in thickness from 5 to 8 inches, and in color from dark grayish brown to light brownish gray.
6 to 18 inches, dark-brown (10YR 4/3) very friable loam; weakly developed fine subangular blocky structure; medium acid; no mottlings; ranges in thickness from 11 to 15 inches, in texture from silt loam to sandy loam, and in color from dark brown to grayish brown.
18 to 26 inches, dark-brown (10YR 4/3) fine sandy loam without mottlings; very friable to loose; structureless; medium acid; ranges in thickness from 7 to 12 inches, in texture from very fine sandy loam to sandy loam, and in color from dark brown to yellowish brown.
26 to 40 inches +, dark yellowish-brown (10YR 4/4) loose sandy loam without mottlings; single-grained structures; medium acid; ranges in texture from fine sandy loam to loamy sand, and in color from dark yellowish brown to pale brown.
Location: SW¼NW¼ sec. 28, T. 28 N., R. 1 W.

Practically all of this soil has been cleared and is now used mostly for row crops. Because it is somewhat droughty, oats and early maturing corn are most often planted on this soil. Many areas are too small to separate from the surrounding soils and are usually used for cotton. Split applications of fertilizer should be used for row crops. This practice gives the crop an early start and prevents excessive leaching of fertilizer before the plant is large enough to use most of it. The coarse-textured subsoil allows rapid movement of water downward and, therefore, removes the applied minerals rapidly. This soil is in capability unit 7 (IIs–1).

Beulah sandy loam, gently sloping phase (2 to 5 percent slopes) (Bb).—This soil has stronger and more varied relief than Beulah sandy loam, nearly level phase. As a result it has faster surface runoff, is more droughty, and in places is more eroded. The total acreage is very small. This soil is in capability unit 7 (IIs–1).

Bosket series

The Bosket series consists of well-drained, strongly to slightly acid, moderately fertile soils. These soils have a dark-brown to light brownish-gray surface layer and a mottle-free dark-brown to yellowish-brown sandy clay loam to sandy loam subsurface layer. They occur in association with Dubbs, Dundee, and Beulah soils on old natural levees and were derived predominantly from coarse-textured Mississippi River alluvium. They were derived from coarser textured alluvium than the Dubbs and Dundee soils; in addition they have a browner, sandier, and better drained profile that contains no mottlings. The Bosket soils characteristically have a sandy clay loam second layer that is absent in Beulah soils. Like the Dubbs and Beulah soils, the Bosket soils need no artificial drainage. The Bosket series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association.

Bosket sandy loam, nearly level phase (less than 2 percent slopes) (Bc).—This soil has a small aggregate acreage but is the most extensive of the Bosket soils.

Modal profile from cultivated field (moist):

0 to 6 inches, brown (10YR 5/3) very friable sandy loam; medium acid; ranges in depth from 5 to 8 inches, in texture from loam to sandy loam, and in color from dark brown to light brownish gray.
6 to 12 inches, dark-brown (10YR 4/3) friable very fine sandy loam; weak medium to fine blocky structure; medium acid; this layer not present in all places.
12 to 28 inches, dark yellowish-brown (10YR 4/4) friable coarse sandy clay loam without mottlings; weak medium to fine subangular and angular blocky structure; medium acid; ranges in thickness from 14 to 18 inches, in color from dark yellowish brown to brown, and in structure from moderate to weak subangular and angular blocky.
28 to 40 inches +, yellowish-brown (10YR 5/4), very friable very fine sandy loam; massive; medium acid; ranges in texture from very fine sandy loam to loamy sand and in color from brown to yellowish brown.
Location: SW¼NE¼ sec. 35, T. 28 N., R. 2 W.

This soil, like other Bosket soils, is well-drained and yet has good water storage capacity because of the nature of its subsoil. Like the Dubbs soils, this soil is easily tilled and needs no artificial drainage. Cotton, corn, oats, and truck crops grown on this soil particularly need nitrogen and organic matter. This soil affords excellent locations for houses. It is in capability unit 2 (I-2).

Bosket sandy loam, gently sloping phase (2 to 5 percent slopes) (Bd).—This soil differs from Bosket sandy loam, nearly level phase, mainly in occurring in short, narrow bands on stronger and more variable slopes and in having a slightly thinner surface layer. Runoff is increased because of the stronger slope and occasionally causes some erosion. This soil has a small aggregate acreage.

Contour tillage, rotation of row crops with close-growing crops, seeding of permanent cover crops, or other erosion control practices should be used. This soil is in capability unit 4 (IIe-2).

Brittain series

The Brittain series consists of poorly and somewhat poorly drained, grayish-brown to light brownish-gray soils. These soils have mottled light-gray to gray silty subsurface layers. They are slowly permeable, very strongly to medium acid, and moderately low in natural fertility. They were derived predominantly from silty alluvium. They occur in association with Pearson soils on old natural levees in the vicinity of the Coldwater, the Tallahatchie, and the Yocona Rivers, mostly in the southeastern part of the county. The Brittain soils differ from the Pearson soils in having generally a grayer profile. The Brittain series is in the Pearson-Brittain-Waverly soil association.

Brittain silt loam, nearly level phase (less than 2 percent slopes) (Be).—This soil occupies a moderately small aggregate acreage on the lowest altitudes of the old natural levees in the vicinity of the Coldwater, the Tallahatchie, and the Yocona Rivers. Runoff is slow.

Modal profile from cultivated field (moist):

0 to 6 inches, brown (10YR 5/3) very friable silt loam; strongly acid; ranges in thickness from 4 to 7 inches, and in color from grayish brown to light brownish gray and pale brown.
6 to 15 inches, light-gray (10YR 7/1) friable silt loam mottled with yellowish red; weakly developed fine subangular blocky structure; very strongly acid; many dark-brown concretions; ranges in thickness from 9 to 18 inches, in mottlings from very pale brown to brownish yellow, and in texture from silt loam to silty clay loam.
15 to 28 inches, light-gray (10YR 7/1) silt loam mottled with very pale brown to yellowish red; friable but compact; massive; very strongly acid; many dark-brown concretions; ranges in texture from silt loam to silty clay loam, in color from light gray to gray, and in concretions from few to many.
28 to 40 inches+, light-gray (10YR 7/1) friable silt loam mottled with pale brown to yellowish brown; massive; neutral in reaction; many dark-brown concretions; ranges in color from light gray to gray, in reaction from strongly acid to neutral or slightly alkaline, and in concretions from few to many.
Location: Center, NW¼ sec. 1, T. 26 N., R. 1 E.

Fair yields of cotton, corn, oats, and soybeans are occasionally obtained on these soils, but probably pasture and timber are more suitable uses. Some areas are somewhat responsive to phosphate or potash, or to both. Nitrogen and drainage are the factors that are first to limit yields of most nonlegume row crops locally grown. This soil is in capability unit 9 (IIs–3).

Brittain silt loam, gently sloping phase (2 to 5 percent slopes) (Bg).—This soil differs from the nearly level phase mainly in having stronger slopes and more variable relief. It occupies a small aggregate acreage in the county. It is easily eroded and needs erosion control. It is in capability unit 9 (IIs–3).

Brittain silty clay loam, nearly level phase (less than 2 percent slopes) (Bh).—This soil differs from Brittain silt loam, nearly level phase, mainly in having a finer textured (silty clay loam) surface layer and, as a result, slightly less desirable tilth. It is the most extensive of the Brittain soils.

Modal profile from cultivated field (moist):

0 to 5 inches, yellowish-brown (10YR 5/4) silty clay loam; moderately plastic, firm to friable, hard; very strongly acid; 4 to 5 inches thick.

5 to 21 inches, light-gray (10YR 7/2) silty clay loam mottled with pale brown and yellowish brown to yellowish red; firm to friable; weakly developed, fine subangular blocky structure; very strongly acid; few iron concretions; in places, texture is silt loam.

21 to 33 inches, light-gray (10YR 7/2) friable silt loam mottled with yellowish red, pale brown, and brownish yellow; massive; strongly acid; few iron concretions; in places texture is silty clay loam.

33 to 40 inches+, light-gray (10YR 7/1) friable silt loam and silty clay loam material mottled with yellowish red, yellowish brown, brownish yellow, and pale brown; massive; medium acid; few iron concretions.

Location: SW¼SE¼ sec. 11, T. 26 N., R. 1 E.

This soil is in capability unit 10 (IIs–4).

Brittain silty clay loam, gently sloping phase (2 to 5 percent slopes) (Bk).—This soil differs from Brittain silty clay loam, nearly level phase, primarily in having stronger and more variable slopes. Erosion control practices are needed. This soil has a very small aggregate acreage. It is in capability unit 10 (IIs–4).

Brittain soils-Waverly soils

Brittain soils-Waverly soils, local alluvium phases (less than 2 percent slopes) (Bm).—This complex consists of fairly large areas of nearly level Brittain silty clay loam soils, spotted or streaked in places with small areas of Brittain silt loam soils. The Waverly soils are in a network of low swags. The dominant texture in the Waverly soils is silty clay loam, but small areas of silt loam and silty clay loam also occur.

In general, Brittain soils comprise 70 to 90 percent of this mapping unit, and the Waverly soils comprise 10 to 30 percent. The areas of this complex are wooded, and detailed mapping is difficult or impractical. Slopes are mostly one-half percent or less. The relatively large aggregate acreage of this complex is in the Pearson-Brittain-Waverly soil association.

A good use for these areas is for woodland. This soil complex is in capability unit 10 (IIs–4).

Clack series

In the Clack series are excessively drained, medium to slightly acid, grayish-brown to pale-brown sandy-surfaced soils. These soils have dark-brown to pale-brown very sandy subsurface layers. The soils were derived from coarse-textured sediments dropped by the Mississippi River; they occur in association with Beulah soils on some of the old natural levees. They have little, if any, horizon differentiation. They differ from the Beulah soils in having a sandier and more droughty profile and less horizon differentiation. The Clack series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association.

Clack sandy loam, nearly level phase (less than 2 percent slopes) (Cc).—This soil has a small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 8 inches, grayish-brown (10YR 5/2) loose sandy loam; single-grain structure; medium acid; ranges in thickness from 7 to 10 inches.

8 to 14 inches, grayish-brown and brown (10YR 5/2 and 5/3) loose loamy sand; single-grain structure; medium acid; ranges in thickness from 6 to more than 32 inches.

14 to 24 inches, dark-brown (10YR 4/3) loose sandy loam; single-grain structure; medium acid; this layer not present in all places.

24 to 40 inches +, brown to yellowish-brown (10YR 5/3 to 5/4) loose loamy fine sand; single-grain structure; medium acid.

Location: South center, SW¼ sec. 6, T. 27 N., R. 1 W.

Practically all of this soil has been cleared of its native vegetation, but it is too droughty for good crop production. Much of it is idle or used for hay. This soil is in capability unit 17 (IVs–1).

Clack loamy sand, nearly level phase (less than 2 percent slopes) (Ca).—This soil differs from Clack sandy loam, nearly level phase, mainly in having a more sandy profile throughout. The entire profile of Clack loamy sand is in many places a loose, pale-brown loamy sand. This soil has a small total acreage. It is droughty and yields of locally grown crops are usually low. This soil is in capability unit 17 (IVs–1).

Clay and sand banks

Clay and sand banks, sloping (5 to 10 percent slopes) (Ce).—This land type is generally along the banks of old stream channels and is associated mainly with the soils of the slack-water areas. It consists of alternating beds of clays and sands that differ widely in characteristics. Color and texture vary according to the type of material. Runoff is rapid, and internal drainage is variable.

The size of any one area is so small that it is usually managed in the same way as the surrounding soils. Where cleared of its native vegetation, this miscellaneous land type is best used for field roads and for pastures. It is fair for timber and wildlife where it has not been cleared. This land type has a small aggregate acreage.

Clay and sand banks, strongly sloping (over 10 percent slopes) (Cg).—Except for stronger slopes, this land type has the same characteristics as clay and sand banks, sloping (5 to 10 percent slopes). It occurs in similar positions and in very narrow strips. It has a very small aggregate acreage.

Collins series

The soils of the Collins series are somewhat poorly drained to moderately well drained and very strongly acid to medium acid. They have a grayish-brown to pale-brown surface layer. Normally, their subsurface layer is a mottled brown silt loam or silty clay loam.

These soils were derived from silty alluvium deposited by the Coldwater, Tallahatchie, and Yocona Rivers. They are in the southeastern part of the county on recent natural levees along these streams. They occur in association with Falaya soils.

The Collins soils differ from Falaya soils in having a browner and better drained profile and in occupying slightly higher altitudes. Like the Falaya soils, they are frequently overflowed where not protected by levees or ditches. The Collins series is in the Collins-Falaya-Waverly soil association.

Collins silt loam (less than 2 percent slopes) (Ch).—Like the other Collins soils, this soil has slow to moderate runoff and moderately slow permeability. Its aggregate acreage is relatively small.

Modal profile from cultivated field (moist):

0 to 5 inches, brown (10YR 5/3) friable silt loam; strongly acid; ranges in thickness from 5 to 7 inches, in color from brown to light brownish gray and pale brown, and in consistence from friable to very friable.

5 to 14 inches, pale-brown (10YR 6/3) very friable silt loam slightly mottled with dark yellowish brown; granular structure; very strongly acid; ranges in thickness from 9 to 16 inches, and in color from brown (moist) to light gray (dry).

14 to 40 inches +, pale-brown (10YR 6/3) friable silt loam mottled with dark yellowish brown; massive; very strongly acid; few concretions; ranges in color from pale brown to light gray, in texture from silt loam to silty clay loam, and in concretions from none to few.

Location: Center, NE¼ sec. 12, T. 7 S., R. 10 W.

Remarks: The subsurface layers, to a depth of 40 inches or more, are similar to the surface layer except that they are slightly more compact and contain brownish and grayish mottlings. The mottlings are not conspicuous near the top of the profile but are larger and more numerous with increasing depth. Included with the Collins soils as mapped are a few areas with subsurface horizons that are stratified with thin layers of sand.

This soil is low in organic matter content. Yields of cotton, corn, and other crops are moderately high. This soil is in capability unit 1 (I–1).

Collins silty clay loam (less than 2 percent slopes) (Ck).—This soil differs from Collins silt loam primarily in having a finer textured (silty clay loam) surface layer and in having in many areas silty clay loam rather than silt loam subsurface layers.

Modal profile from cultivated field (moist):

0 to 5 inches, brown (10YR 5/3) friable silty clay loam; medium acid; ranges in thickness from 4 to 6 inches and in color from grayish brown to pale brown.

5 to 14 inches, yellowish-brown (10YR 5/4) friable silt loam to silty clay loam slightly mottled with yellowish red and pale brown; granular structure; medium acid; ranges in thickness from 9 to 16 inches, in color from grayish brown to light brownish gray, and in mottlings from shades of gray to shades of brown.

14 to 40 inches +, grayish-brown (10YR 5/2) friable silt loam to silty clay loam material mottled with brown and gray; massive; medium acid; color ranges from grayish brown to light brownish gray and light gray.

This soil is in capability unit 11 (IIs-6).

Collins-Falaya silt loams

Collins-Falaya silt loams, nearly level phases (less than 2 percent slopes) (Cm).—In parts of Quitman County, the soils in this complex do not occur uniformly in the general soil pattern. Because they usually vary within a few feet, separation is impractical. In some areas this complex consists of Collins silt loam soils and Falaya silt loam soils in about equal proportions, but in most areas the Collins soils predominate. Included within this complex is a sizable amount of soil with a silty clay loam surface layer. This complex has a fairly small aggregate acreage. It is in the Collins-Falaya-Waverly soil association.

The Collins soils are somewhat poorly drained and moderately well drained, and the Falaya soils are poorly and somewhat poorly drained. The Falaya soils have grayer subsurface layers than the Collins soils. Collins-Falaya silt loams are in capability unit 9 (IIs-3).

Collins-Falaya silt loams, gently sloping phases (2 to 5 percent slopes) (Cn).—This complex has faster runoff than Collins-Falaya silt loams, nearly level phases, because of stronger and more variable slopes. This soil complex has a small aggregate acreage and is in the Collins-Falaya-Waverly soil association. It is in capability unit 9 (IIs-3).

Collins soils and Waverly soils

Collins soils and Waverly soils, local alluvium phases (less than 2 percent slopes) (Co).—This mapping unit consists of fairly large forested areas of nearly level Collins soils, local alluvium phases, and interwoven low swags in which there are Waverly soils, local alluvium phases. The soils of this mapping unit range in texture from silty clay to silt loam.

Generally, Collins soils, local alluvium phases, comprise 70 to 90 percent of this mapping unit, and Waverly soils, local alluvium phases, comprise 10 to 30 percent. This mapping unit has a small aggregate acreage and is in the Collins-Falaya-Waverly soil association. It is in capability unit 11 (IIs-6).

Crowder series

The Crowder series consists of slightly to strongly acid, poorly drained, grayish-brown soils that have a mottled gray to light-gray sandy clay subsurface layer. This soil series was derived from uniformly mixed clay and medium coarse sand. It is associated with Alligator and Dowling soils. The Crowder soils differ from the Alligator soils in having more sand throughout the profile. They differ from the Dowling soils in not occupying a depressional position and in having a lighter colored and sandier profile. The Crowder soils are in the Alligator-Sharkey-Dowling soil association. Only one soil, Crowder sandy clay, was mapped in this series.

Crowder sandy clay (less than 2 percent slopes) (Cp).—This soil occurs in slack-water areas on the flood plain and was derived from clayey and sandy Mississippi River alluvium. It has slow surface runoff and is slowly permeable. It has a fairly small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 3 inches, grayish-brown (10YR 5/2) sandy clay; moderately plastic, firm, hard; medium acid; ranges from 3 to 5 inches in thickness.

3 to 26 inches, light-gray (10YR 7/1) sandy clay mottled with yellowish brown and dark yellowish brown; moderately plastic, firm, hard; massive when wet, weak subangular blocky structure when dry; medium acid; ranges in thickness from 20 to 25 inches, in color from gray to light gray, and in mottlings from yellowish red to dark yellowish brown.

26 to 40 inches +, light-gray (10YR 7/1) sandy clay highly mottled with yellowish brown and brownish yellow; moderately plastic, firm, hard; massive; medium acid; ranges in color of mottlings from yellowish red to yellowish brown, and in texture from sandy clay to clay.

Location: S½SE¼ sec. 20, T. 28 N., R. 1 E.

Pasture, soybeans, hay crops, oats, and rice are some of the better crops for this soil. Fair yields of cotton and corn also can be obtained. This soil is in capability unit 10 (IIs–4).

Dowling series

The Dowling series consists of very dark gray to gray, very poorly and poorly drained, slightly to strongly acid soils. These soils have a very plastic, mottled, dark-gray to gray clayey subsoil. They are in depressions on the Mississippi River flood plain and were derived partly from Mississippi River slack-water deposits and partly from local alluvium washed and sloughed from the surrounding clayey soils. Because of the very slow external and internal drainage and the low position of these soils, water accumulates on them from adjacent higher areas following heavy rain. Extensive surface drainage is needed.

In Quitman County the surface texture of the Dowling soils is not uniform. Clay and silty clay textures occur in a mixed pattern that is occasionally spotted with a silty clay loam texture.

Most of the acreage is in the Alligator-Sharkey-Dowling soil association, but a good-size portion is included in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association. The Dowling soils in the county have all been combined into one mapping unit.

Dowling clay and silty clay (less than 1 percent slopes) (Da).—The soils of this undifferentiated group were derived from predominantly dark-colored, fine-textured Mississippi River alluvium. They are very plastic, sticky soils that are usually higher in organic matter than the surrounding soils. They have a relatively large aggregate acreage and are interspersed with the Alligator, Sharkey, Forestdale, and Tunica soils.

Modal profile from a cultivated area of Dowling clay (moist):

0 to 5 inches, very dark grayish-brown (10YR 3/2) granular clay: very plastic, very firm, very hard; medium acid; color ranges from very dark gray to gray, and the thickness from 3 to several inches.

5 to 24 inches, gray (10YR 5/1) clay mottled with yellowish brown; very plastic, very firm, very hard to extremely hard; massive when wet, weak coarse blocky structure when dry; medium to slightly acid; ranges in color from gray to dark gray and in thickness from 7 to 20 inches.

24 to 40 inches +, gray and olive gray (10YR 5/1 and 5Y 5/2) clay mottled with yellowish brown; massive; medium to slightly acid.

Location: SW¼SE¼ sec. 12, T. 27 N., R. 2 W.

