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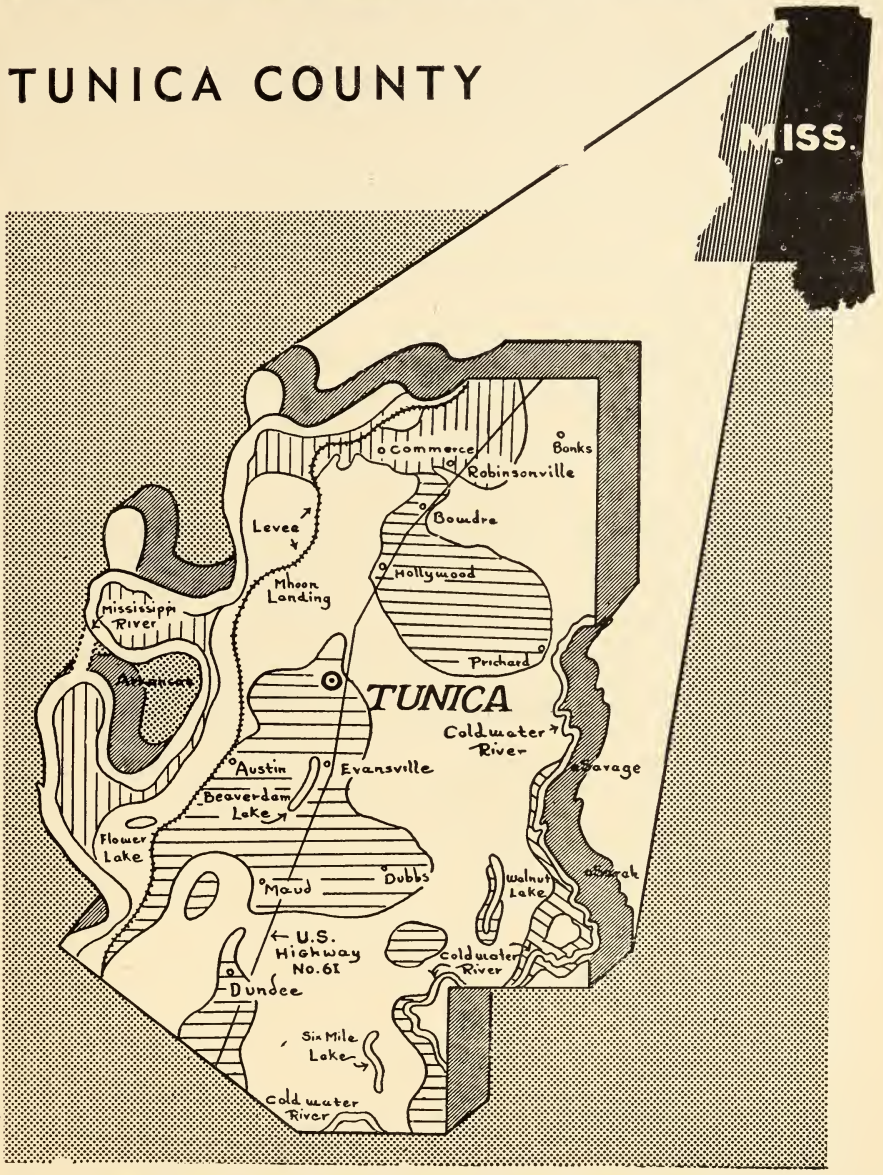
Soil management practices, Tunica County

L. A. Davidson

SOIL MANAGEMENT PRACTICES

TUNICA COUNTY



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SOIL MANAGEMENT PRACTICES

Recommended for

TUNICA COUNTY

By L. A. DAVIDSON[1]

All soils are developed by nature with certain properties so that some are adapted for the production of certain crops, while others are adapted for the growth of other crops, just as some cattle are suitable for the production of meat and others for the production of milk.

The many differences in fertility, texture, elevation, slope, and drainage of soils make it advisable to vary the management[2] for distinctly different soil types. It is the purpose of the soil survey to provide information that will aid the farmer in making the best practical use of each soil type on his farm.

This bulletin is intended for use with the accompanying soil map of the operator's farm. The report contains directions for using the soil map, a discussion of general principles of soil management, and a discussion of specific management for each soil type. The map shows the location of soil boundaries, the type and slope of soil in each area, roads, houses, ditches, and section lines. The discussion of management covers general soil management problems and describes the best adapted crops, rotations, fertilizers, and other practices for each soil type.

Definition of Terms

Some general definitions and explanations are given to aid and assist the farmers in getting the full benefits of the report.

1. **Alluvium** - material deposited by streams.
2. **Colluvium** - material deposited by gravity; colluvium is found at the foot of steep hills or embankments.
3. **Complex** - an area where it is impractical to separate the individual soils because two or more soils are mixed in a complicated pattern or the area is densely wooded.
4. **Depression** - low places where water is slow to drain off or does not drain off.