A very noticeable characteristic of these soils is the wide and deep cracking that occurs during dry weather. The clay and silty clay surface textures, poor drainage, and low position of these soils make cultivation difficult and crop yields uncertain. The depressions where these soils are located are a part of the natural drainage pattern and usually can be used advantageously for drainageways. This undifferentiated soil group is in capability unit 16 (IVw–1).

Dubbs series

The soils of the Dubbs series were derived from moderately fine to coarse Mississippi River alluvium. They occur on old natural levees and are moderately well drained to well drained. They occupy the best drained position in the Dubbs-Dundee-Forestdale catena.

The Dubbs soils are moderately permeable, strongly to slightly acid, and moderately fertile. They have a very friable grayish-brown to pale-brown surface soil that is underlain by a faintly mottled to mottle-free dark-brown to yellowish-brown subsoil. They have moderately to strongly developed subangular and angular blocky structure.

These soils are less extensive than the associated Dundee and Forestdale series. They differ from the Dundee soils in being at slightly higher altitudes and in having a browner, slightly coarser textured, and almost mottle-free profile. They differ from the Bosket series in having slightly finer textured subsurface layers with some faint mottlings. The Dubbs series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association.

Dubbs fine sandy loam, nearly level phase (less than 2 percent slopes) (Db).—This soil characteristically has a moderately developed B horizon. It is generally in the central and western parts of the county.

Modal profile from cultivated field (moist):

0 to 6 inches, grayish-brown (10YR 5/2) very friable fine sandy loam; medium acid; ranges in thickness from 5 to 8 inches, and in color from grayish brown to pale brown; some areas with loam and very fine sandy loam textures are included.

6 to 14 inches, dark-brown (10YR 4/3) friable silty clay loam without mottling; moderately developed, medium to coarse, subangular blocky structure; strongly acid; ranges in thickness from 8 to 16 inches, in texture from silty clay to clay loam, in color from dark brown to yellowish brown, in mottlings from none to few, and in structure from moderately to strongly developed subangular and angular blocky.

14 to 22 inches, brown (10YR 5/3) friable sandy clay loam to silt loam; moderately developed subangular blocky structure; strongly acid; ranges in texture from silty clay loam to silt loam, in color from brown to yellowish brown, and in mottlings from none to few.

22 to 40 inches +, yellowish-brown (10YR 5/4) friable very fine sandy loam; medium acid; ranges in texture from silty clay loam to sandy loam, in color from grayish brown to yellowish brown, in mottlings from none to few, and in structure from none to weak subangular blocky.

Location: East center, NE¼ sec. 27, T. 28 N., R. 2 W.

Almost all of this soil has been cleared of its original vegetation and is used mainly for cultivated crops, chiefly cotton. Additions of nitrogen and organic matter are necessary for maximum yields of cotton, corn, oats, or truck crops. Little if any improvised drainage is needed. Easy tillage, moderate movement of water and air through the soil, and capacity to produce high yields make this one of the best soils of Quitman County. Areas of this soil are excellent for house sites, gardens, and orchards. This soil is in capability unit 1 (I–1).

Dubbs fine sandy loam, gently sloping phase (2 to 5 percent slopes) (Dc).—This soil differs from Dubbs fine sandy loam, nearly level phase, mainly in having slightly thinner and more variable layers throughout the profile and in occupying narrow and short bands on stronger and more variable slopes. Because of the increased runoff, some small areas are moderately eroded.

Erosion control practices, such as contour tillage, rotation of row crops with close-growing crops, or seeding of permanent cover crops, should be used. This soil has a small aggregate acreage. It is in capability unit 3 (IIe–1).

Dubbs silt loam, nearly level phase (less than 2 percent slopes) (Dd).—This soil differs from Dubbs fine sandy loam, nearly level phase, primarily in having a slightly finer textured (silt loam) surface layer and usually in having slightly thicker subsurface layers that contain more silt and less sand than the fine sandy loam. Because of the higher silt content of the surface layer, there is more crusting in this soil than in the fine sandy loam. This soil has a relatively small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 6 inches, grayish-brown (10YR 5/2) very friable silt loam; medium acid.
6 to 18 inches, dark-brown (10YR 4/3) friable clay loam; strongly developed, medium to coarse subangular and angular blocky structure; strongly acid.
18 to 40 inches +, yellowish-brown (10YR 5/4) very friable, very fine sandy loam; moderately and weakly developed subangular blocky structure; medium acid.
Location: East center, SE¼ sec. 31, T. 26 N., R. 1 W.

This soil is in capability unit 1 (I–1).

Dubbs silt loam, gently sloping phase (2 to 5 percent slopes) (De).—This soil differs from Dubbs fine sandy loam, gently sloping phase, mainly in having a slightly finer textured surface layer that occasionally causes more crusting after heavy rains. This soil has a small aggregate acreage. It is in capability unit 3 (IIe–1).

Dundee series

The Dundee series consists of dark grayish-brown to light-gray soils. These soils have moderately developed, slightly mottled grayish-brown, brown, yellowish-brown, or pale-brown silty clay or silty clay loam B horizons. They were derived from stratified beds of fine- to coarse-textured Mississippi River alluvium and occur on the old natural levees. They are the somewhat poorly to moderately well drained members of the catena that also includes the moderately well drained and well drained Dubbs soils and the poorly drained and somewhat poorly drained Forestdale soils. The Dubbs soils usually occupy the highest positions (normally the soils closest to the stream channel), the Dundee soils occupy the intermediate positions (adjacent to the Dubbs soils), and the Forestdale soils occupy the lowest position (adjacent to the Dundee soils and the greatest distance from the old stream channel).

The Dundee soils are medium in fertility, moderately slowly permeable, and very strongly acid to slightly acid in reaction. They differ from Dubbs soils in having more mottled and usually slightly finer textured subsurface layers. They differ from Forestdale soils in having browner and less mottled subsurface layers. The Dundee series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association.

Dundee silt loam, nearly level phase (less than 2 percent slopes) (Dk).—This is one of the most extensive of the soils on old natural levees. In general, it is distributed in the central and western parts of the county. There are a few areas in the eastern part.

Modal profile from cultivated field (moist):

0 to 6 inches, brown (10YR 5/3) friable silt loam; strongly acid; ranges in thickness from 5 to 7 inches, and in color from dark brown (moist) to light gray (dry).
6 to 20 inches, brown (10YR 5/3) friable silty clay loam mottled with shades of gray and brown; weakly to moderately developed subangular and angular blocky structure; very strongly acid; ranges in thickness from 12 to 20 inches, in texture from silty clay to silty clay loam, and in color from grayish brown to yellowish brown.
20 to 26 inches, brown (10YR 5/3) friable clay loam mottled with shades of gray and brown; weak subangular blocky structure; strongly acid; ranges in thickness from 6 to 20 inches or more, in texture from silty clay loam to silt loam, and in color from grayish brown to yellowish brown.
26 to 40 inches +, pale-brown (10YR 6/3) very friable, very fine sandy loam; weak subangular blocky to massive structure; medium acid; ranges in texture from clay loam to very fine sandy loam, in color from grayish brown (moist) to light gray (dry), and in iron concretions from none to few.
Location: ½ mile southeast of Walnut School, SW¼NE¼ sec. 10, T. 26 N., R. 2 W.

The texture and tilth of this soil are such that work in the field can be done during most of the year. The soil is excellent for most row crops locally grown but is mainly planted to cotton. Additions of nitrogen and organic matter are essential for maximum yields of cotton, corn, oats, or truck crops. Little or no artificial drainage is needed. Like the Dubbs and Bosket soils, Dundee soils are desirable for homesites, gardens, and orchards. This soil is in capability unit 1 (I–1).

Dundee silt loam, gently sloping phase (2 to 5 percent slopes) (Dm).—This soil differs from Dundee silt loam, nearly level phase, mainly in having thinner profile layers. Also, it occurs in narrow bands on stronger and more variable slopes; consequently, it has faster runoff and usually slightly more erosion.

Contour tillage, rotation of row crops with close-growing crops, seeding permanent cover crops, or other erosion-control practices should be used. This is not an extensive soil; it is in capability unit 3 (IIe–1).

Dundee fine sandy loam, nearly level phase (less than 2 percent slopes) (Dg).—This soil differs from Dundee silt loam, nearly level phase, mainly in having a coarser textured (fine sandy loam) surface layer and slightly more sand throughout the profile. It has less crusting because it has more sand in the surface layer. This is a moderately extensive soil.

Modal profile from cultivated field (moist):

0 to 6 inches, grayish-brown (10YR 5/2) very friable fine sandy loam; medium acid; some areas with loam and very fine sandy loam textures are included.
6 to 20 inches, grayish-brown to yellowish-brown (10YR 5/2 to 5/4) friable silty clay loam mottled with yellowish brown and brown; moderately developed angular and subangular blocky structure; strongly acid.
20 to 28 inches, light brownish-gray (10YR 6/2) friable sandy clay loam mottled with yellowish brown and brown; weakly developed subangular blocky structure; strongly acid.
28 to 40 inches +, light-gray (10YR 7/2) friable very fine sandy loam mottled with yellowish brown; medium subangular blocky to massive structure; medium acid.
Location: South center, SW¼ sec. 35, T. 28 N., R. 2 W.
Remarks: In a few places the subsurface layers are friable pale-brown fine sandy loams mottled with shades of gray, brown, and yellow; these layers overlie substrata of clay or silty clay.

This soil is in capability unit 1 (I–1).

Dundee fine sandy loam, gently sloping phase (2 to 5 percent slopes) (Dh).—This soil is on stronger and more variable slopes and has a slightly thinner surface layer than Dundee fine sandy loam, nearly level phase. It has faster runoff that occasionally causes some erosion. Contour tillage, rotation of row crops with close-growing crops, seeding permanent cover crops, or other erosion control practices are needed. This soil is not extensive. It is in capability unit 3 (IIe–1).

Dundee silty clay loam, nearly level phase (less than 2 percent slopes) (Dn).—This soil has a finer textured (silty clay loam) and normally a thinner surface layer than Dundee silt loam, nearly level phase. It usually has a thicker subsoil and less sand throughout the profile. The tilth is slightly less desirable than that of the silt loam soils. This is not an extensive soil.

Modal profile from cultivated field (moist):

0 to 4 inches, dark grayish-brown (10YR 4/2) silty clay loam; firm to friable; medium acid.
4 to 20 inches, grayish-brown (10YR 5/2) firm silty clay mottled with shades of brown and gray; moderately developed, medium to coarse, subangular blocky structure; strongly acid.
20 to 26 inches, grayish-brown (10YR 5/2) friable silty clay loam mottled with shades of gray and brown; weak subangular blocky structure; strongly acid.
26 to 40 inches +, yellowish-brown (10YR 5/4) friable sandy clay loam mottled with shades of gray and brown; weak subangular blocky to massive structure; medium acid; some silty clay loam texture.

This soil is in capability unit 11 (IIs–6).

Dundee silty clay loam, gently sloping phase (2 to 5 percent slopes) (Do).—This soil is differentiated from Dundee silty clay loam, nearly level phase, mainly because it occurs in narrow bands on stronger and more variable relief. As a result of this relief it has faster surface runoff and usually slight erosion. The horizons of this soil are generally somewhat thinner than those of the nearly level phase.

Contour tillage, rotation of row crops with close-growing crops, seeding of permanent cover crops, or other erosion control practices are needed. This is not an extensive soil. It is in capability unit 5 (IIe–4).

Falaya series

The Falaya series consists of poorly and somewhat poorly drained, very strongly to medium acid soils. These soils have a grayish-brown to pale-brown surface layer and a mottled light-grayish silt loam or silty clay loam subsurface layer. They were derived from silty alluvium washed from the nearby Loess Hills by the Coldwater, Tallahatchie, and Yocona Rivers. Falaya soils occur in association with Collins soils on recent natural levees (first bottoms) along these streams. They differ from Collins soils in occupying slightly lower positions and in having a grayer, more mottled, and more poorly drained profile. They also are subject to frequent flooding where not protected by levees or ditches. The Falaya series is in the Collins-Falaya-Waverly soil association.

Falaya silt loam (less than 2 percent slopes) (Fa).—This soil, like other Falaya soils, is low in inherent fertility. It has a relatively small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 5 inches, brown (10YR 5/3) very friable silt loam; medium acid; ranges in thickness from 4 to 7 inches, and in color from grayish brown to pale brown.
5 to 14 inches, light-gray (10YR 7/1) friable silt loam mottled with brown and light brownish gray; granular structure; strongly acid; ranges in texture from silt loam to silty clay loam, and in thickness from 9 to 15 inches.
14 to 40 inches+, light-gray (10YR 7/1) friable silt loam mottled with yellowish red, brownish yellow, and yellowish brown; massive; strongly acid; occasional concretions; ranges in texture from silt loam to silty clay loam.
Location: ¼ mile northwest of Crowder, NW¼SE¼ sec. 25, T. 27 N., R. 1 E.

Because this soil is subject to frequent overflows, it is best suited to pasture and timber, but cotton and corn can be grown if good management is practiced. This soil is in capability unit 9 (IIs-3).

Falaya silty clay loam (less than 2 percent slopes) (Fb).—This soil differs from Falaya silt loam mainly in having a finer textured (silty clay loam) surface layer. As a result, tillage is more difficult. This soil has productivity and management requirements like those of Falaya silt loam. It is not extensive and is in capability unit 10 (IIs–4).

Forestdale series

The soils of the Forestdale series are light brownish gray to grayish brown and are poorly and somewhat poorly drained. Their subsurface layers normally are highly mottled light-gray, gray, or light brownish-gray silty clay and silty clay loam. The Forestdale soils were derived from stratified beds of medium- and fine-textured Mississippi River alluvium. They occur on old natural levees and occupy the lowest and most poorly drained positions in the Dubbs-Dundee-Forestdale catena. These soils are medium to slightly low in fertility, slowly permeable, and very strongly acid to slightly acid in reaction. They have had some profile development. The soils of the Forestdale series have a grayer colored and more mottled profile than the soils of the Dundee series, and they are less productive. The Forestdale series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association.

Forestdale silt loam, nearly level phase (less than 2 percent slopes) (Fc).—This is a moderately extensive soil and is somewhat low in fertility. Small manganese and iron concretions in the surface soil and upper subsoil layers are common. Runoff is slow but can be improved by shallow ditches.

Modal profile from cultivated field (moist):

0 to 6 inches, grayish-brown (10YR 5/2) friable silt loam; medium acid; ranges in thickness from 4 to 6 inches and in color from grayish brown to light brownish gray.
6 to 12 inches, light-gray (10YR 7/2) silty clay loam highly mottled with yellowish brown; moderately plastic, firm to friable, hard; weak subangular blocky structure; strongly acid layer; not present in all places.
12 to 24 inches, light-gray (10YR 7/2) silty clay highly mottled with yellowish brown; weakly to moderately developed, medium to coarse, subangular blocky structure; strongly acid; ranges in thickness from 12 to 20 inches, and in color from gray and light gray to light brownish gray.
24 to 40 inches+, light brownish-gray (10YR 6/2) silty clay loam mottled with yellowish brown; firm to friable and somewhat compacted; weak subangular blocky to massive structure; medium acid; ranges in color from gray to light brownish gray; stratified in places with sandier material.
Remarks: Concretions absent in some places, and in others they occur throughout the profile.
Location: NE¼NW¼ sec. 1, T. 26 N., R. 2 W.

Most of this soil has been cleared of its native vegetation and is now used for the production of cotton, soybeans, oats, corn, or pasture. The surface layer often crusts to such an extent after rain that poor stands of crops result. Yields are restricted by lack of nitrogen and the poor to somewhat poor drainage. Additions of organic matter are helpful when feasible (fig. 3). Because this soil has a fine textured and wet subsoil, plant roots do not penetrate it readily. This soil is in capability unit 9 (IIs–3).

Forestdale silt loam, gently sloping phase (2 to 5 percent slopes) (Fd).—This soil occurs in narrow bands on stronger and more variable relief than the nearly level phase of Forestdale silt loam. Runoff is greater and has caused moderate erosion in spots. Erosion control practices, such as contour tillage, rotation of row crops with close-growing crops, or seeding of permanent cover, are needed. This soil occupies a small aggregate acreage. It is in capability unit 9 (IIs–3).

Forestdale silty clay loam, nearly level phase (less than 2 percent slopes) (Fe).—This soil differs from Forestdale silt loam, nearly level phase, mainly in having a thinner,

Figure 3.—Mature sorghum cut into Forestdale silt loam to provide faster water intake and less packing, crusting, and puddling.

slightly darker, and finer textured (silty clay loam) surface layer and normally a thicker and in many places a slightly finer textured subsurface layer. Also, it is less easily tilled than Forestdale silt loam, nearly level phase.

This soil is either between modal slack-water soils, such as Alligator clay, and modal old natural levee soils, such as Dundee and Forestdale silt loams, or is at the highest altitudes (the narrow old natural levees) in the predominantly slack-water (clay) areas. It is a moderately extensive soil.

Modal profile from cultivated field (moist):

0 to 4 inches, light brownish-gray (10YR 6/2) firm silty clay loam; strongly acid.
4 to 24 inches, gray (10YR 5/1) silty clay highly mottled with yellowish brown and other shades of brown and gray; plastic, firm, hard; weak to moderate, medium to coarse, subangular blocky structure; very strongly acid.
24 to 40 inches +, gray and light brownish-gray (10YR 5/1 and 6/2) silty clay loam; firm to friable; weak subangular blocky to massive structure, slightly acid.
Location: NE¼SW¼ sec. 17, T. 26 N., R. 1 W.

Some improvised drainage is usually needed. Because the silty clay subsurface layer is thick enough to allow only a minimum loss of irrigation water, the soil is suitable for rice production. This soil is in capability unit 10 (IIs–4).

Forestdale silty clay loam, gently sloping phase (2 to 5 percent slopes) (Fg).—This soil has a thinner surface layer and is more varied throughout the other layers than Forestdale silty clay loam, nearly level phase. In addition, it occurs in narrow bands on stronger and more varied relief. The stronger relief increases runoff and causes slightly more erosion.

Contour tillage, rotation of row crops with close-growing crops, seeding of permanent cover crops, or other erosion control practices are needed. This soil has a small aggregate acreage. It is in capability unit 10 (IIs–4).

Made land

Made land (Ma).—This miscellaneous land type consists of earth fills, dikes, and levees.

Pearson series

The Pearson series consists of somewhat poorly drained and moderately well drained silty soils that have a grayish-brown to pale-brown surface layer and a dark yellowish-brown, brown, or pale-brown silty subsurface layer. These soils occur in association with Brittain soils on old natural levees in the vicinity of the Coldwater, Tallahatchie, and Yocona Rivers, generally in the southeastern part of the county. They were derived predominantly from silty alluvium. These medium to very strongly acid soils are medium to moderately low in natural fertility. They differ from the Brittain soils in being better drained, in occupying slightly higher positions, and in being browner and less mottled throughout the profile. The Pearson series is in the Pearson-Brittain-Waverly soil association.

Pearson silt loam, nearly level phase (less than 2 percent slopes) (Pa).—This soil has a small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 5 inches, yellowish-brown (10YR 5/4) friable silt loam; medium acid; ranges in thickness from 5 to 7 inches, and in color from grayish brown (moist) to light brownish gray and pale brown (dry).
5 to 12 inches, yellowish-brown (10YR 5/6) friable silt loam; weakly developed fine subangular blocky structure; strongly acid; ranges in thickness from 7 to 25 inches, in texture from silt loam to silty clay loam, and in color from dark yellowish brown to yellowish brown.
12 to 40 inches +, pale-brown (10YR 6/3) friable silt loam and silty clay loam material mottled with yellowish brown and very pale brown; weak subangular blocky to massive structure; very strongly to medium acid; few to numerous large and small dark-brown concretions; ranges from light brownish gray and pale brown (moist) to light yellowish brown and light gray (dry).
Location: NW¼NW¼ sec. 36, T. 27 N., R. 1 E.

Additions of nitrogen and organic matter are needed to produce maximum yields of crops such as cotton, corn, oats, and truck crops. Some areas are slightly low in phosphorus or potassium, or in both. A minimum of improvised drainage is required. This land is planted predominantly to cotton, but some soybeans, small grains, corn, pastures, and other local crops are sometimes grown. This soil is in capability unit 1 (I–1).

Pearson silt loam, gently sloping phase (2 to 5 percent slopes) (Pb).—This soil is on stronger and more variable relief and has a thinner surface horizon than Pearson silt loam, nearly level phase. The stronger relief increases runoff and occasionally causes moderate erosion on small areas.

Contour tillage, rotation of row crops with close-growing crops, seeding of permanent cover crops, or other erosion-control practices are needed. This soil has a very small aggregate acreage. It is in capability unit 3 (IIe–1).

Pearson silty clay loam, nearly level phase (less than 2 percent slopes) (Pc).—This soil differs from Pearson silt loam, nearly level phase, mainly in having a finer textured (silty clay loam) surface layer and, as a result, slightly less desirable tilth. Its aggregate acreage is small. It is in capability unit 11 (IIs–6).

Pearson silty clay loam, gently sloping phase (2 to 5 percent slopes) (Pd).—Because of its stronger and more variable slopes, this soil has faster runoff and slightly more erosion than Pearson silty clay loam, nearly level phase. Among the erosion-control practices needed are contour tillage, rotation of row crops with close-growing crops, and use of permanent cover crops. This soil has a very small aggregate acreage. It is in capability unit 5 (IIe–4).

Pearson very fine sandy loam, nearly level phase (less than 2 percent slopes) (Pe).—This soil has a sandier surface layer, and, as a result, less crusting after heavy rains than Pearson silt loam, nearly level phase. Its aggregate acreage is very small. This soil is in capability unit 1 (I-1).

Pearson very fine sandy loam, gently sloping phase (2 to 5 percent slopes) (Pg).—This soil differs from Pearson silt loam, gently sloping phase, only in having a slightly sandier surface layer and less crusting after heavy rains. It, too, has a very small aggregate acreage. It is in capability unit 3 (IIe-1).

Sand banks

Sand banks, strongly sloping (over 10 percent slopes) (Sb).—This miscellaneous land type is generally found along the banks of old stream channels and is associated with the soils of the natural levees, both old and recent. It occurs in long narrow strips and is variable in profile characteristics. Normally it is a pale-brown loose loamy sand to sandy loam to a depth of several feet. Runoff is moderate to rapid, and natural drainage is excellent to excessive. Soil reaction varies widely.

When cleared, most of this land type is best suited to winter grazing and to early spring pasture. It is not always practical to handle the very narrow strips of this land type separately from surrounding soils. A good use for Sand banks is for field roads. The small aggregate acreage of this land type is partly in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association, partly in the Collins-Falaya-Waverly, and partly in the Pearson-Brittain-Waverly.

Sharkey series

The Sharkey series consists of very dark gray and dark-gray, very plastic, poorly drained clayey soils. These soils have mottled dark-gray to very dark gray clayey subsurface layers. They were derived from fine-textured, dark-colored Mississippi River alluvium. Included in this series is a small acreage that has a grayish-brown to yellowish-brown silt loam overwash.

The Sharkey soils are slowly and very slowly permeable and slightly acid to strongly acid. They are associated with Alligator, Tunica, and Dowling soils in slack-water areas. They are often called buckshot or gumbo land. Sharkey soils differ from Alligator soils in having a profile that is darker colored and usually slightly less acid. They differ from Tunica soils in not having coarser textured material at depths of 20 to 30 inches. They differ from the Dowling soils in not occupying depressional positions and in being dark-colored throughout the profile, rather than in just the upper 20 inches. The Sharkey series is in the Alligator-Sharkey-Dowling soil association.

Sharkey silty clay, nearly level phase (less than 2 percent slopes) (Sd).—This soil is moderately extensive. Runoff is slow.

Modal profile from cultivated field (moist):

0 to 4 inches, very dark gray (10YR 3/1) granular silty clay; very plastic, very firm, very hard; slightly acid; ranges in color from very dark gray to dark gray, and in thickness from 3 to 5 inches.

4 to 24 inches, dark-gray (10YR 4/1) clay slightly mottled with yellowish brown and dark brown; very plastic, very firm, very hard or extremely hard; massive when wet, moderately developed coarse subangular blocky structure when dry; strongly acid; ranges in thickness from 17 to 21 inches, in color from dark gray to very dark gray, and in structure from moderate to weak, medium to coarse, subangular blocky.

24 to 40 inches+, dark-gray (10YR 4/1) clay mottled with yellowish brown and dark brown; very plastic, very firm, very hard or extremely hard; massive when wet, weak coarse blocky structure when dry; medium acid; ranges in color from dark gray (moist) to gray (dry).

Included in some areas of this soil are small areas of Sharkey clay and Alligator clay soils.

Sharkey silty clay, nearly level phase, like the Alligator soils, develops deep wide cracks during long dry seasons. Farming practices on this soil are influenced by the weather. Usually moisture conditions are right for tillage for only a short period. The soil varies from too plastic and sticky when wet to too hard when dry. Most row crops will grow better in ridge and depression areas of this soil, or in areas adjacent to small bayous, than in larger uniform areas with slightly less than one-half percent slope.

Drainage and additions of nitrogen are needed to produce maximum yields of most local crops on this soil. Probably rice, pasture crops, hay crops, oats (with sufficient surface drainage), and soybeans are the most suitable. This soil is in capability unit 15 (IIIs–4).

Sharkey silty clay, gently sloping phase (2 to 5 percent slopes) (Se).—This soil is in narrow bands and has stronger and more variable relief than Sharkey silty clay, nearly level phase. Some areas are moderately eroded because of the increased surface runoff caused by the stronger relief. Contour tillage, rotation of row crops with close-growing crops, seeding permanent cover, or other erosion control practices are needed. This soil has a small aggregate acreage. It is in capability unit 15 (IIIs–4).

Sharkey silt loam, nearly level overwash phase (less than 2 percent slopes) (Sc).—This soil differs from Sharkey silty clay, nearly level phase, primarily in having a grayish-brown to yellowish-brown mellow silt loam surface layer that ranges from 6 to 36 inches in thickness. It occurs in the transitional zone between Sharkey silty clay and Collins silt loam soils and, like the Collins soils, is subject to occasional flooding. It consists of sediments from two sources—a thin layer of silt loam material from the nearby Loess Hills; and beneath this layer, thick beds of dark-colored, fine-textured slack-water clay deposited by the Mississippi River. Because of its silt loam surface layer, this soil has better tilth and is more productive than the other Sharkey soils. Moderate to high yields of such crops as cotton and corn can be produced. This soil has a small aggregate acreage. It is in capability unit 12 (IIIw–8).

Souva series

The Souva soils are somewhat poorly drained, slightly to medium acid, and dark gray to pale brown. They usually have a mottled dark grayish-brown silty clay loam subsurface layer overlying grayish silty clay or silty clay loam material. These soils occur in association with Ark soils in shallow depressed areas and were derived largely from local alluvium washed and sloughed from the surrounding Bosket, Dubbs, and Dundee soils. They differ from Ark soils in having a grayer, more mottled, and more poorly drained profile. Because of their position, they are frequently covered by water after heavy rains. Some improvised surface drainage is needed. The Souva series is in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association.

Souva silt loam, nearly level phase (less than 2 percent slopes) (Sg).—This soil is moderately slowly permeable and has slow runoff. Many areas of it contain inclusions that have a silty clay loam surface soil. Souva silt loam, nearly level phase, has a small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 6 inches, pale-brown to dark-brown (10YR 6/3 to 4/3) friable silt loam; medium acid; ranges in thickness from 6 to 10 inches.
6 to 26 inches, dark grayish-brown (10YR 4/2) friable silty clay loam mottled with light gray and yellowish brown; medium acid; ranges in thickness from 15 to 25 inches.
26 to 40 inches +, gray to dark-gray (10YR 5/1 to 4/1) silty clay mottled with light gray and brown; plastic, firm, hard; medium to slightly acid; ranges in texture from silty clay to silty clay loam.
Location: W½SE¼ sec. 25, T. 28 N., R. 2 W.

The dampness of the soil and the accumulation of naturally fertile material from adjacent higher soils make this soil productive when adequate surface drainage has been provided. Plant roots grow readily in the surface horizon and penetrate fairly easily into the subsurface layer if unchecked by a high water table. This soil is in capability unit 6 (IIw–3).

Souva silt loam, gently sloping phase (2 to 5 percent slopes) (Sh).—This soil differs from the nearly level phase principally in occupying stronger relief. It has a very small aggregate acreage. It is in capability unit 6 (IIw–3).

Tunica series

The Tunica series consists of dark-gray to dark grayish-brown, plastic soils that have a dark-gray to dark grayish-brown clay or silty clay subsurface layer. This layer overlies brownish silty clay loam or sandy clay loam material. Although somewhat poorly drained, they are the best drained soils of the slack-water areas and occupy the highest positions in these areas. These soils were derived from moderately thick beds of clay over silty or sandy material deposited by the Mississippi River. The Tunica soils occur in association with and closely resemble the Sharkey soils, but unlike the Sharkey soils they are underlain by silty clay loam or sandy clay loam material at depths of 20 to 30 inches. The Sharkey soils normally have clay subsurface layers that are more than 5 feet thick. The Tunica series is in the Alligator-Sharkey-Dowling soil association.

Tunica silty clay, nearly level phase (less than 2 percent slopes) (Ta).—This soil has a relatively small aggregate acreage.

Modal profile from cultivated field (moist):

0 to 4 inches, dark-gray to dark grayish-brown (10YR 4/1 to 4/2) granular silty clay; plastic, firm, very hard; medium to slightly acid; this layer ranges from 3 to 4 inches in thickness.
4 to 22 inches, dark grayish-brown (10YR 4/2) clay or silty clay mottled with shades of brown; very plastic, very firm, very hard to extremely hard; massive when wet, moderate to well developed, medium to coarse, subangular blocky structure when dry; medium acid; 15 to 20 inches thick.
22 to 40 inches +, yellowish-brown (10YR 5/4) friable clay loam mottled with shades of brown and streaked with sandier material; massive; medium to slightly acid.
Location: NW¼SW¼ sec. 19, T. 8 S., R. 10 W.

This soil is used mainly for crop production, chiefly cotton. Some small grains, corn, soybeans, annual hays, and pasture crops are grown. This is a productive soil, although the silty clay surface texture limits somewhat the period between rains that is desirable for tillage. It usually needs application of nitrogen and some improvised drainage in order to produce maximum yields of such row crops as cotton or corn. This soil is in capability unit 8 (IIs–2).

Tunica silty clay, gently sloping phase (2 to 5 percent slopes) (Tb).—This soil occupies stronger and more variable slopes than Tunica silty clay, nearly level phase. Consequently, it has faster runoff and some moderately eroded spots. Erosion control measures, such as contour tillage, rotation of row crops with close-growing crops, or seeding of permanent cover crops, are needed. This soil has a very small aggregate acreage. It is capability unit 14 (IIIs–2).

Tunica and Dundee soils

Tunica and Dundee soils, nearly level phases (less than 2 percent slopes) (Tc).—In a few areas of Quitman County, Tunica silty clay and Dundee silty clay loam soils are rather closely associated in an intricate pattern. If mapped separately, each area would be too small to be of agricultural significance. Since they require similar management and are suited to similar crops, they are mapped together in this undifferentiated group. Usually, the Tunica soils comprise a larger percentage of these areas than the Dundee soils, but both phases combined have a very small aggregate acreage. This acreage is shown partly in the Bosket-Dubbs-Dundee-Forestdale-Dowling soil association and partly in the Alligator-Sharkey-Dowling soil association. This undifferentiated soil group is in capability unit 8 (IIs–2).

Tunica and Dundee soils, gently sloping phases (2 to 5 percent slopes) (Td).—The Tunica and Dundee soils in this undifferentiated soil group have stronger and more variable relief than Tunica and Dundee soils, nearly level phases. Runoff is faster, and as a result small areas have moderate erosion. These soils need contour tillage, rotation of row crops with close-growing crops, seeding of permanent cover, or other erosion control practices. This undifferentiated soil group has a small aggregate acreage. It is in capability unit 14 (IIIs–2).

Waverly series

The Waverly series consists of pale-brown to light-gray soils that have a highly mottled light-gray and gray subsurface layer. These soils are medium to strongly acid. They occupy the depressions throughout the Pearson, Brittain, Collins, and Falaya soils. They were formed partly from local alluvium washed or sloughed from the surrounding silty textured soils and partly from tributary alluvium washed from the nearby Loess Hills by the Coldwater, Tallahatchie, and Yacona Rivers. These soils remain flooded from short to fairly long periods following each heavy rain. Water accumulation is caused by the runoff from the adjacent higher areas and the very slow external and slow internal drainage. Improvised surface drainage is always needed.

The surface texture of the Waverly soils lacks uniformity. Both silty clay loam and silt loam textures, and occasionally silty clay texture, occur in most of the depressions occupied by these soils. For this reason, all surface textures that occur within the Waverly series are included in one mapping unit, which is called Waverly soils, depressional phases. It is partly in the Collins-Falaya-Waverly soil association and partly in the Pearson-Brittain-Waverly soil association.

Waverly soils, depressional phases (less than 1 percent slopes) (Wa).—This mapping unit has a moderately large aggregate acreage.

Modal profile from cultivated field of Waverly silty clay loam (moist):

0 to 5 inches, pale-brown (10YR 6/3) friable silty clay loam mottled with brown; medium to strongly acid; few dark concretions; ranges in color from pale brown to light gray, in thickness from 4 to 7 inches, and in concretions from none to few.

5 to 25 inches, light-gray (10YR 7/1) friable silty clay loam highly mottled with shades of brown and gray; massive; strongly to medium acid; few concretions; ranges in color from gray to light gray, in texture from silty clay loam to silt loam, in thickness from 20 to 40 inches, and in concretions from few to none.

25 to 40 inches +, gray (10YR 5/1) silty clay mottled with shades of gray and brown; plastic, firm, very hard; massive; strongly to slightly acid.

Location: SE¼SW¼ sec. 36, T. 27 N., R. 1 E.

These low areas are usually the most fertile spots in the field, because they have accumulated fertile material from the surrounding higher land. However, their poor drainage and low position make row crops a definite risk, and future yields are always an uncertainty. These low swags are part of the natural drainage pattern of the area and can be used advantageously as location of secondary or primary drainageways. This mapping unit is in capability unit 16 (IVw–1).

Management of Soils

Capability Groups

Soils of the county have been grouped in units within capability classes and subclasses. This is part of a nationwide system of capability grouping in which there are 8 land-capability classes, up to 4 subclasses in most of the classes, and units that are groups of similar soils within each class and subclass.

The 8 general classes are based on the degree that natural features of each soil limit its use or cause risk of damage if it is used for crops, grazing, woodland, or wildlife. A soil is placed in 1 of the 8 classes after study of the uses that can be made of it, the risks of erosion or other damage when it is used, and the need for practices to keep it suitable for use, to control erosion, and to maintain yields.

In classes I, II, and III are soils that are suitable for annual or periodic cultivation for annual or short-lived crops.

Class I soils are those that have the widest range of use and the least risk of damage. They are level or nearly level, productive, well drained, and easy to work. They can be cultivated with almost no risk of erosion and will remain productive if managed with normal care.

Class II soils can be cultivated regularly but they do not have quite so wide a range of suitability as class I soils, or they need more protection. Some class II soils are gently sloping and consequently need moderate care to prevent erosion; others are slightly droughty or slightly wet or somewhat limited in depth.

Class III soils can be cropped regularly but have a narrower range of use and need still more careful management than those in class II.

In class IV are soils that should be cultivated only occasionally or only under very careful management.

In classes V, VI, and VII are soils that, as a rule, should not be cultivated for annual or short-lived crops but that can be used for pasture or range, as woodland, or for wildlife.

In class VIII are soils that have little value for crops, grazing, or woodlands, but may be useful as watersheds, for wildlife, or as sites for recreation. None of these four classes occurs in Quitman County.

The soils in any one capability class are limited by their natural features to about the same degree, but they may be limited for different reasons. To show the main kind of limiting factor, any one of classes II through VIII may be divided into from one to four subclasses, each identified by a letter following the capability class number. The letter "e" indicates that the risk of erosion is what chiefly limits the uses of the soil; the letter "w" is used if the soil is too wet for general use and needs water control; the letter "s" shows that the soil is fine textured, shallow, droughty, or unusually low in fertility; and the letter "c" is used to indicate that the climate is so hazardous that it limits uses of the soil.

Capability units are groups of similar soils within each class and subclass that have similar management requirements. An example is capability unit 3 (IIe–1).

Capability classes and units[5] in Quitman County are given in the following list:

Class I.—Soils that have few limitations in use.
- Unit 1 (I–1): Nearly level, moderately well drained loamy soils.
- Unit 2 (I–2): Nearly level, well-drained sandy loam.

Class II.—Soils moderately limited for use as cropland.
- Unit 3 (IIe–1): Gently sloping, moderately well drained and well drained silt loams or sandy loams.
- Unit 4 (IIe–2): Gently sloping, well-drained, slightly eroded sandy loam.
- Unit 5 (IIe–4): Gently sloping, moderately well drained and somewhat poorly drained, slightly eroded silty clay loams.
- Unit 6 (IIw–3): Somewhat poorly drained and moderately well drained soils of depressions.
- Unit 7 (IIs–1): Somewhat excessively drained sandy loams on old natural levees.
- Unit 8 (IIs–2): Nearly level, somewhat poorly drained clayey soils that are rather difficult to work.
- Unit 9 (IIs–3): Somewhat poorly drained and poorly drained silt loams on old or recent natural levees.
- Unit 10 (IIs–4): Somewhat poorly drained and poorly drained soils, mostly silty clay loams.
- Unit 11 (IIs–6): Nearly level, moderately well drained and somewhat poorly drained silty clay loams.

Class III.—Soils severely limited but suitable for regular use as cropland.
- Unit 12 (IIIw–8): Nearly level soil subject to overflow and backwater.
- Unit 13 (IIIw–11): Nearly level, poorly drained clays.

[5] The nomenclature commonly used to designate each capability unit within the State and county is shown in parentheses. Soils are assigned to capability units in a Delta-wide basis. Since all of the capability units in the Delta do not occur in Quitman County, the capability numbers in parentheses are not consecutive. For example, no soils of capability unit IIe–3 are in Quitman County, therefore this capability group is not discussed in this report.

Unit 14 (IIIs–2): Gently sloping, slightly or moderately eroded, somewhat poorly drained clayey soils.

Unit 15 (IIIs–4): Nearly level or gently sloping, poorly drained clayey soils.

Class IV.—Soils very severely limited for use as cropland; suitable for cultivation part of the time or for special crops.

Unit 16 (IVw–1): Poorly drained soils in depressions.

Unit 17 (IVs–1): Nearly level or gently sloping loamy sands.

Capability units

A brief description of each capability unit, a list of the soils in the unit, and some suggestions for use and management are given in the pages that follow.

Unit 1 (I–1): Nearly level, moderately well drained loamy soils.—Soils of this capability unit, with one exception, are located on the highest parts of the old natural levees. Collins silt loam occupies the highest parts of recent natural levees. The soils in this unit are:

Dubbs fine sandy loam, nearly level phase.
Dubbs silt loam, nearly level phase.
Dundee fine sandy loam, nearly level phase.
Dundee silt loam, nearly level phase.
Pearson silt loam, nearly level phase.
Pearson very fine sandy loam, nearly level phase.
Collins silt loam.

The surface soils are silt loams or sandy loams that range in thickness from 5 to 10 inches. They are easy to work, but bare soils tend to form crusts after rains. The silt loams occasionally form crusts so hard that poor stands of crops are obtained.

The subsoils range in texture from silty clay to silt loam. They are favorable for movement of water and air and for growth of roots.

These soils are excellent for most row crops, truck crops, orchards, small grains, and the grasses and legumes that are commonly grown in the county. They are not well suited to rice, which requires flood irrigation. They are well suited to forests of the good hardwood type and for wildlife, but they are seldom used for these purposes. Trees that grow well are sweetgum and red, white, and water oaks and similar species.

Little if any surface drainage is needed. The Collins soil is subject to overflow, and crops on it need to be protected by levees. On all the soils, rows should run on the contour to reduce danger of erosion and should not cross the ridges. Fall breaking, other than subsoiling, leaves the soil exposed to erosion during the heavy winter rains. Compacted layers from 2 to 12 inches thick are sometimes formed just under the plowed surface soil. These compacted layers should be shattered by subsoiling in the dry fall months. Physical properties such as tilth and capacity to take in water are likely to decline if crop residues and other organic matter are not added regularly. Sod crops and winter legumes will help maintain or increase the organic matter.