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[1]Soil survey made by Thomas Fowlkes (in charge), L. A. Davidson, J. A. Herren, and C. G. Morgan, Mississippi Agricultural Experiment Station cooperating with United States Department of Agriculture, Bureau of Plant Industry and Soil Conservation Service.

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[2]Management includes all practices relating to soil use (fertilizers, adapted crops, rotations, drainage, and row direction).

5. **Escarpment** - a steep bank or "jump off."

6. **Management** - includes all practices relating to soil use (fertilizers, adapted crops, rotations, drainage, and row direction).

7. **Fallow** - a tillage practice where no crop is grown and the area is plowed frequently to kill weeds.

Explanations

1. The soils are designated on the map by three numbers; the the first refers to the position of the soil; the second to the drainage; and the third to the texture of the surface (sand, silt or clay). For example, soil 125 is a first bottom soil, rather poorly drained, and has a silt loam surface.

2. There are nine groups of soils according to position and material from which they were developed. They are shown on the map as groups 100 to 900.

Soils Derived from Mississippi River Alluvium

a. **Group 100,** first bottom soils. These soils are found near the Mississippi River on both sides of the levee and consist of recent alluvium. These soils usually occur on the highest elevations in the "delta" and are known locally as "sandy" soils.

b. **Group 200,** depressional soils. These soils are found in low wet places.

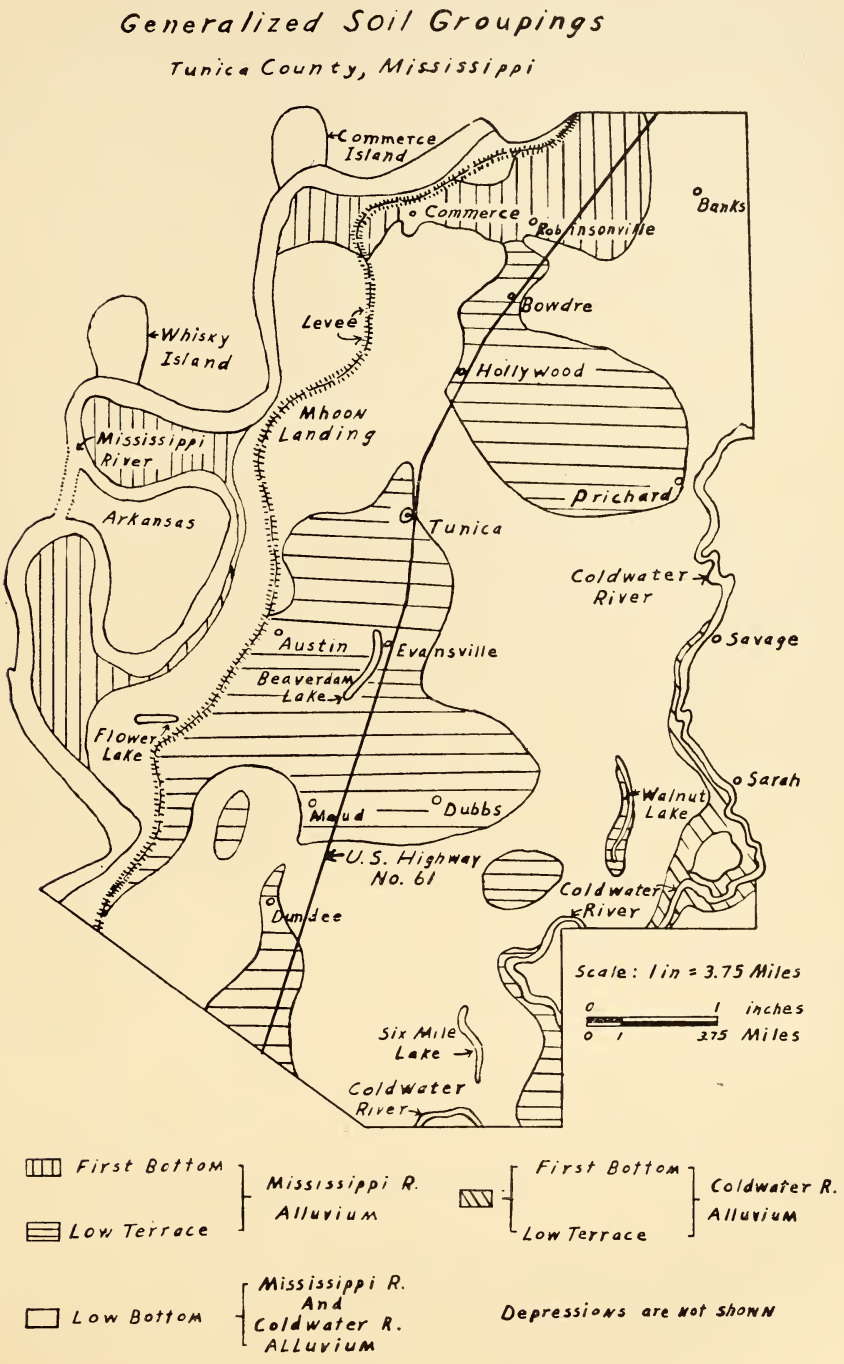
c. **Group 300,** low bottom soils. These soils occur in the backwater areas of the Mississippi River flood plain. They are known locally as "buckshot" soils.