Unit 2 (I–2): Nearly level, well-drained sandy loam.—The soil in this unit has had little or no erosion. It is located on the old natural levees bordering former channels and runs of the Mississippi River. The soil in capability unit 2 (I–2) is:

Bosket sandy loam, nearly level phase.

The surface soil is a sandy loam that ranges in thickness from 5 to 8 inches. The soil is easy to work, but when it is bare, rains cause it to pack and to form a crust. The subsoil is usually sandy clay loam.

This soil is good to excellent for most row crops and small grains, as well as for grasses and legumes that are commonly grown in the county. It is well suited to forest of the good hardwood type and to wildlife.

Little if any surface drainage is needed. A compacted layer is sometimes formed just under the plowed surface soil. It should be shattered by subsoiling in the dry months late in fall. In areas where this compacted layer is present, growth of roots, internal movement of water, and available moisture supply are confined to the surface layer. The amount of organic matter is low. The shredding or cutting of crop residues in the fall and the use of sod crops will help to maintain organic matter.

Unit 3 (IIe–1): Gently sloping, moderately well drained and well drained silt loams or sandy loams.—The soils of unit 3 (IIe–1) are located in narrow but long bands along present or former stream channels of old natural levees. They occupy some of the stronger slopes of these levees. The soils in the unit are:

Dubbs fine sandy loam, gently sloping phase.
Dubbs silt loam, gently sloping phase.
Dundee fine sandy loam, gently sloping phase.
Dundee silt loam, gently sloping phase.
Pearson silt loam, gently sloping phase.
Pearson very fine sandy loam, gently sloping phase.

The surface soils range in texture from silt loams to sandy loams. They are easy to work, but bare soils tend to form crusts after rains. The silt loams occasionally form crusts so hard that poor stands of crops are obtained.

The subsoils range in texture from silty clays to silt loams. They are favorable for movement of water and air and growth of roots.

The soils are good to excellent for most row crops, small grains, and grasses and legumes that are commonly grown in the county. They are suited to woodland of the hardwood type.

Slopes on these soils are strong enough to cause erosion hazard if clean-tilled crops are continuously grown. Grass-and-legume sod crops or other close-growing crops, kept on the soil 2 out of every 4 years, will reduce the erosion hazard and maintain physical properties such as organic matter and good tilth. Rows should run on the contour to prevent further erosion and to conserve moisture. Fall breaking, other than subsoiling, leaves the soils exposed to erosion during heavy winter rains. Compacted layers are sometimes formed just under the plowed surface soils. They should be shattered by subsoiling in the dry months late in fall.

Unit 4 (IIe–2): Gently sloping, well-drained, slightly eroded sandy loam.—The only soil of unit 4 (IIe–2) is located in widely scattered narrow bands along present or former stream channels on slopes of the old natural levees. The soil in this unit is:

Bosket sandy loam, gently sloping phase.

The surface soil is sandy loam. The subsoil is generally sandy clay loam.

This soil is excellent for cotton, small grains, and early truck crops. It is moderately good for early corn, vetch, and wild winter peas. Late corn, soybeans, millet, and sudangrass are not suited because of drought hazard. Bermudagrass, johnsongrass, and crimson clover are well suited, but whiteclover is only fairly well suited. Fescue, dallisgrass, the annual summer grasses, and annual lespedeza are not generally suitable. Forest of the hardwood type is suited.

This soil is easy to work, but rains cause the bare soil to pack, crust, and erode. There is a tendency for plowpans to form. Infiltration is fairly good, internal movement of water is good, and water-holding capacity is fair. During short dry periods, some plants, particularly corn and soybeans, show signs of wilt on most of this soil. The organic-matter content is low and is difficult to maintain.

Unit 5 (IIe–4): Gently sloping, moderately well drained and somewhat poorly drained, slightly eroded silty clay loams.—The soils of unit 5 (IIe–4) occur in widely scattered narrow bands on slopes of old natural levees. Soils in the unit are:

Dundee silty clay loam, gently sloping phase.
Pearson silty clay loam, gently sloping phase.

Surface soils are silty clay loams. Subsoils range in texture from silty clays to silt loams.

All crops that are commonly grown in the county are suited to these soils except corn and annual lespedeza, which are fairly well suited. All the perennial and summer grasses and all the perennial and annual legumes except lespedeza are suited. Hardwood trees grow well on these soils.

The soils of this unit erode easily where unprotected. Where the soils are cultivated, contour rows should empty into vegetated waterways. The soils of this unit are somewhat difficult to work. Adverse moisture conditions in these soils delay cultivation after rains. Infiltration and internal movement of water are slow. Water-holding capacity is good. The organic-matter content is low but can be maintained under good management.

Unit 6 (IIw–3): Somewhat poorly drained and moderately well drained soils of depressions.—The soils of this unit are widely scattered throughout the loamy and sandy areas. The soils of unit 6 (IIw–3) are:

Ark silt loam.
Souva silt loam, nearly level phase.
Souva silt loam, gently sloping phase.

The surface soils are silt loams that range in thickness from 6 to 10 inches. The occasional hard crusts that form prevent good stands of crops.

The subsoils are silty clay loams. Water, air, and plant roots penetrate the subsoils fairly well, but they move slowly in the silty clay substratum of the Souva soils.

These soils are good for most locally grown row crops. When proper surface drainage has been provided, they are well suited to most hay crops and grasses, including fescue and whiteclover, dallisgrass and lespedeza, and summer grazing crops. They are well suited to sweetgum, water oak, hackberry, elm, ash, and similar species of hardwood trees. These soils are slightly difficult to work and slightly limited in their use because of the accumulation of excess water on them from adjacent higher lands. Very slow or slow external drainage and slow or moderately slow internal drainage also cause excess water on these soils. Improved surface drainage in the form of W- or V-type ditches emptying into proper outlets is needed on these soils.

Unit 7 (IIs–1): Somewhat excessively drained sandy loams on old natural levees.—The soils of unit 7 (IIs–1) occur on slopes that are less than 5 percent and usually have had only slight erosion. They are:

Beulah sandy loam, nearly level phase.
Beulah sandy loam, gently sloping phase.

The surface soils are easily tilled sandy loams. The subsoils range in texture from silt loams to loamy sands; in many places they are alternate layers of silt loam and loamy sand. Movement of water and air through the subsoils is rapid.

These soils are well suited to early truck crops and small grains for grazing. Bermudagrass and johnsongrass are suited, but dallisgrass, whiteclover, and annual lespedeza are not. Cotton and early corn are not very well suited. Soybeans, late corn, millet, and other crops that grow during the summer months may be damaged by insufficient moisture. Forest of the hardwood type is suited.

Water moves rapidly through these somewhat droughty soils and causes the applied fertilizers to leach from them. Because the water-holding capacity of these soils is low, soil moisture is often deficient during dry seasons.

Unit 8 (IIs–2): Nearly level, somewhat poorly drained clayey soils that are rather difficult to work.—The soils of unit 8 (IIs–2) have had but little erosion. They are:

Tunica silty clay, nearly level phase.
Tunica and Dundee soils, nearly level phases.

The surface soils are predominantly silty clays, spotted with silty clay loams. The subsoils are clays or silty clays that grade into coarser textured material at lower depths.

These soils are good for pasture and hay but may not be entirely safe for row crops. They are suited to cotton, sorghum, soybeans, and small grains, including rice. Fescue, johnsongrass, dallisgrass, alfalfa, whiteclover, and winter legumes are also suited. Forest of the lowland hardwood type is suited.

Some surface drainage is usually necessary for row-crop production. These soils are very hard when dry and very sticky when wet. Infiltration of water is very slow when the soils are wet. When dry, the soils shrink and crack. The surface layers are rather thin, and their organic-matter content is low.

Unit 9 (IIs–3): Somewhat poorly drained and poorly drained silt loams on old or recent natural levees.—The soils of unit 9 (IIs–3) are:

Brittain silt loam, nearly level phase.
Brittain silt loam, gently sloping phase.
Falaya silt loam.
Forestdale silt loam, nearly level phase.
Forestdale silt loam, gently sloping phase.
Collins-Falaya silt loams, nearly level phases.
Collins-Falaya silt loams, gently sloping phases.

The surface soils are silt loams. The subsoils range from silty clays to silt loams. They are underlain by medium-textured material. Water moves slowly through them.

These soils are suited to soybeans, sorghum, small grains, vetch, and wild peas. They are less well suited to corn, cotton, sudangrass, and millet. Bermudagrass, johnsongrass, and winter legumes are well suited. Dallisgrass, white and red clovers, annual lespedeza, and summer grasses are fairly well suited (fig. 4). Lowland hardwood forest is suited.

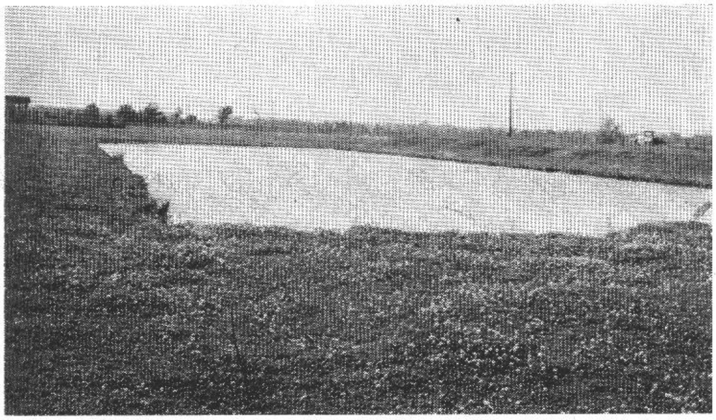

***Figure 4.*—Whiteclover and bermudagrass provide excellent pasture on soils of capability classes II and III. Runoff from sod-covered soils causes little or no erosion, and as a result farm ponds and lakes are clear.**

All of the soils of this unit work easily, but rain will cause them to pack, crust, puddle, and erode when bare. There is a tendency for compacted layers to form in these soils. The organic-matter content should be built up and maintained to improve infiltration and to reduce puddling and crusting as much as possible. In some cases, additions of lime, phosphate, and potash are needed. Where the gently sloping phases are cultivated, the rows should be on the contour and they should empty into vegetated waterways to prevent further erosion.

Unit 10 (IIs–4): Somewhat poorly drained and poorly drained soils, mostly silty clay loams.—The soils of unit 10 (IIs–4) usually have had only slight or no erosion. They are:

Brittain silty clay loam, nearly level phase.
Brittain silty clay loam, gently sloping phase.
Brittain soils-Waverly soils, local alluvium phases.
Crowder sandy clay.
Falaya silty clay loam.
Forestdale silty clay loam, nearly level phase.
Forestdale silty clay loam, gently sloping phase.

The surface soils are silty clay loams and sandy clays. The subsoils range from silty clays to silty clay loams. They may be underlain by a coarser textured substratum.

Soybeans, annual lespedeza, small grains, sorghum, bermudagrass, and johnsongrass are well suited to these soils. Cotton, sudangrass, and millet are fairly well suited. Lowland hardwoods grow well.

Infiltration and internal movement of water are slow on the soils of this unit. Surface drainage is generally necessary for the nearly level soils. The Falaya soil is subject to overflow, and crops on it need to be protected by levees. Where cultivated, the Brittain and Forestdale soils that are gently sloping require rows on the contour that empty into vegetated waterways to prevent further erosion. The soils are somewhat difficult to work, and land preparation is usually done late in spring. Rains during the growing season delay cultivation.

Unit 11 (IIs–6): Nearly level, moderately well drained and somewhat poorly drained silty clay loams.—The soils of unit 11 (IIs–6) have had little or no erosion. They are:

Dundee silty clay loam, nearly level phase.
Pearson silty clay loam, nearly level phase.
Collins silty clay loam.
Collins soils and Waverly soils, local alluvium phases.

The surface soils are silty clay loams. Subsoils range in texture from silty clays to silt loams. Water and air move slowly through these subsoils.

These soils are well suited to the crops that are most commonly grown in the county, including all of the perennial and summer grasses and legumes. Trees of the hardwood species are suited.

All of the soils of this unit are somewhat difficult to work. They are slow to warm in spring. The organic-matter content is low, but it can be maintained under good management. The Collins soils are subject to overflow, and crops on them need to be protected by levees.

Unit 12 (IIIw–8): Nearly level soil subject to overflow and backwater.—The only soil in unit 12 (IIIw–8) is poorly drained. It is:

Sharkey silt loam, nearly level overwash phase.

The surface soil is silt loam. The subsoil is clay. Water and air move slowly or very slowly through this subsoil.

Soybeans, rice, and sorghum are well suited to this soil. Cotton, corn, millet, sudangrass, and annual lespedeza are fairly well suited. Sweetgum-water oak and hackberry-elm-ash forests are suited.

This soil is easy to work, but it is occasionally flooded. Rain causes the soil to pack, to form crusts, and to puddle when bare. Growth of plant roots is usually limited to the surface layer. Careful row arrangement and a system of V- and W-ditches are needed to prevent ponding and to dispose of excess surface water.

Unit 13 (IIIw–11): Nearly level, poorly drained clays.—The soils of unit 13 (IIIw–11) occur in slack-water areas. They have had little or no erosion. Soils in the unit are:

Alligator clay, level phase.
Alligator and Dowling clays.

The surface soils as well as the subsoils are clays. Water and air move slowly through the subsoils, and most root penetrations are shallow.

These soils are well suited to rice, hay crops, and grasses and are fairly well suited to soybeans. In well-drained areas, oats yield well. Some row crops, such as cotton or corn, yield well only occasionally. The organic matter contained in these soils when first cleared is usually reflected in the yields and in the rate of water intake for the first 3 years of cultivation. After the organic matter is depleted, yields and intake of water drop to the level of the areas that have been cleared longer.

These are moderately good soils for cultivated crops, but they are limited by poor drainage, thin surface layers, and poor tilth. Their high clay content causes them to be very sticky and plastic when wet and to be very hard and to have numerous cracks when dry. Best results are obtained for row crops if the soils are broken and prepared in the fall. Spring breaking of the soils often leaves them cloddy throughout the growing season. These soils should not be used regularly for nonleguminous row crops because of the risk of low yields. Crop yields can be increased by a rotation that includes, 4 out of every 6 years, grass and legume sods, winter and summer legumes, or other soil-improving crops. This rotation will improve the tilth of the soils and help maintain a higher organic-matter content and greater fertility. When row crops are grown, an extensive system of W- and V-type ditches is required for surface drainage (fig. 5).

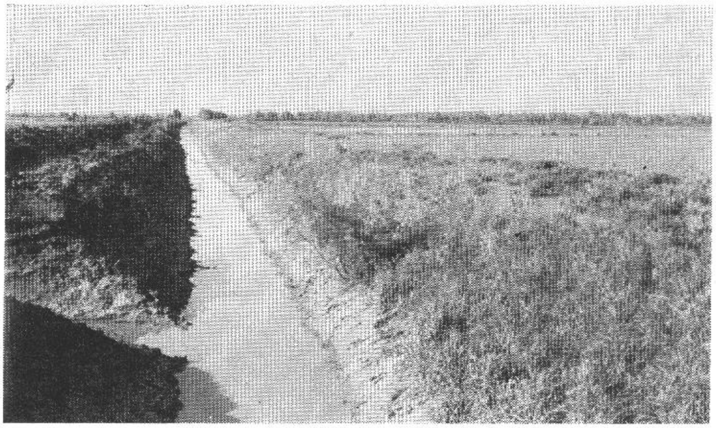

***Figure 5.*—An extensive system of primary and secondary ditching is needed to remove excess surface water from the level and nearly level, poorly drained clayey soils.**

Unit 14 (IIIs–2): Gently sloping, slightly or moderately eroded, somewhat poorly drained clayey soils.—The soils of unit 14 (IIIs–2) are:

Tunica silty clay, gently sloping phase.
Tunica and Dundee soils, gently sloping phases.

The surface soils are predominantly silty clays, spotted with silty clay loams. The subsoils are clays or silty clays that grade into coarser textured material at lower depths.

These soils are well suited to such crops as cotton, soybeans, small grains, vetch, and wild winter peas. Annual lespedeza, millet, sudangrass, fescue, dallisgrass, bermudagrass, johnsongrass, alfalfa, and white and red clovers are suited (fig. 4.). Corn and sorghum are not well suited. Sweetgum-water oak and hackberry-elm-ash forests are suited.

These soils are somewhat difficult to work. Water infiltrates and permeates very slowly when the soils are wet. Runoff and erosion are severe during rains if the soils are left bare. Rows should be arranged with extreme care to prevent erosion. W-type ditches are needed as outlets to remove water from the crop rows (fig. 6). Some vegetated waterways may be necessary for soil protection. The soils shrink and crack when dry. During prolonged dry periods, the roots of some plants are damaged by the cracking. These soils have a moderate water-holding capacity. Their organic-matter content is low, but it can be maintained under good management.

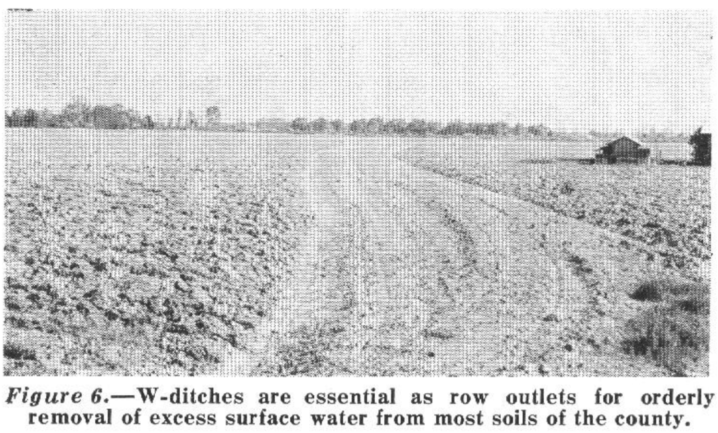

***Figure 6.*—W-ditches are essential as row outlets for orderly removal of excess surface water from most soils of the county.**

Unit 15 (IIIs–4): Nearly level or gently sloping, poorly drained clayey soils.—The soils of unit 15 (IIIs–4) occur in slack-water areas. They have had little or no erosion. The soils in the unit are:

Alligator clay, gently sloping phase.
Alligator silty clay, nearly level phase.
Alligator silty clay, gently sloping phase.
Alligator and Sharkey clays, nearly level phases.
Alligator and Sharkey clays, gently sloping phases.
Sharkey silty clay, nearly level phase.
Sharkey silty clay, gently sloping phase.

The surface soils are clays and silty clays. The subsoils are clays. Water and air move slowly through the subsoils, and most root penetration is shallow.

These soils are very good for pasture and hay. Small grains, rice, and soybeans are suited. Cotton, sudangrass, millet, and annual lespedeza are fairly well suited. Sweetgum-water oak forest grows well on these soils.

The soils of this capability unit are difficult to manage. They must be cultivated within very narrow moisture limits, and a good crop stand is difficult to obtain. Above-average crop yields can be produced only during weather particularly well suited to the crops. The soils swell and seal over when wet, and they crack severely when dry. A carefully planned system of surface drainage is required.

Unit 16 (IVw–1): Poorly drained soils in depressions.—Soils of unit 16 (IVw–1) are predominantly fine textured. They are:

Dowling clay and silty clay.
Waverly soils, depressional phases.

The surface soils are predominantly clays and silty clays. Their thickness varies and depends upon the amount of material recently deposited from runoff waters.

The subsoils are predominantly clays and silty clays. Water and air move very slowly through the subsoils, and most root penetration is shallow.

These soils are fairly good for hay and pasture, as well as for sorghum, soybeans, millet, and sudangrass. They are suitable for growing rice. Crops that require normal growing seasons to mature, such as cotton and corn, are not well suited. Forest of the swamp type is suited.

The disposal of surface water is a severe problem on these soils. Spring planting of row crops and cultivation are often delayed by the poor drainage.

Unit 17 (IVs–1): Nearly level or gently sloping loamy sands.—The soils in unit 17 (IVs–1) are droughty. They are:

Clack loamy sand, nearly level phase.
Clack sandy loam, nearly level phase.

The surface soils range from sandy loams to loamy sands. The subsoils range from sandy loams to sands. Water movement through the subsoils is good to excessive.

These soils are not favorable for growing row crops. They are fairly well suited to early truck crops, early corn, and small grains. Bermudagrass and crimson clover grow well. Lowland hardwood trees are suited.

These soils have a very low water-holding capacity. Their fertility and organic-matter content are low and are difficult to maintain.

Estimated Yields

The estimated average acre yields that can be expected from the principal crops grown on soils of Quitman County under two levels of management are given in table 3. The

TABLE 3.—*Estimated average acre yields of principal crops for the soils of the county under two levels of management*

[Yields in columns A are those obtained under common management; those in columns B are obtained under good management. Absence of yield indicates that crop specified is not recommended for the soil]

Soil group and soils	Cotton (lint)[1]		Corn [1]		Oats		Soybeans [2]		Rice [3]		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B	A	B
Unit 1 (I-1)—Nearly level moderately well drained loamy soils:	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Acres per animal unit* [4]	*Acres per animal unit* [4]
Dubbs fine sandy loam, nearly level phase	600	800	40	85	35	55	15	25			4.2	2.2
Dubbs silt loam, nearly level phase	600	800	40	85	35	55	15	25			4.2	2.2
Dundee fine sandy loam, nearly level phase	600	750	40	85	35	55	15	25			4.2	2.2
Dundee silt loam, nearly level phase	600	750	40	85	35	55	15	25			4.2	2.2
Pearson silt loam, nearly level phase	550	750	35	85	35	55	15	25			4.2	2.2
Pearson very fine sandy loam, nearly level phase	550	750	35	85	35	55	15	25			4.2	2.2
Collins silt loam	500	750	35	90	30	50	15	25			4.2	2.2
Unit 2 (I-2)—Nearly level, well-drained sandy loam:												
Bosket sandy loam, nearly level phase	600	750	40	75	30	50	10	15			5.0	2.4
Unit 3 (IIe-1)—Gently sloping, moderately well drained and well drained silt loams or sandy loams:												
Dubbs fine sandy loam, gently sloping phase	525	700	35	60	33	55	10	15			4.2	2.4
Dubbs silt loam, gently sloping phase	525	700	35	60	33	55	10	15			4.2	2.4
Dundee fine sandy loam, gently sloping phase	525	650	35	60	35	55	10	15			4.2	2.4
Dundee silt loam, gently sloping phase	525	650	35	60	35	55	10	15			4.2	2.4
Pearson silt loam, gently sloping phase	500	600	35	60	30	50	10	15			4.2	2.4
Pearson very fine sandy loam, gently sloping phase	500	600	35	60	30	50	10	15			4.2	2.4
Unit 4 (IIe-2)—Gently sloping, well-drained, slightly eroded sandy loam:												
Bosket sandy loam, gently sloping phase	450	550	30	60	30	50	10	15			5.0	2.5
Unit 5 (IIe-4)—Gently sloping, moderately well drained and somewhat poorly drained, slightly eroded silty clay loams:												
Dundee silty clay loam, gently sloping phase	400	500	25	45	35	55	15	20			5.5	3.5
Pearson silty clay loam, gently sloping phase	400	500	25	45	35	50	15	20			5.5	3.5
Unit 6 (IIw-3)—Somewhat poorly drained and moderately well drained soils of depressions:												
Ark silt loam	500	750	45	90	30	50	15	25			4.5	2.2
Souva silt loam, nearly level phase	350	500	45	85	25	40	15	25			5.0	2.3
Souva silt loam, gently sloping phase	350	500	45	85	25	40	15	25			5.0	2.3
Unit 7 (IIs-1)—Somewhat excessively drained sandy loams on old natural levees:												
Beulah sandy loam, nearly level phase	375	500	30	60	30	50	10	15			5.0	2.5
Beulah sandy loam, gently sloping phase	325	450	20	40	30	50	10	15			5.0	2.5
Unit 8 (IIs-2)—Nearly level, somewhat poorly drained clayey soils that are rather difficult to work:												
Tunica silty clay, nearly level phase	450	625	30	45	30	55	15	30	40	70	5.0	3.0
Tunica and Dundee soils, nearly level phases	450	650	30	45	30	55	15	30	40	70	5.0	3.0
Unit 9 (IIs-3)—Somewhat poorly drained and poorly drained silt loams on old or recent natural levees:												
Brittain silt loam, nearly level phase	375	500	35	55	30	50	15	25	40	70	4.2	2.3
Brittain silt loam, gently sloping phase	350	500	35	55	30	50	15	25	30	50	4.5	2.5
Falaya silt loam	350	500	35	55	25	45	15	25	40	70	4.2	2.3
Forestdale silt loam, nearly level phase	375	500	35	55	30	50	15	25	40	70	4.2	2.3
Forestdale silt loam, gently sloping phase	350	500	30	55	30	50	15	25	30	50	4.5	2.5
Collins-Falaya silt loams, nearly level phases	400	525	35	60	30	50	15	25	30	60	4.2	2.3
Collins-Falaya silt loams, gently sloping phases	375	500	30	55	30	50	15	25	30	50	4.2	2.3

See footnotes at end of table.

TABLE 3—*Estimated average acre yields of principal crops for the soils of the county under two levels of management*—Continued

Soil group and soils	Cotton (lint)[1]		Corn [1]		Oats		Soybeans [2]		Rice [3]		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B	A	B
Unit 10 (IIs-4)—Somewhat poorly drained and poorly drained soils, mostly silty clay loams:	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Acres per animal unit* [4]	*Acres per animal unit* [4]
Brittain silty clay loam, nearly level phase	350	450	25	50	30	50	15	30	40	70	5. 5	2. 8
Brittain silty clay loam, gently sloping phase	325	400	25	40	30	50	15	25	40	50	5. 5	2. 8
Brittain soils-Waverly soils, local alluvium phases	325	400	25	45	25	40	15	30	40	70	5. 5	2. 8
Crowder sandy clay	325	400	25	45	30	50	15	30	40	70	5. 5	2. 8
Falaya silty clay loam	325	425	25	50	30	50	15	30	40	70	5. 5	2. 8
Forestdale silty clay loam, nearly level phase	350	450	25	50	30	50	15	30	40	70	5. 5	2. 8
Forestdale silty clay loam, gently sloping phase	325	400	25	40	30	50	15	25	40	50	5. 5	2. 8
Unit 11 (IIs-6)—Nearly level, moderately well drained and somewhat poorly drained silty clay loams:												
Dundee silty clay loam, nearly level phase	475	625	35	50	35	55	15	25	35	55	4. 5	2. 3
Pearson silty clay loam, nearly level phase	450	600	35	50	35	55	15	25	35	55	4. 5	2. 3
Collins silty clay loam	450	600	35	50	35	55	15	25	35	55	4. 5	2. 5
Collins soils and Waverly soils, local alluvium phases	425	550	30	50	30	50	15	25	30	55	4. 5	2. 5
Unit 12 (IIIw-8)—Nearly level soil subject to overflow and backwater:												
Sharkey silt loam, nearly level overwash phase	350	500	30	55	35	55	15	25	40	70	5. 0	3. 0
Unit 13 (IIIw-11)—Nearly level, poorly drained clays:												
Alligator clay, level phase	200	300	15	25	------	------	12	30	40	70	6. 0	4. 0
Alligator and Dowling clays	200	300	15	25	------	------	12	30	40	70	6. 0	4. 0
Unit 14 (IIIs-2)—Gently sloping, slightly or moderately eroded, somewhat poorly drained clayey soils:												
Tunica silty clay, gently sloping phase	400	600	30	45	30	50	15	25	40	60	5. 0	3. 0
Tunica and Dundee soils, gently sloping phases	400	600	30	45	30	50	15	25	40	60	5. 0	3. 0
Unit 15 (IIIs-4)—Nearly level or gently sloping, poorly drained clayey soils:												
Alligator clay, gently sloping phase	250	400	20	45	30	50	12	30	40	70	5. 5	3. 5
Alligator silty clay, nearly level phase	250	400	20	45	30	50	12	30	40	70	6. 0	3. 0
Alligator silty clay, gently sloping phase	250	400	20	45	30	50	12	30	40	70	5. 5	3. 5
Alligator and Sharkey clays, nearly level phases	250	400	20	45	30	50	12	30	40	70	6. 0	3. 0
Alligator and Sharkey clays, gently sloping phases	250	400	20	45	30	50	12	30	40	70	5. 5	3. 5
Sharkey silty clay, nearly level phase	300	400	30	50	30	50	15	30	40	70	6. 0	3. 0
Sharkey silty clay, gently sloping phase	300	400	30	50	30	50	15	30	40	70	5. 5	3. 5
Unit 16 (IVw-1)—Poorly drained soils in depressions:												
Dowling clay and silty clay	------	------	------	------	------	------	15	30	30	70	8. 0	4. 0
Waverly soils, depressional phases	------	------	------	------	------	------	15	30	30	70	8. 0	4. 0
Unit 17 (IVs-1)—Nearly level or gently sloping loamy sands:												
Clack loamy sand, nearly level phase	------	------	------	------	20	30	------	------	------	------	8. 0	4. 0
Clack sandy loam, nearly level phase	------	------	------	------	20	30	------	------	------	------	8. 0	4. 0

[1] Must be irrigated to obtain these yields in dry years.
[2] Yields vary with rainfall. Highest yields are obtained during wet growing seasons.
[3] After 2 years of continuous rice, yields often decline sharply.
[4] An animal unit is equivalent to 1 mature cow, steer or horse, 5 hogs, or 7 sheep or goats.

yields in columns A are those to be expected under common management. Those in columns B are to be expected under improved management. Yields to be expected under common management are those obtained by farmers who use only a few of the practices that have proved best in producing a specified crop. Yields to be expected under improved management are those obtained by practices that have been proved successful by those farmers getting better yields or by the agricultural experiment station, or by both. As an example, the best management for producing a high yield of cotton on a particular soil might be:

(1) Improve the drainage.
(2) Subsoil when dry to shatter the plow pan.
(3) Prepare good seedbed.
(4) Select high-yielding variety.
(5) Apply large amounts of nitrogen.
(6) Control insects.
(7) Maintain or improve supply of organic matter by growing sod crops for 3 years out of every 6.
(8) Irrigate as needed.

A farmer might follow all of these practices except the control of insects, and still only obtain yields comparable to those obtained under common management.

Control of Water on the Land

This section discusses irrigation, soil characteristics that affect the drainage and control of runoff, and the selection of sites for roads and buildings. The characteristics of the soils and climate are stressed, because detailed plans for irrigating, draining, and controlling erosion are beyond the scope of a soil survey report. Advice on these subjects can be obtained through the county agent or the local representative of the Soil Conservation Service.

The soils of Quitman County are drained mainly by two types of ditches called the V-ditch and the W-ditch. V-ditches should be at least 1 foot deep and 12 feet wide, and the sides should never have more than 1 foot rise in 4 feet of slope. Side slopes should be gradual enough to permit mowing and easy crossing by farm equipment. The channels of W-ditches should be 30 feet apart and at least 6 inches below ground level. The excavated dirt should be placed between the channels. The slopes of the channels should be gradual enough to permit mowing and easy crossing by farm equipment.

Irrigation

Irrigation farming is a specialized type of farming that requires careful planning based on reliable information. Among other things, the farmer needs to know (1) how different kinds of soils take in, hold, and give up moisture; (2) how different kinds of plants use moisture; (3) how to apply water so as to best meet the needs of the soils and the plants growing on them; (4) cost of supplying the water; (5) the probable increase in yield if the water is applied; and (6) the price to be expected from the crops grown.

Farmers who plan to irrigate, or who have already installed an irrigation system, need detailed information that cannot be supplied in a soil survey report. They can obtain this from the local representative of the Soil Conservation Service or the county agent.

Nevertheless, it seems worthwhile to point out in this report the pattern of rainfall, the results of some experiments on irrigation, and ways of estimating the amount of moisture in soils of various textures.

Pattern of rainfall

In this county the total annual rainfall normally exceeds the amount needed for best crop production, but most of it falls in winter when crops need the least moisture. Many days, or even weeks, during summer the crops need far more moisture than the rainfall provides. Frequently, summer droughts are severe enough to reduce yields of pasture and row crops. In most years, perennial pasture is severely affected by high temperatures and shortage of moisture from midsummer to fall.

Records of rainfall and crop needs for moisture are not available for Quitman County, but the shortage of summer rainfall can be estimated from records at Stoneville, Miss., which has similar rainfall and equivalent need of moisture for plant growth. At Stoneville, August rainfall was less than the crops needed for 21 out of 22 years in the period 1930–51. In this period, the September rainfall was short of crop needs in 19 years, October rainfall in 9, and November rainfall in 2 years. For the same period, the May rainfall was short of crop needs in 2 years, the June rainfall in 11, and the July rainfall in 17 years.

Irrigation experiments

Irrigation experiments made in the period 1952–54 at the Delta branch of the Mississippi Agricultural Experiment Station in the west central part of the Delta section of Mississippi disclosed the following (*3*):

1. On sandy loam soils, during the 1952–54 period, irrigation increased the yield of seed cotton about 750 pounds an acre; corn, 26 bushels an acre; and soybeans, 8 bushels an acre.
2. On clay soils, irrigation increased yields of corn 30 bushels an acre; soybeans, 10 bushels an acre; and alfalfa, 1.5 tons an acre. In 1954, cotton yields did not increase under irrigation.
3. In 1954, irrigated pastures of dallisgrass, johnsongrass, and coastal bermudagrass added more than 300 pounds of weight per acre to beef cattle in the period July 26 to November.
4. Irrigating cotton on hardpan soil is of little benefit unless the hardpan is broken.
5. If cotton and corn have wilted severely, irrigation only slightly increases yields. Water must be applied before wilting if it is to be of much value.
6. Insects are more difficult to control if cotton is irrigated.
7. Irrigation makes it more difficult to control grasses and weeds.
8. The fiber is longer and weaker if cotton is irrigated. Irrigation corrects deficiencies created by drought but apparently has no other effect on the fiber properties.
9. Irrigation has no significant influence on nep count, yarn strength, or other spinning qualities of cotton.
10. Irrigation has a permanent place in agriculture in the Yazoo-Mississippi Delta, as is indicated by the weather records and the crop-response data.

In judging the benefits and disadvantages of irrigation just listed, it should be recalled that yields of the most nonirrigated crops were severely reduced by dry weather in 1952 and 1954, and that yields of many nonirrigated crops were reduced in 1953. Because the experiments were made in dry years, the comparative increases in yield resulting from irrigation are probably larger than they would be in years of average or better rainfall. However, there normally is a shortage of rainfall during the growing season, and, as previously mentioned, August rainfall has been less than the need for moisture in 21 years out of 22, at Stoneville, Miss.

Soil moisture supply [6]

Described in table 4 are the appearance and behavior of soils of several textures when they contain various percentages of moisture ranging from dry to above field capacity. This information will be useful to those who have installed irrigation systems or who are considering the possibility of irrigating their land.

[6] Parts of this section have been adapted from Mississippi Farm Research, Vol. 18, No. 5 (*2*) and Mississippi Agricultural Experiment Station Circular 180 (*4*).

TABLE 4.—*Behavior of soils of several textures at different moisture contents*

Soils	No moisture	Up to 50 percent field capacity	50 to 75 percent field capacity	75 percent to field capacity	Field capacity	Above field capacity
Sandy loam	Dry, loose; flows through fingers.	Appears dry; will not form a ball.[1]	Forms ball under pressure, but ball seldom holds together.	Forms weak ball that breaks easily; not slick or slippery.	If squeezed in hand, no free water but wet imprint on hand.	Free water released if kneaded.
Loam and silt loam.	Dry, powdery; at times forms crusts that break into powder easily.	Somewhat crumbly but holds together under pressure.	Forms ball; somewhat plastic; at times is slick or slippery under pressure.	Forms ball; very plastic; feels slick or slippery if it contains much clay.	If squeezed in hand, no free water but wet imprint on hand.	Free water can be squeezed out.
Clay loam and clay.	Hard crust that may be cracked; at times, loose crumbs on surface.	Somewhat plastic; ball forms under pressure; cracks appear in ball.	Forms ball; forms ribbon if pressed between fingers.	Forms ribbon easily; feels slick or slippery.	If squeezed in hand, no free water but wet imprint on hand.	Puddles; free water on surface.

[1] Ball is formed by squeezing a handful of soil firmly.

Soil acts as a reservoir. During heavy rainfall, it absorbs and holds water for crop use in the dry periods. The water is held in the soil much as it is held in a sponge.

Following a rain that thoroughly saturates the soil, some water will drain away, and the rest will be held in the soil against the pull of gravity. The amount of moisture held in the soil after such a rain is called *field capacity*.

To get water from the soil, plant roots must exert a force greater than the force that holds the water to the soil particles. The more water the plants withdraw, the greater the force they need to exert to obtain more water. Eventually, the point is reached where plant roots no longer exert enough force to pull the water from the soil, and then the plants wilt. This point is called the *permanent wilting percentage*.

The *available moisture capacity* of a soil is the difference between the amount held at field capacity and the amount that is held at the permanent wilting percentage.

Most plants grow best when the soil moisture is about halfway between field capacity and the permanent wilting percentage. At this level, the soil is adequately aerated, yet there is sufficient moisture for good growth.

The water-holding capacity of a soil is determined mainly by the size and arrangement of the soil particles and by the slope. In general, the finer the soil particles and the stronger the slope, the more slowly the soil absorbs water. Because sandy soils have coarse particles, they absorb water rapidly, hold little of it, and quickly give up this small amount. Clay soils, in contrast, have very fine particles. Consequently they soak up water slowly, hold a large amount, and give up this amount slowly. Clay soils still hold an appreciable amount of water after plants have wilted.

Soils best suited to irrigation are those that are nearly level and of intermediate texture. Soils that take in water slowly because of texture, slope, or both, are difficult to irrigate. Small amounts of water must be applied over long periods, and this increases the cost of irrigating. Coarse-textured soils are also difficult to irrigate because they wash so easily. The intake of water can be improved for both fine- and coarse-textured soils by adding organic matter.

Table 5 shows the available moisture capacity of the soils that are most commonly irrigated and the depth of irrigation for the usual crops.

Soil Characteristics That Affect Drainage and Control of Runoff

This subsection summarizes the soil characteristics most important in controlling water. The various rates of surface runoff and internal drainage are briefly defined. The soils are then listed, by capability groups, for various ranges in rate of surface runoff.

Surface runoff

The movement of water over the land is called surface runoff, or external drainage. The various rates of surface drainage used in this county are defined as follows (*8*):

Rapid Surface Runoff: A large part of the water that falls on the land runs off; only a small part moves down through the soil.

Medium Surface Runoff: Moderate amount of water flows away and a moderate amount enters the soil; free water is on the surface for only short periods; loss of water through medium surface runoff does not seriously reduce the supply of water for plants.

Slow Surface Runoff: Water flows away so slowly that free water covers the soil for significant periods, passes through the soil profile, or evaporates into the air.

Very Slow Surface Runoff: Water flows away so very slowly that free water lies on the surface for long periods or immediately enters the soil. Much of the water either passes through the soil or evaporates.

Soils with medium to moderately rapid surface runoff and moderate to severe erosion:

Miscellaneous land types

Clay and sand banks, sloping.
Clay and sand banks, strongly sloping.
Sand banks, strongly sloping.

TABLE 5.—*Available moisture capacity of soils most commonly irrigated and depth of irrigation for the usual crops*

Soil type	Capability unit	Available moisture capacity by 1-foot layers	Depth to be irrigated for crops listed	
			Crop	Depth
		Inches of water per foot of soil		*Feet*
Beulah sandy loam, nearly level phase Beulah sandy loam, gently sloping phase	Unit 7 (IIs–1)	1.2 1.2 1.0	Summer pasture Small grain Cotton Corn	3.0 2.5 3.0 3.0
Bosket sandy loam, nearly level phase	Unit 2 (I–2)	1.6 1.6 1.4	Summer pasture Small grain Cotton Corn	3.0 2.5 3.0 3.0
Dubbs fine sandy loam, nearly level phase Dubbs silt loam, nearly level phase	Unit 1 (I–1)	1.8 1.8 1.5	Summer pasture Small grain Cotton Corn	2.5 2.5 2.5 2.5
Dundee fine sandy loam, nearly level phase Pearson very fine sandy loam, nearly level phase	Unit 1 (I–1)	2.0 2.2 2.0	Summer pasture Small grain Cotton Corn	2.5 2.5 2.5 2.5
Collins silt loam Dundee silt loam, nearly level phase Pearson silt loam, nearly level phase	Unit 1 (I–1)	2.0 2.2 2.0	Summer pasture Small grain Cotton Corn	2.5 2.5 2.5 2.5
Collins silty clay loam Dundee silty clay loam, nearly level phase Pearson silty clay loam, nearly level phase	Unit 11 (IIs–6)	2.0 2.2 2.2	Summer pasture Small grain Cotton Corn	2.5 2.5 2.5 2.5
Brittain silt loam, nearly level phase Brittain silt loam, gently sloping phase Falaya silt loam Forestdale silt loam, nearly level phase Forestdale silt loam, gently sloping phase	Unit 9 (IIs–3)	2.2 2.2 2.2	Summer pasture Small grain Cotton Corn	2.0 2.0 2.0 2.0
Brittain silty clay loam, nearly level phase Brittain silty clay loam, gently sloping phase Falaya silty clay loam Forestdale silty clay loam, nearly level phase Forestdale silty clay loam, gently sloping phase	Unit 10 (IIs–4)	2.5 2.5 2.5	Summer pasture Small grain Cotton Corn	2.0 2.0 2.0 2.0
Alligator clay, gently sloping phase Alligator silty clay, nearly level phase Alligator silty clay, gently sloping phase Sharkey clay [1] Sharkey silty clay, nearly level phase Sharkey silty clay, gently sloping phase	Unit 15 (IIIs–4)	3.0 3.0 3.0	Summer pasture Small grain Cotton Corn	2.0 2.0 2.0 2.0

[1] Sharkey clay appears only in an undifferentiated group as Alligator and Sharkey clays.

Soils with medium surface runoff and slight to moderate erosion:

Unit 3 (IIe–1)

Dubbs fine sandy loam, gently sloping phase.
Dubbs silt loam, gently sloping phase.
Dundee fine sandy loam, gently sloping phase.
Dundee silt loam, gently sloping phase.
Pearson silt loam, gently sloping phase.
Pearson very fine sandy loam, gently sloping phase.

Unit 4 (IIe–2)

Bosket sandy loam, gently sloping phase.

Unit 5 (IIe–4)

Dundee silty clay loam, gently sloping phase.
Pearson silty clay loam, gently sloping phase.

Unit 7 (IIs–1)

Beulah sandy loam, gently sloping phase.

Unit 9 (IIs–3)

Brittain silt loam, gently sloping phase.
Forestdale silt loam, gently sloping phase.
Collins-Falaya silt loams, gently sloping phases.

Unit 10 (IIs–4)

Brittain silty clay loam, gently sloping phase.
Forestdale silty clay loam, gently sloping phase.

Unit 14 (IIIs–2)

Tunica silty clay, gently sloping phase.
Tunica and Dundee soils, gently sloping phases.

Unit 15 (IIIs–4)

Alligator clay, gently sloping phase.
Alligator silty clay, gently sloping phase.
Alligator and Sharkey clays, gently sloping phases.
Sharkey silty clay, gently sloping phase.

Soils with slow surface runoff and little erosion:

Unit 1 (I–1)

Dubbs fine sandy loam, nearly level phase.
Dubbs silt loam, nearly level phase.
Dundee fine sandy loam, nearly level phase.
Dundee silt loam, nearly level phase.
Pearson silt loam, nearly level phase.
Pearson very fine sandy loam, nearly level phase.
Collins silt loam.

Unit 2 (I–2)

Bosket sandy loam, nearly level phase.

Unit 7 (IIs–1)

Beulah sandy loam, nearly level phase.

Unit 8 (IIs–2)

Tunica silty clay, nearly level phase.
Tunica and Dundee soils, nearly level phases.

Unit 9 (IIs–3)

Brittain silt loam, nearly level phase.
Forestdale silt loam, nearly level phase.
Collins-Falaya silt loams, nearly level phases.
Falaya silt loam.

Unit 10 (IIs–4)

Brittain silty clay loam, nearly level phase.
Forestdale silty clay loam, nearly level phase.
Brittain soils-Waverly soils, local alluvium phases.
Crowder sandy clay.
Falaya silty clay loam.

Unit 11 (IIs–6)

Dundee silty clay loam, nearly level phase.
Pearson silty clay loam, nearly level phase.
Collins silty clay loam.
Collins soils and Waverly soils, local alluvium phases.

Unit 12 (IIIw–8)

Sharkey silt loam, nearly level overwash phase.

Unit 13 (IIIw–11)

Alligator clay, level phase.
Alligator and Dowling clays.

Unit 15 (IIIs–4)

Alligator silty clay, nearly level phase.
Alligator and Sharkey clays, nearly level phases.
Sharkey silty clay, nearly level phase.

Unit 17 (IVs–1)

Clack loamy sand, nearly level phase.
Clack sandy loam, nearly level phase.

Soils with very slow surface runoff and no erosion:

Unit 6 (IIw–3)

Ark silt loam.
Souva silt loam, nearly level phase.
Souva silt loam, gently sloping phase.

Unit 16 (IVw–1)

Dowling clay and silty clay.
Waverly soils, depressional phases.

Internal drainage

The movement of water through the soil is called internal drainage. The various rates of internal drainage used in this county are defined as follows (*8*):

Rapid Internal Drainage: Soil is saturated with water only a few hours, so movement of water is a little too rapid for the best growth of the important crops. The soil is free of mottles and has a brownish subsoil.

Medium Internal Drainage: Soil is saturated with water only a few days, or for too short a time to damage roots of crop plants; this is about the best internal drainage for growth of important crops; subsoil is brownish and only slightly mottled, and surface soil is free of mottling.

Very Slow Internal Drainage: Water moves through the soil too slowly for best growth of crops; root zone may be saturated for a month or two; subsoil is normally dark gray or gray and splotched or highly mottled.

Internal movement of water in soils and the need for ditches to remove surface water are given in the section Capability Groups.

Soil Drainage and Building Sites

Water seeps faster from ponds, irrigation flumes, terraces, and similar excavations on soils of capability units 1 (I–1), 2 (I–2), 3 (IIe–1), 4 (IIe–2), 7 (IIs–1), and 17 (IVs–1) than on other soils of the county because they have more permeable and in most places sandier subsoils. However, the loss of water is often negligible because silt and clay particles settle and soon form a lining in the excavations. Only a small amount of water seeps from excavations in soils that have clayey subsoils.

Soils of capability units 1 (I–1), 2 (I–2), 3 (IIe–1), 4 (IIe–2), 7 (IIs–1), and 17 (IVs–1) that have a low clay content do not expand in wet seasons and contract in dry seasons as the clayey soils do. Therefore they are desirable sites for buildings and public roads. Unsurfaced roads on these loamy and sandy soils that have medium to moderately rapid internal drainage can be used throughout the year. Soils in capability units 9 (IIs–3) and 11 (IIs–6) are the next most desirable locations for buildings and roads. The soils in capability unit 16 (IVw–1) are the least desirable for building sites and roads because of their extremely clayey profile and naturally low position. The very wet subsurface layers often cause highway and building foundations to sag.

Soil Associations

There are four general soil patterns in Quitman County. Each soil pattern is known as a soil association. The soil association is named for the dominant soil series that occur within it. It consists of the dominant series and other series of lesser extent. The distribution of the soil associations is shown in a generalized map (fig. 7). Each of the four soil associations is described in this section.

Bosket-Dubbs-Dundee-Forestdale-Dowling Association

The Bosket-Dubbs-Dundee-Forestdale-Dowling association occupies the nearly level and gently sloping old natural levees and their associated depressions. The old natural levee soils were formed from stratified layers of fine-, medium-, and sometimes coarse-textured Mississippi River alluvium. The depressional soils were formed partly from Mississippi River alluvium and partly from local alluvium sloughed from the adjacent higher land. All of the soils in this association except the depressional ones have been free from overflow long enough to be partially leached. The soils range from slightly to very

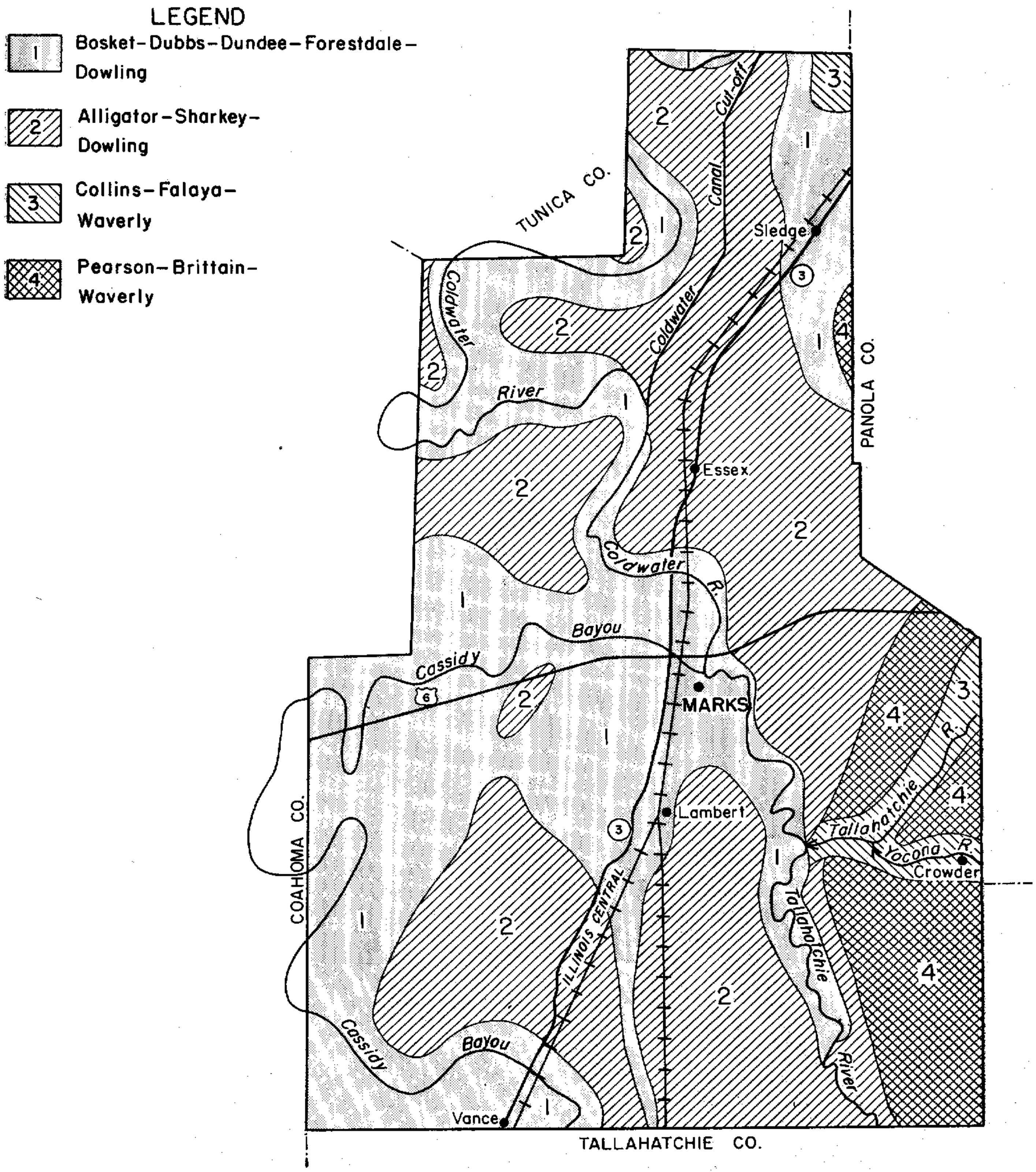

Figure 7.—**Soil associations, Quitman County, Miss.**

strongly acid. Most of them are only slightly eroded, but some scattered small areas are moderately eroded.

The moderately well drained and well drained Dubbs soils and the well drained Bosket soils, together with some associated small areas of somewhat excessively drained Beulah soils and the excessively drained Clack soils, comprise a small percentage of this association. They generally occupy the highest altitudes of the county. Their surface textures range from silt loams to loamy sands.

The somewhat poorly and moderately well drained Dundee soils occupy the intermediate and higher altitudes. Their surface textures range from silty clay loams to fine sandy loams.

The poorly and somewhat poorly drained Forestdale soils, the poorly drained Dowling soils, the somewhat poorly drained Souva soils, and the moderately well drained Ark soil form an intricate pattern at lower altitudes of the old natural levees and in the depressions. They comprise the largest percentage of the association. Their surface textures range from silty clays to silt loams.

Most of this land has been cleared of its native vegetation and is used chiefly for cultivated crops. The Bosket, Dubbs, Dundee, and Ark are considered the best agricultural soils in the county. They grow most local crops well. The Forestdale and Souva soils often require some improvised surface drainage for maximum yields, and the Dowling soils usually require surface drainage before cultivation is feasible. The Beulah and Clack soils are usually somewhat droughty during relatively dry growing seasons.

Alligator-Sharkey-Dowling Association

The Alligator-Sharkey-Dowling association occupies nearly level and level areas on the wide slack-water flats and low ridges and in the associated depressions. A small acreage is gently sloping. These clay and silty clay soils were formed from Mississippi River sediments that were high in clay content. They range from slightly to very strongly acid. Most of the soils have had only slight or no erosion, but there are scattered small areas of moderate erosion.

The poorly drained Alligator, Sharkey, and Dowling soils predominate in this association, but sizable areas of the poorly drained Crowder sandy clay soils and the somewhat poorly drained Tunica silty clay soils are included. The soils of this association usually have not been free from overflows as long as the soils of the Bosket-Dubbs-Dundee-Forestdale-Dowling association, and they have had less profile development than these soils.

Rice, grass and legume mixtures, oats, and some row crops grow well on these soils if surface drainage is adequate. Trees also grow well.

Collins-Falaya-Waverly Association

The Collins-Falaya-Waverly association consists of soils on the nearly level recent natural levees (first bottoms) and in depressions along the Coldwater, Yocona, and Tallahatchie Rivers. These soils were formed from highly silty alluvium deposited by these three rivers. They have silt loam and silty clay loam surface textures. The soils of this association are subject to overflow where not protected by levees. They range from very strongly to medium acid. Most of the soils have had little or no erosion.

The somewhat poorly and moderately well drained Collins soils are at the higher altitudes on the recent natural levees, and the poorly and somewhat poorly drained Falaya soils are at the lower altitudes. The poorly drained Waverly soils are in the depressions.

Where protected from overflows, the Collins are good soils for the production of most locally grown crops. The Falaya soils need some artificial drainage for profitable production. The Waverly soils require extensive drainage by means of ditches before cultivation is feasible.

Pearson-Brittain-Waverly Association

The Pearson-Brittain-Waverly association consists of soils on the nearly level and gently sloping tributary old natural levees and in the associated depressions. These soils were formed from silty alluvium that was deposited by the Coldwater, Tallahatchie, and Yocona Rivers. Except for the Waverly soils, they have been free from overflow long enough to be partially leached and to have some profile development. The soils of this association range from medium to very strongly acid. Most of them are only slightly eroded.

The somewhat poorly and moderately well drained Pearson soils are at the higher altitudes and have silty clay loam, silt loam, and very fine sandy loam surface textures. The poorly and somewhat poorly drained Brittain soils are at the lower altitudes on the tributary old natural levees and have silty clay loam and silt loam surface soils. The Waverly soils occupy the depressions. They lack uniformity in surface-soil texture. Silty clay loam and silt loam and, in places, silty clay surface-soil textures occur within the same delineation.

Most of the locally grown crops are well suited to the Pearson soils. The Brittain soils usually require some improvised drainage for maximum yields. The Waverly soils usually require extensive drainage before cultivation is feasible.

Soil Survey Methods and Definitions

The scientist who makes a soil survey examines soils in the field, classifies the soils in accordance with facts that he observes, and maps their boundaries on an aerial photograph or other map.

Field study.—The soil surveyor bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern; they are located according to the lay of the land. Usually they are not more than a quarter of a mile apart, and sometimes they are much closer. In most soils such a boring or hole reveals several distinct layers, called horizons, which collectively are known as the soil profile. Each layer is studied to see how it differs from others in the profile and to learn the things about the soil that influence its capacity to support plant growth.

Color is usually related to the amount of organic matter. The darker the surface soil, as a rule, the more organic matter it contains. Streaks and spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

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

Structure, which is the way the individual soil particles are arranged in larger grains and the amount of pore space between grains, gives us clues to the ease or difficulty with which the soil is penetrated by plant roots and by moisture.

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

Consistence of the various layers is given in this report at different degrees of moisture content. For example, very plastic, very firm, and very hard means very plastic *when wet*, very firm *when moist*, and very hard *when dry*. Consistence is listed in this sequence of moisture content throughout the report.

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

In a practical sense the degree of acidity may be thought of as the degree of poverty of lime (available calcium carbonate). An alkaline soil in this county is rich in lime, a neutral soil contains enough lime for any commonly grown local crop, and an acid soil is generally low in lime. The reaction of the soil is its degree of acidity or alkalinity expressed mathematically as the pH value. A pH value of 7 indicates precise neutrality; higher values indicate alkalinity and lower values indicate acidity. Terms referring to reaction in this report are defined in the Soil Survey Manual (*8*) as follows:

	pH		*pH*
Extremely acid	Below 4.5	Mildly alkaline	7.4–7.8
Very strongly acid	4.5–5.0	Moderately alkaline	7.9–8.4
Strongly acid	5.1–5.5	Strongly alkaline	8.5–9.0
Medium acid	5.6–6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1–6.5		
Neutral	6.6–7.3		

Classification.—On the basis of the characteristics observed by the survey team or determined by laboratory tests, soils are classified by series, types, and phases.

As an example of soil classifications, consider the Dundee series of Quitman County. This series is made up of three soil types, subdivided into phases, as follows:

Series	*Type*	*Phase*
Dundee	silt loam	nearly level phase
		gently sloping phase
	fine sandy loam	nearly level phase
		gently sloping phase
	silty clay loam	nearly level phase
		gently sloping phase

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

Soil type.—Soils having the same texture in the surface layers and similar in kind, thickness, and arrangement of soil layers are classified as one soil type.

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

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

Miscellaneous land types.—Areas of land that have little or no natural soil, that are too nearly inaccessible for orderly examination, or that, for other reasons, preclude practical classification are called miscellaneous land types. These are identified by descriptive names such as Clay and sand banks and Sand banks.

Soil complex.—In places two or more soils may be in such mixed patterns that they cannot be clearly shown on the soil map. Because each of the soils usually changes in a few feet, separation is impractical. These closely associated soils are mapped together and called a soil complex. An example of this is the Brittain soils-Waverly soils, local alluvium phases.

Undifferentiated soils.—Occasionally two or more soil phases are in such a close association that separation is impractical, especially where they are covered with forest. These closely associated soil phases are mapped together into an undifferentiated soil group. An example of this is Alligator and Dowling clays.

Genesis, Morphology, and Classification of Quitman County Soils[7]

Factors of Soil Formation

Soil is a function of climate, living organisms, parent materials, topography, and time. The characteristics of the soil at any point on the earth depend upon the combination of these five major factors at that point. All five of these factors have had a part in determining the genesis of every soil. The relative importance of each factor in forming the soil differs from place to place; sometimes one is more important, and sometimes another. In extreme cases one factor may dominate in the formation of the soil and fix most of its properties. This is common when the parent material consists of pure quartz sand. Little can happen to quartz sand, and the soils derived from it usually have faint horizons. Even in quartz sand, however, distinct profiles can be formed under certain types of vegetation where the topography is low and flat and a high water table is present.

Following is a separate discussion of each of these five factors and their effects in soil formation, but it should be remembered that for every soil, it is the past combina-

[7] Much of the material in this section was taken, with modification, from the soil survey of Tunica County, Mississippi (7).

tion of the five major factors that determines its present character.

Climate

The climate of Quitman County is characteristic of the southeastern United States (table 1, p. 2). It is humid, warm-temperate, and continental. Over the county, climate has been a uniform factor in soil development but has made only a slight impression on the soils.

The soils of Quitman County are not of the kind normally associated with warm-temperate, humid climates; they resemble those commonly found in cooler and slightly drier climates. Generally, regions with humid, warm-temperate climates have strongly weathered, leached, and acid soils of low fertility. The Mississippi-Yazoo Rivers flood plain, however, is geologically young. Time has not yet permitted strong weathering of the sediments in place, and the sediments themselves have come largely from sections of the country where weathering is not intense.

Living organisms

Before settlement of the county, the native vegetation was most important in the complex of living organisms that affect soil development. The activities of animals were seemingly of minor importance. The first settlers found a cover of dense forests broken by occasional canebrakes. Heavy stands of cypress, mixed with tupelo-gum, filled the swampy areas, whereas hardwood trees occupied most of the better drained soils and many of the wet ones. The trees on the slight ridges were chiefly hickory, pecan, post oak, blackgum, and winged elm. In the swales and low places that were wet but not swampy, the principal trees were tupelo-gum, sweetgum, soft elm, green ash, hackberry, cottonwood, overcup oak, and willow oak. Canebrakes covered many of the broader flats between the swamps in the sloughs and bayous. These differences in native vegetation seem to have been associated mainly with variations in drainage. Only the major differences in the original vegetation are reflected to any extent in the soils, probably because of the general youth of the land surface.

With the development of agriculture in Quitman County, man has become important to the future direction and rate of development of the soils. The clearing of the forest, the cultivation of the soils, the introduction of new species of plants, the building of levees for flood protection, and the artificial improvement of natural drainage will be reflected in the direction and rates of soil genesis in the future. Few results of these changes can yet be seen. Some will probably not be evident for many centuries. The complex of living organisms reflecting soil genesis in Quitman County has been drastically changed, however, as a result of man's activity.

Parent materials

Alluvial sediments deposited by the Mississippi River are the parent materials of the soils of Quitman County, except in one small area. In this area the parent materials are alluvial sediments brought down from the loess-capped bluffs near the county's eastern edge. These sediments have been moved by the Tallahatchie, Yocona, and Coldwater Rivers. The total thickness of alluvium in Quitman County ranges from tens to several hundreds of feet.

The alluvium in this county has a mixed lithology, originating as it does in the wide reaches of the upper Mississippi River Basin. Sedimentary rocks are most extensive in this upper basin, which extends from Montana to Pennsylvania, but other kinds of rocks are also exposed and serve as sediment sources in many places. Immense areas in the upper basin are mantled by recent glacial drift and loess. The alluvium along the lower stretches of the Mississippi, including Quitman County, has come from the multitude of soils, rocks, and unconsolidated sediments of some 20 States. As a result, the alluvium consists of a mixture of minerals. Furthermore, many of the minerals are comparatively fresh and but slightly weathered.

Within Quitman County, there are wide ranges in the texture of the alluvium because of differences in deposition. All of it has been laid down by river water, either when quiet or in flood. As the river overflows its channel and the water spreads out over the flood plain, the coarser sediments are dropped first. Sands are commonly deposited in bands parallel to and near the channel. Low ridges thus formed are known as natural levees. As the floodwaters continue to spread, they move more slowly and finer sediments, such as silts, are deposited next. These finer sediments are usually mixed with some sands and clays. When the flood has passed and water is left standing in the lowest parts of the flood plains, the finest sediments or clays may settle out. These so-called slack-water clays do not settle until the water becomes still.

The simple pattern of coarse sediments near the channel, fine sediments in slack-water areas some distance away, and medium-textured sediments between the two is common along the numerous old stream channels scattered throughout the county. Over the centuries large stream channels have migrated back and forth across much of the flood plain, sometimes cutting out natural levees laid down earlier, sometimes depositing sand on top of slack-water clays. The normal pattern of sediment distribution from a single channel has been partly or wholly truncated in many places and has had subsequent beds of alluvium superimposed on it. All possible combinations of sediments resulting from the superposition of the simple patterns, one upon another, now exist in the flood plain. Fragments of former channels with their adjacent sandy natural levees, the very gently sloping bodies of medium-textured sediments, and slack-water clays can be found in a number of places. On the whole, the large areas of slack-water clays have been stable, partly because they lie farthest from the meander belt established by the river channel in the central part of the broad flood plain.

Texture differences in the alluvium are accompanied by some differences in chemical and mineralogical composition. Sandier sediments are usually higher in quartz than those of intermediate or fine textures. Conversely, they are lower in felspars and ferromagnesian minerals. Sandier sediments are characteristically more siliceous and lower in bases. They are also lower in carbonates for the most part, but that is not always true.

Topography

Quitman County is a small part of an immense flood plain, which is nearly level. The topography ranges from flat bodies of slack-water clays to gently sloping successions of ridges and swales in areas that once bordered large stream channels. Seldom are the differences in elevation as great as 15 feet within 1 square mile. Slopes are generally less than 2 percent, but on a few streambanks they are greater. The total area with strong slopes is negligible.

The flat relief of the county contributes to the slow drainage of many of the soils. Water moves into the main channels with difficulty, especially from the slack-water clay areas. Movement of water through such soils is also slow. As a result, drainage problems are increased.

Time

Geologically, the soils of the county are young. Even now some areas receive fresh sediments at frequent intervals. Probably the sediments now forming the land surface in Quitman County arrived during and after the advances of the Wisconsin glaciers. The latest of these glaciers was moving into the North Central States 11,000 years ago. In those States, the soils being formed on glacial drift of the Mankato stage (last of the Wisconsin glaciers) show little horizonation other than the downward leaching of carbonates and the accumulation of organic matter in the surface layer. The present surface of the Mankato drift has probably been exposed for 8,000 years. Assuming that rates of horizon differentiation in the alluvium of Quitman County would be as rapid as that on the Mankato drift, the soils could be somewhat older than those of south-central Minnesota. Even so, the comparison indicates that the time span for the development of horizons in the soils of Quitman County has been short.

Morphology and Composition

Soil morphology in Quitman County is expressed generally in faint horizons. Some of the soils do have one distinct or prominent horizon, but those are in the minority. None of the soils have prominent horizons within the solum. Marked differences in texture between the solum or C horizon and an underlying D horizon occur in some profiles, as, for example, in the Tunica soils formed from thin beds of clay over sand. Generally speaking, horizon differentiation is in the early stages or it has scarcely started, and the horizons themselves are indistinct.

The differentiation of horizons in soils of the county is the result of one or more of the following processes: (1) Accumulation of organic matter, (2) leaching of carbonates and salts more soluble than calcium carbonate, (3) translocation of silicate clay minerals, (4) and reduction and transfer of iron. In most soil profiles in the county, two or more of these processes have operated in the development of horizons. For example, the first and the last are the chief causes of the morphology of Sharkey clay. All four processes have operated to some extent in the differentiation of horizons in Dundee soils.

Some organic matter has accumulated in the uppermost layer of most soils in Quitman County to form an A_1 horizon. Much of that organic matter is in the form of humus. The quantities are very small in some soils but fairly large in others. Soils that have faint and thin A_1 horizons (such as Clack loamy sand) are low in organic matter at best. Other soils, such as Sharkey clay, have evident, thick A_1 horizons fairly high in organic matter. Taking the soils of the county as a whole, the accumulation of organic matter has been most important among the processes of horizon differentiation.

Leaching of carbonates and salts has occurred in all soils of the county, although it has been of limited importance to horizon differentiation. The effects have been indirect, in that the leaching permitted the subsequent translocation of silicate clay minerals in some soils. Carbonates and salts have been carried completely out of the profiles of most of the well-drained soils. Even in the wettest soils, some leaching is indicated by the absence of carbonates and by the acid reactions. Leaching of the very wet soils is slow because water movement through the profile is itself slow.

Translocation of silicate clay minerals has contributed to the development of horizons in relatively few soils in the county, mainly those of the Dubbs, Dundee, and Bosket series. Darker coatings on ped faces and clay films in former root channels in the B horizon of these soils indicate some downward movement of silicate clay minerals from the A horizons. The actual amount of clay movement has been small, but it has contributed to horizon differentiation. In the Dubbs, Dundee, and Bosket soils, translocation of clay has been about as important as the accumulation of organic matter in horizon differentiation. Leaching of carbonates and salts from the upper profile seems to be a necessary prelude to the movement of the silicate clays.

The reduction and transfer of iron has occurred in all of the very poorly drained, poorly drained, and somewhat poorly drained soils. It has also occurred to some extent in deeper horizons of the moderately well drained soils, such as Dundee fine sandy loam. In the large areas of naturally wet soils in Quitman County, the reduction and transfer of iron, a process often called gleying, has been of importance in horizon differentiation.

The gray colors of the deeper horizons of the wet soils indicate the reduction of iron oxides. This reduction is commonly accompanied by some transfer of iron, which may be local or general in character. After it has been reduced, iron may be removed completely from some horizons and may even go out of the soil profile. More commonly in Quitman County, it has moved a short distance and stopped either in the horizon of its origin or in a nearby horizon. Iron has been segregated within deeper horizons of many of the soils to form yellowish-red, strong-brown, or yellowish-brown mottles. Iron has also been segregated into concretions in deeper profiles of some soils.

The differentiation of the A_1 horizon from the deeper horizons in poorly drained soils of Quitman County is caused in part by the reduction and transfer of iron. Horizon differences also result in part from a greater accumulation of organic matter in the surface layer. The effects of gleying—the reduction and transfer of iron—are evident but not prominent in the profiles of the soils in Quitman County generally. This seems to reflect the youth of the land surface and of the soils. The time during which the sediments have been subject to horizon differentiation has not been long enough to permit the development of prominent horizons in the soil profiles.

Classification of Soils by Higher Categories

Soils are placed into narrow classes for the organization and application of knowledge about their behavior within farms or counties. They are placed into broad classes for study and comparisons of large areas such as continents. In the comprehensive system of soil classification followed in the United States (*1*), the soils are placed into classes in six categories, one above the other. Beginning at the top, the six categories are the order, suborder, great soil group, family, series, and type.

In the highest category, the soils of the whole country are grouped into three orders, whereas in the lowest category, thousands of soil types are recognized. The suborder and family categories have never been fully developed and thus have been little used. Attention has largely been given to the classification of soils into soil types and series within counties or comparable areas and to the subsequent grouping of series into great soil groups and orders. The nature of the soil series and soil type is discussed in the section, Soil Survey Methods and Definitions. Subdivisions of soil types into phases so as to provide finer distinction significant to soil use and management are also discussed in the same section.

Classes in the highest category of the classification scheme are the zonal, intrazonal, and azonal orders (*1*). The zonal order comprises soils with evident, genetically related horizons that reflect the predominant influence of climate and living organisms in their formation. The intrazonal order includes soils with evident, genetically related horizons that reflect the dominant influence of a local factor of topography, parent materials, or time over the effects of climate and living organism. The azonal order consists of soils that lack distinct, genetically related horizons, commonly because of youth, resistant parent material, or steep topography.

Table 6 shows the groupings of Quitman County soils into higher categories. A description of each soil type listed may be found in the section, Soils of Quitman County.

Among the soils of Quitman County, the Bosket, Dubbs, Dundee, and Pearson series may be considered zonal soils. The horizons in those soils are evident but more nearly faint than distinct. They are genetically related and seem to reflect the influence of climate and living organisms, although the effect of time is also important. The four series are considered to fall barely within the zonal order and may be looked upon as intergrades to the azonal order.

The Bosket, Dubbs, Dundee, and Pearson series are tentatively classified in the Gray-Brown Podzolic group, although there is evidence for placing them in the Prairie group. Gray-Brown Podzolic soils have thin dark A_1 horizons over light brownish-gray and often platy A_2 horizons. The A_2 horizons are underlain by brown to yellowish-brown finer textured B horizons that grade into lighter colored and usually coarser textured C horizons.

Prairie soils have thick dark grayish-brown to very dark-brown A_1 horizons grading into brownish B horizons, which may be mottled. The B horizons grade, in turn, into lighter colored and usually coarser textured C horizons. Both the Gray-Brown Podzolic and the Prairie great soil groups normally occur under humid cool-temperate climates, the former under deciduous forest and the latter under tall prairie grasses.

The Bosket, Dubbs, Dundee, and Pearson soils lack a distinct A_2 horizon, but all areas of the soils have been disturbed through cultivation. Consequently, it seems highly probable that the plow layer now includes former thin A_1 and A_2 horizons. The soils clearly lack thick, dark A_1 horizons and do not appear to have had them in the past.

The present character of the B horizon, using the Dubbs profile as an example, would permit classification of the soils in either of the two great soil groups. The apparent absence of a thick A_1 horizon, as well as the probability that the A_1 and A_2 horizons have been mixed by plowing, is used as a basis for placing the soils in the Gray-Brown Podzolic group. It should be recognized, however, that the series are intergrades to the Prairie soils, being almost as much like them as they are like the central members of the Gray-Brown Podzolic group.

Soils of the intrazonal order are by far the most extensive in Quitman County. These are soils of the Alligator, Brittain, Crowder, Dowling, Falaya, Forestdale, Sharkey, and Waverly series. All of these are either very poorly drained, poorly drained, or somewhat poorly drained. None seem to have distinct horizons, although they show the effects of gleying and accumulation of organic matter in their morphology. These soils either are members of or are closely related to hydromorphic groups. The

TABLE 6.—*Classification of the soils by higher categories*

ZONAL SOILS

Great soil group	Series	Type
Gray-Brown Podzolic.	Bosket	Bosket sandy loam.
	Dubbs	Dubbs fine sandy loam.
		Dubbs silt loam.
	Dundee	Dundee fine sandy loam.
		Dundee silt loam.
		Dundee silty clay loam.
	Pearson	Pearson silt loam.
		Pearson silty clay loam.
		Pearson very fine sandy loam.

INTRAZONAL SOILS

Great soil group	Series	Type
Low-Humic Gley	Crowder	Crowder sandy clay.
	Forestdale	Forestdale silt loam.
		Forestdale silty clay loam.
	Waverly	Waverly soils, depressional phases.
	Brittain	Brittain silt loam.
		Brittain silty clay loam.
	Falaya	Falaya silt loam.
		Falaya silty clay loam.
	Alligator	Alligator clay.
		Alligator silty clay.
	Dowling	Dowling clay.
		Dowling silty clay.
Grumusol	Sharkey	Sharkey clay.
		Sharkey silty clay.
		Sharkey silt loam, overwash phase.

AZONAL SOILS

Great soil group	Series	Type
Alluvial	Ark	Ark silt loam.
	Tunica	Tunica silty clay.
	Collins	Collins silt loam.
		Collins silty clay loam.
	Souva	Souva silt loam.
Regosol	Clack	Clack loamy sand.
		Clack sandy loam.
	Beulah	Beulah sandy loam.

absence of a thick A_1 horizon high in organic matter is used as a basis for excluding these series from the Humic Gley group. The series therefore seem more appropriately classified as Low-Humic Gley soils, with the exception of Sharkey soils. Sharkey soils exhibit properties of churning through shrinking, swelling, and cracking and are therefore tentatively classified as a Grumusol.

Recognition of the Low-Humic Gley group was proposed initially for somewhat poorly drained to poorly drained soils lacking prominent A_1 horizons but having strongly gleyed B and C horizons with little textural differentiation. The recognition of two great soil groups, Low-Humic Gley and Humic Gley (Wiesenboden) soils, was based on thickness of the A horizon and on its content of organic matter.

Humic Gley soils are defined as high in organic matter, whereas Low-Humic Gley soils are moderate to low. The Alligator, Brittain, Crowder, Dowling, Falaya, Forestdale, and Waverly soils are not high in organic matter, and they do show effects of gleying in their morphology. On the basis of present knowledge, classification of these seven series as Low-Humic Gley soils seems appropriate. However, the Brittain series is an intergrade to the Gray-Brown Podzolic group, and the Falaya series is an intergrade to the Alluvial group. Further studies may indicate that the Alligator and Dowling series are intergrades to Grumusols because both are closely related to the Sharkey series.

Grumusols were proposed for a group of soils dominated by montmorillonitic clays. These soils are typically clay in texture, lack eluvial and illuvial horizons, have moderate to strong granular structure in the upper horizons, and have high coefficients of expansion and contraction upon wetting and drying. In the exchange complex of these soils, calcium and magnesium are dominant. With their high coefficients of expansion and contraction, the Grumusols shrink and swell markedly with changes in moisture content. In the process of shrinking and swelling, the soils crack and materials from upper horizons drop down into lower ones. Thus, the soils are being churned or mixed continually, a process that partially offsets horizon differentiation.

Grumusols may have prominent A_1 horizons but lack B horizons. They have dull colors of low chroma, as a rule, and are not well drained. Sharkey clay has many of the features common to Grumusols. The profile has a clay texture throughout, and the clay is dominantly montmorillonitic. The dark A_1 horizon, plus evidence of gleying in the deeper horizons, suggests placement of the series in the Humic Gley group. Laboratory analyses, however, indicate that the content of organic matter in the A_1 horizon of Sharkey clay is appreciably lower than that normal to Humic Gley soils and more nearly comparable to that of typical Grumusols. Furthermore, the dark A_1 horizon is also common to many Grumusols. Consequently, Sharkey clay is tentatively classified as a Grumusol, but as one that is an intergrade to the Low-Humic Gley group. Sharkey clay seems more poorly drained than is typical of Grumusols, but it is not too wet for operation of the churning and mixing process.

Azonal soils are much less extensive in Quitman County than intrazonal or zonal soils, despite the fact that the whole area consists of geologically recent alluvium. At the same time, all soils classified in the zonal and intrazonal orders are marginal to the azonal order because of their low degree of horizonation. Only the series that lack genetically related horizons or are in the initial stages of horizon differentiation are placed in the azonal order.

In the azonal order are the Ark, Beulah, Clack, Collins, Souva, and Tunica series. The Ark, Collins, Souva, and Tunica series are classed as Alluvial soils, although some of the most poorly drained profiles exhibit effects of gleying. The Beulah and Clack series are classed with the Regosols.

The morphology of the Souva soils shows that some reduction and transfer of iron has occurred. Even so, the horizons are faint at best and, in some profiles, all but lacking. Consequently, this series is considered wet Alluvial soils rather than Low-Humic Gley soils. Unless drainage is greatly improved in the future, the Souva series can be expected to develop into Low-Humic Gley soils as horizon differentiation continues.

The Alluvial soils in Quitman County lack distinct horizons because the sediments in which they are developing are so young. Given more time under natural conditions, most of these soils would eventually have had profiles similar to those of the Dubbs, Dundee, and Bosket series. Whether that will now occur in soils under cultivation remains to be seen. The regime in which the soils now exist differs greatly from that of their original natural environment. Some of the processes important in horizon differentiation probably will be accentuated and others subdued. Some may progress more rapidly, and others more slowly. The net effect of the change in environment on future development of the soils cannot be forecast as yet with any certainty and may not be apparent for some centuries.

Regosols may be defined as an azonal group of soils consisting of deep unconsolidated rock (soft mineral deposits) in which few or no clearly expressed soil characteristics have developed (*9*). The Clack soils fit this definition, since there is practically no difference in color and texture between their horizons. There is little difference in color and texture in the horizons of Beulah soils. The Beulah series is considered a member of the Regosols, but it strongly intergrades towards the Gray-Brown Podzolic group.

Additional Facts About Quitman County

Organization and Population

The first white settlers came to the area that is now Quitman County in 1861. Most of them were from the surrounding counties, but a few were from Virginia, the Carolinas, and Georgia.

Quitman County was formed by an act of the Mississippi Legislature on February 1, 1877, from parts of Coahoma, Tunica, Panola, and Tallahatchie Counties. The Board of Supervisors directed that the county seat be located west of the Coldwater River and that it be named Belen after the battle ground where Gen. John A. Quitman fought in the Mexican War. Marks was later made the county seat.

In 1925 Quitman County was the most sparsely settled county in Mississippi (*6*). In 1940 it had an average of 66 people per square mile and rated sixteenth in population among the counties of Mississippi. In 1950 its average had dropped to 62.8 people per square mile.

Cultural Development and Improvement

Rural homes range from the small three-room tenant houses with no modern conveniences to large plantation mansions. Numerous small landowners have substantial dwellings with all necessary conveniences. In general, the small houses are on the less productive soils or on large plantations where a considerable number are needed to house all of the tenant families. The modern homes are usually located on the more productive soils.

The number and kind of fences and barns vary with the prevailing type of agriculture. In areas where livestock raising, as well as production of crops, is important, the fences are adequate.

A public health center is located in Marks, and its services are available to all residents of the county. The county has rural mail service to all points and has conveniently located churches and schools. A county schoolbus service transports pupils to the various schools.

Industries

The county is basically agricultural. It has few industries, most of which are in the vicinity of Marks. They consist of a cottonseed-oil mill, 30 cotton gins (many of which are privately owned and used on individual plantations), a Federal compress, a furniture factory, a fertilizer mixing plant, an insecticide plant, and a commercial grain elevator. There are several sawmills throughout the county.

Transportation and Markets

A branch of the Yazoo and Mississippi Valley Railroad, which is controlled by the Illinois Central Railroad, crosses the county generally north and south. It passes through the towns of Marks, Lambert, and Vance. This branch is one of the main freight lines through the State and connects the county directly with Memphis, St. Louis, and Chicago markets to the north and with Vicksburg and New Orleans outlets to the south. Another branch line runs from Lambert generally southward out of the county to Swan Lake.

Two paved State highways cross the county, No. 6 from east to west and No. 3 from north to south. Highway No. 3 generally follows the Yazoo and Mississippi Valley Railroad through the county. Numerous graveled all-weather roads are well distributed, so that practically all localities are accessible by automobile throughout the year. Along these gravel roads are most of the rural homes. In some of the more remote sections of the county, automobile travel during the wet winter season is impossible.

Water Supply

There are approximately 50 artesian wells throughout the county. Artesian water is tapped by boring through the alluvium of the flood plain into the coastal plain formations underneath. This water is at greater depths in the western side of the county than in the eastern side. Driven pumps and artesian wells furnish most of the water for household use. The water supply for the towns of Marks and Lambert comes from artesian wells 900 to 1,000 feet deep. Most of the larger plantations have similar wells. The smaller landowners rely on pump wells 30 to 50 feet deep. Water from these small wells is hard and is often not good for washing and cooking.

Water for animals comes from streams, lakes, bayous, and wells. Irrigation water is pumped from the many lakes and streams of the county or from specially dug large wells that range in depth from 90 to 125 feet.

Wildlife

The extensive woodlands in the county are interwoven by many acres of permanent and intermittent water—rivers, lakes, bayous, and ponds—and to a large extent are subject to frequent overflow. These woodland areas and the many acres of oats, soybeans, corn, hay, and pasture give the county range, feed, and water adequate to support abundant wildlife.

Squirrels, rabbits, and other small fur-bearing animals are found throughout most of the county. Deer are found in a few areas. Quail and mourning doves are the most numerous game birds. Ducks and geese are common during the winter months following wet autumns. State game laws provide protection for the game.

Agriculture

The Choctaw and Chickasaw Indians practiced a primitive type of agriculture in the area now occupied by Quitman County. Corn was the main crop. It was planted and worked with crude bone and wooden implements.

Agriculture is now the principal means of livelihood for the inhabitants of the county. Since the time of the first settlers, the agriculture of the county has been based on cotton. Cotton always has occupied the largest acreage of cropland. Oats, soybeans, corn, hay crops, pastures, rice, and grain sorghums are grown less extensively.

Land use

According to the United States census, farms occupied 86.9 percent of the county area, or a total of 229,154 acres, in 1954. Sixty-one percent of the total farmland was cropland harvested. Between 1944 and 1954 the cropland harvested decreased 1,833 acres.

In 1954 the land in farms was divided as follows:

	Acres
Cropland harvested	140, 046
Cropland used only for pasture	11, 024
Cropland not harvested and not pastured	6, 918
Woodland pastured	11, 639
Woodland not pastured	42, 028
Other pasture (not cropland and not woodland)	6, 234

Crops

The acreages of the principal crops grown in the stated census years are given in table 7.

In 1949, 103,821 acres of cotton were harvested. This was 74 percent of the total cropland harvested. In 1954, because of acreage controls on cotton, there were only 67,765 acres of cotton harvested. This acreage was somewhat reduced by allotments in 1955 and still further reduced in 1956. These reduced allotments for cotton acreage necessitated acreage increases for most of the

TABLE 7.—*Acreage of principal crops in stated years*

Crops	1929	1939	1949	1954
	Acres	*Acres*	*Acres*	*Acres*
Cotton	100, 042	62, 525	103, 821	67, 765
Corn harvested for grain	10, 777	46, 205	17, 559	17, 164
Oats combined or threshed	(1)	2, 419	1, 438	7, 635
Soybeans harvested for beans	(1)	1, 090	3, 229	30, 187
Rice	(1)	(1)	(1)	2, 483
Sweetpotatoes	66	228	[2] 48	[3] 31
Irish potatoes	16	107	[2] 17	[3] 23
Hay:				
Alfalfa	145	1, 082	182	104
Lespedeza cut	(1)	3, 720	5, 345	2, 477
Annual legumes cut for hay	2, 775	15, 564	5, 556	5, 337
Other hay	687	157	856	606

[1] Not reported or not available.
[2] For 1949, data was not included for farms with less than 15 bushels harvested.
[3] For 1954, data was not included for farms with less than 20 bushels harvested.

other crops of the area. New varieties, new insecticides, improved machinery, and more know-how now make it possible to produce higher yields of cotton per acre than at any other period in the history of the county.

Corn yields are variable but generally low. By practicing better soil selection and by supplying nitrogen and plenty of moisture through irrigation, corn yields could be greatly increased in the future.

Soybeans are grown extensively, but average yields are low. During wet growing seasons, yields are usually high, and during dry growing seasons, they are often very low. Soybeans are generally planted for oil, but when a moisture deficiency occurs, a fairly large percentage is sometimes cut for hay. In 1954, 15 percent of the soybeans grown were cut for hay.

Oats occupy a large acreage partly because of the restriction on cotton acreage. Oats require much less labor than cotton, and they will produce higher yields on a wider range of soil types than either cotton or corn. Oat yields of 90 bushels or more per acre are common.

Winter wheat and barley produce good yields but are not grown extensively.

A large acreage of lespedeza is grown in the county. Like soybeans, lespedeza has higher yields during wet growing seasons than during dry ones.

Alfalfa acreage has decreased from 1,082 acres in 1939 to 104 acres in 1954. If planted on suitable soils and properly managed, alfalfa produces good yields. The acidity in most soils of the county usually has to be corrected before the highest yields can be obtained from alfalfa, sweetclover, or red clover. But like alfalfa, sweetclover and red clover are seldom planted.

Vetch and winter peas are the principal winter-cover crops. They are turned under early in spring. Some vetch and winter peas are planted to supplement winter grazing, and some are harvested as seed crops.

Rice has proved to be well suited to some of the fine-textured soils in the county. The acreage in rice has increased from none in 1949 to 2,483 acres in 1954. The average yield was 66.5 bushels per acre. Yields for the first 2 years often range as high as 95 and 100 bushels per acre, but afterwards they usually decline sharply.

Livestock

The 1954 census reports 242 horses on 164 farms and 1,718 mules on 630 farms, as compared to 505 horses on 240 farms and 5,918 mules on 1,309 farms in 1945.

The number of cattle and calves has increased from 7,126 in 1945 to 11,611 in 1954. In 1945 most of the cattle were owned by tenants and kept mainly for home milk production. Many of the cattle on the farms today are for beef production and are of Angus, Hereford, or Shorthorn breeds (fig. 8). Beef cattle production has a promising future on many farms because pasturing is feasible most of the year.

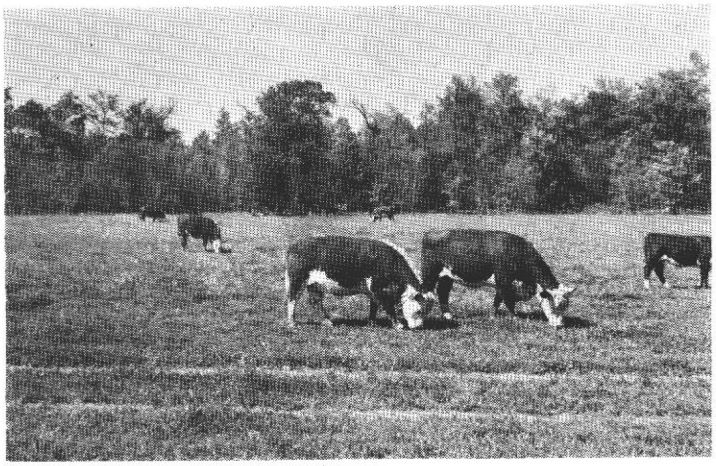

***Figure 8.*—Cattle grazing fescue and whiteclover on Alligator and Sharky clay soils.**

In the last decade the hogs have decreased and the sheep have increased. In 1945 there were 13,109 hogs and pigs on farms in the county, and 9,060 in 1954. There were 146 sheep and lambs on farms in 1945, and 319 in 1954. In 1954, 1,336 pounds of wool were shorn from 225 sheep. Most of the hogs are owned by tenants and are kept for home use.

Pastures

According to the 1954 census, 11,024 acres of cropland were used only for pasture. Also used for pasture were 11,639 acres of woodland and 6,234 acres other than cropland or woodland.

Previous to 1950, much of the farm machinery was mule drawn. Pastures for these work mules and for the few dairy cows kept for home milk production were mostly in convenient places near the barns. Seldom was the suitability of the soil for pasture considered. Because of the high cattle and sheep prices, between 1945 and 1951, and because farmers were losing money by growing cotton continuously on certain soils, planned pasture programs were begun. Under these programs many farmers fenced soils that were well suited to grass and poorly suited to cotton and seeded them to permanent pasture. Many small beef herds and several sheep herds were started.

Size and tenure of farms

According to the census, there were 3,864 farms in Quitman County in 1954. The average farm was 59.3 acres in size. This was a 28.9 percent decline in the number of farms since 1945 and a 31.4 percent increase in the size of the average farm. Also, in 1954, 18.5 percent of the farms were less than 10 acres in size, 51.2 percent were 10 to 29 acres, 11.2 percent were 30 to 49 acres, 9.3 percent were 50 to 99 acres, 7.5 percent were 100 to 499 acres, 1.7 percent were 500 to 999 acres, and 0.7 percent were 1,000 acres or more.

According to the 1954 census, tenants operated 81.1 percent of the farms, owners 14 percent, part owners 4.4 percent, and managers, 0.5 percent. Sharecroppers operated most of the large farms under supervision of managers or riders. Under this system, the farm owner or operator furnishes all equipment and work animals and advances credit for food and personal expenses. The operator receives from the sharecropper half of the cotton and interest on the money loaned.

Many tenants are renters and furnish their own equipment and work animals. Some pay cash rent, and others pay part of the crops, usually one-third of the cotton and one-fourth of the corn.

Farm equipment and facilities

There has been an increase in motor power on farms within the last decade. There were 144 percent more automobiles, 178 percent more motortrucks, and 292 percent more tractors on farms in 1954 than in 1945. According to the 1954 census, 1,030 farms had 1,252 motortrucks and 978 farms had 2,267 tractors. The land in this county is favorable for tractor farming, and most of the large farms use tractors almost exclusively.

There has also been an increase in electric power on farms. In 1945, 13 percent of the farms had electricity, as compared with 86 percent in 1954. Only 80 farms had telephones in 1945, whereas 304 farms had telephones in 1954.

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Supplement to the soil map showing important characteristics of the soil series

Soil series	Relief	Runoff	Degree of erosion	Water movement through soil	Drainage class	Surface soil	Subsoil [1]
RECENT NATURAL LEVEES (FIRST BOTTOMS)							
Collins	Nearly level	Slow	None to slight.	Moderately slow.	Somewhat poorly drained and moderately well drained.	Grayish-brown to pale-brown silt loams and silty clay loams, 4 to 7 inches thick.	Mottled brownish silt loam or silty clay loam, underlain by mottled pale-brown to light-gray silt loam or silty clay loam material.
Falaya	Nearly level	Slow	None to slight.	Slow	Poorly drained and somewhat poorly drained.	Grayish-brown to pale-brown silty clay loams and silt loams, 4 to 7 inches thick.	Mottled light-grayish silty clay loam or silt loam, underlain by mottled light-gray silty clay loam or silt loam material.
DEPRESSIONS							
Ark	Level or nearly level.	Very slow or ponded.	None, soil accumulates.	Moderate	Moderately well drained.	Light brownish-gray to dark-brown silt loams, 6 to 10 inches thick.	Mottle-free to slightly mottled light brownish-gray to dark-brown sandy clay loam to silty clay, underlain by mottled brownish sandy clay loam to sandy loam material.
Souva	Level to gently sloping.	Slow to ponded.	None, soil accumulates.	Moderately slow and slow.	Somewhat poorly drained.	Dark-gray to pale-brown silt loams, 6 to 10 inches thick.	Mottled dark grayish-brown silty clay loam, underlain by mottled gray to dark-gray silty clay.
Waverly	Level or nearly level.	Very slow or ponded.	None, soil accumulates.	Slow	Poorly drained	Pale-brown to light-gray silty clays to silt loams, 4 to 7 inches thick.	Highly mottled gray to light-gray silty clay loam or silt loam, underlain by mottled gray silty clay.
Dowling	Same	Same	None, soil accumulates.	Very slow	Poorly drained and very poorly drained.	Very dark gray to gray clays to silty clay loams, 3 to several inches thick.	Mottled dark-gray to gray clay and silty clay, underlain by mottled gray clay.
SLACK-WATER AREAS							
Alligator	Level to gently sloping.	Very slow to medium.	None to moderate.	Very slow and slow.	Poorly drained	Grayish-brown to dark-gray clays and silty clays, 2 to 4 inches thick.	Highly mottled gray clay, underlain by mottled gray clay.
Crowder	Nearly level	Slow	None and slight.	Slow	Poorly drained	Grayish-brown sandy clays, 3 to 5 inches thick.	Mottled gray to light-gray sandy clay, underlain by highly mottled grayish sandy clay to clay.
Sharkey	Nearly level and gently sloping.	Slow and medium.	None to moderate.	Very slow and slow.	Poorly drained	Very dark gray and dark-gray clays and silty clays and grayish-brown to yellowish-brown silt loams, 3 to 36 inches thick.	Mottled dark-gray to very dark gray clay, underlain by mottled dark-gray to gray clay.
Tunica	Same	Slow and medium.	None to moderate.	Slow and moderately slow.	Somewhat poorly drained.	Dark-gray to dark grayish-brown silty clay, 3 or 4 inches thick.	Mottled dark-gray to dark grayish-brown clay or silty clay, underlain by mottled brownish silty clay loam to sandy clay loam material.

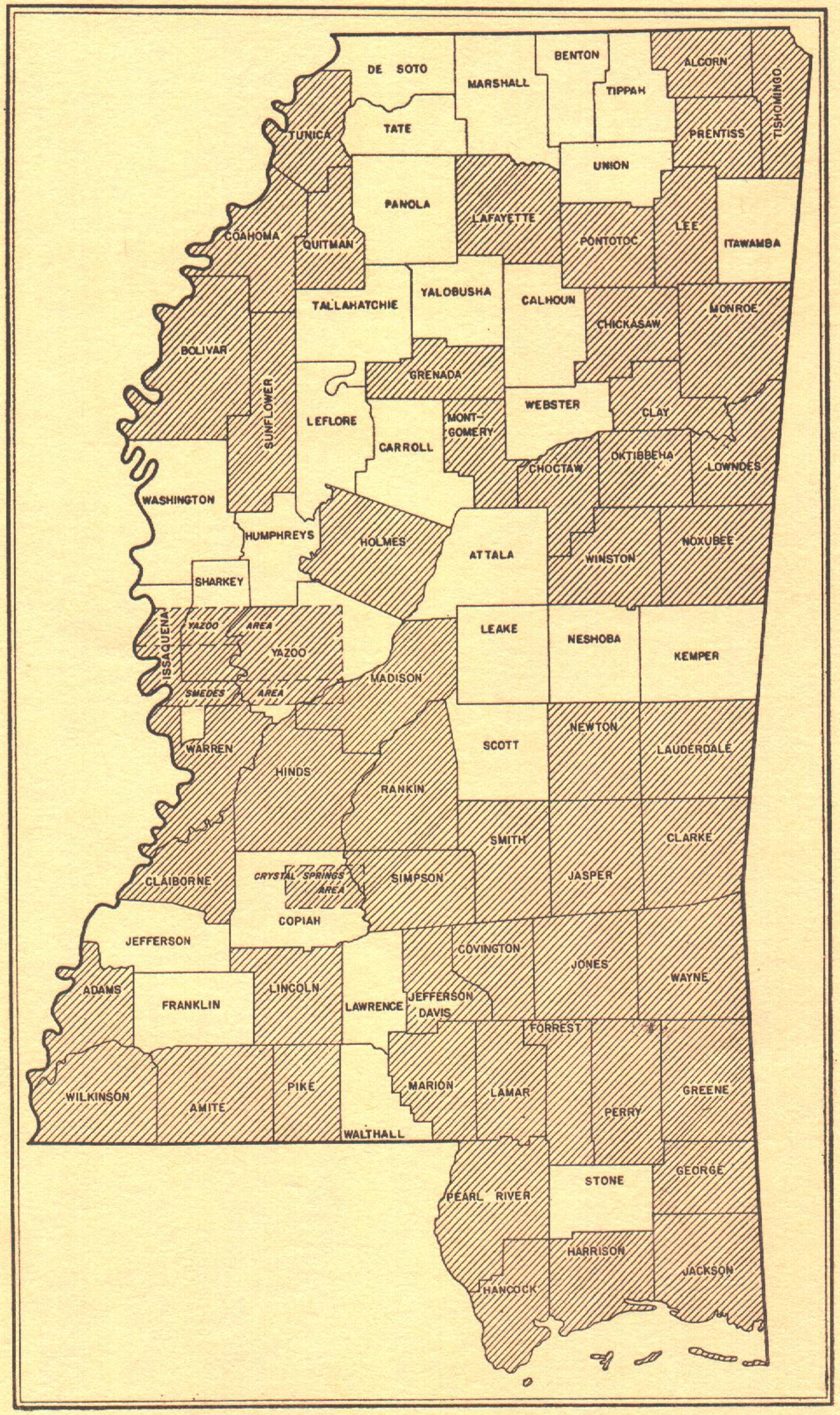
See footnote at end of table.

Supplement to the soil map showing important characteristics of the soil series—Continued

OLD NATURAL LEVEE FORMATIONS

Soil series	Relief	Runoff	Degree of erosion	Water movement through soil	Drainage class	Surface soil	Subsoil [1]
Clack	Nearly level and gently sloping.	Slow	None to slight.	Very rapid	Excessively drained.	Grayish-brown to pale-brown sandy loams and loamy sands, 7 to 10 inches thick.	Dark-brown to pale-brown loamy sand to sandy loam, underlain by brownish loamy sand material.
Beulah	Same	Slow and medium.	None to slight.	Rapid	Somewhat excessively drained.	Dark grayish-brown to light brownish-gray sandy loams, 5 to 8 inches thick.	Mottle-free, dark-brown to yellowish-brown silt loam to sandy loam, underlain by brownish sandy loam to loamy sand material.
Bosket	Same	Same	None to moderate.	Moderately rapid.	Well drained	Dark-brown to light brownish-gray sandy loams, 5 to 8 inches thick.	Mottle-free dark-brown to yellowish-brown sandy clay loam to sandy loam material.
Dubbs	Same	Same	None to moderate.	Moderate	Moderately well drained and well drained.	Grayish-brown to pale-brown fine sandy loams and silt loams, 5 to 8 inches thick.	Mottle-free or faintly mottled dark-brown to yellowish-brown silty clay to clay loam, underlain by slightly mottled brownish silty clay loam to sandy loam material.
Dundee	Same	Same	None to moderate.	Moderately slow.	Somewhat poorly drained and moderately well drained.	Dark grayish-brown to light-gray silty clay loams to fine sandy loams, 4 to 7 inches thick.	Mottled grayish-brown, brown, yellowish-brown, or pale-brown silty clay and silty clay loam, underlain by mottled brownish silty clay loam to sandy loam material.
Forestdale	Same	Same	None to moderate.	Slow	Poorly drained and somewhat poorly drained.	Light brownish-gray to grayish-brown silty clay loams and silt loams, 4 to 6 inches thick.	High mottled gray, light-gray, or light brownish-gray silty clay and silty clay loam, underlain by mottled grayish silty clay loam or sandy clay loam material.
Pearson	Same	Same	None to moderate.	Moderately slow.	Somewhat poorly drained and moderately well drained.	Grayish-brown to pale-brown silty clay loams to very fine sandy loams, 4 to 7 inches thick.	Mottled dark yellowish-brown, brown, or pale-brown silt loam or silty clay loam, underlain by mottled brownish silt loam or silty clay loam material.
Brittain	Same	Same	None to moderate.	Slow	Poorly drained and somewhat poorly drained.	Grayish-brown to light brownish-gray silt loams and silty clay loams, 4 to 7 inches thick.	Mottled light-gray and gray silty clay loam or silt loam, underlain by mottled grayish silty clay loam and silt loam material.

[1] Applies mostly to the part of soil profile directly below the surface soil, usually a slightly finer texture than that of the layer above.



Areas surveyed in Mississippi shown by shading.

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