d. **Group 400,** low terrace soils. These soils usually occur on elevations slightly higher than the first bottom soils (group 100) and are more acid. Most low terrace soils are known locally as "sandy" soils and the remainder are known as "light buckshot."

Soils Derived from Coldwater River Alluvium or Mixed Mississippi and Coldwater River Alluvium

e. **Group 500,** first bottom soils. These soils occur near the Coldwater River and consist of recently deposited alluvium of this stream. Most areas are overflowed frequently and are known locally as "made land."

f. **Group 600,** depressional soils. These soils are derived from mixed Coldwater and Mississippi River alluvium and occur in low wet places similar to group 200 soils.


Generalized Soil Groupings
Tunica County, Mississippi
Commerce Island
Commerce
Robinsonville
Banks
Bowdre
Levee
Whisky Island
Hollywood
Mhoon Landing
Mississippi River
Arkansas
Prichard
Tunica
Coldwater River
Austin
Evansville
Savage
Beaverdam Lake
Flower Lake
Sarah
Walnut Lake
Maud
Dubbs
U. S. Highway No. 61
Coldwater River
Dundee
Scale: 1 in = 3.75 Miles
0 1 inches
0 1 2.75 Miles
Six Mile Lake
Coldwater River
First Bottom
Low Terrace
Mississippi R. Alluvium
First Bottom
Low Terrace
Coldwater R. Alluvium
Low Bottom
Mississippi R. And Coldwater R. Alluvium
Depressions are not shown

g. **Group 700,** low bottom soils. These soils are derived from mixed Coldwater and Mississippi River alluvium and occur in the eastern part of the county. They are similar to soils in group 300 in most respects except that they overflow frequently.

h. **Group 800,** low terrace soils. These soils are derived from Coldwater River alluvium and occur near the present channel of the river.

Soil Derived from Colluvium of the Loess-capped Bluff

i. **Group 900,** colluvial soil. This soil consists of mixed materials at the base of the bluff along the eastern county boundary.

Use of Soil Map

The soil map is a complete sketch of the farm the same size as AAA photograph (scale: 8 inches - 1 mile). All important soil types, as well as rivers, drains, and artificial features, such as roads, houses, ditches, and section lines, are shown. (See "Legend of symbols on the soil map," page 7.) The number in each separate area on the map is the symbol for the soil type in that area. (See "Management by Soil Type," starting on page 14, for soil name and recommendations.) The letter following a soil number indicates the slope of the soil.

The soil map is used to determine the best location of field boundaries and roads, and to determine the soil type in each area. The slope and type of the soil, along with size and shape of the area, should determine the proper row direction.

Field Boundaries and Roads. Where practicable, field boundaries should be placed on soil boundaries that separate distinctly different soils. Then each field will contain only the soils that respond to the same management. Rotations, fertilizer treatments, and other management practices that are suitable for the entire field can then be planned.

Dotted lines indicate the approximate location of gradual changes between two soil types. They do not mean that field divisions should be made at that place unless the types of soil separated respond to different management. (See "Management by Soil Type," starting on page 14.)

Solid lines indicate the location of a rather sharp change between two soil types that usually respond to different management practices. Field boundaries should be located on most solid line soil boundaries. There are a few exceptions, such as the better drained depressional soils. (See "Management by Soil Type," starting on page 14.)

Roads usually serve as field boundaries and should be placed on soil boundaries where possible. Located on soil boundaries, they utilize the space left for turning that is ordinarily wasted. The boundaries of soils with B, C, or D slopes, as well as escarpments and bayou banks, are ideal locations for roads.

LEGEND OF SYMBOLS ON THE SOIL MAP

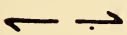
457. Soil type number denotes a soil type or complex of types in that area where the number is placed. (See "Management by Soil Type", page 14, for soil type names.)

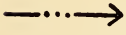
457A. The letter following the soil number indicates the slope of the area. The absence of a letter or the use of A shows that the area is depressional (no erosion problem); A° - nearly flat (no erosion problem); A - slightly sloping, ¼ percent to 2 percent, (very little erosion problem); B⁻ - used only for colluvial soils occurring at the bottom of slopes (very little erosion problem); B - ridges or gently sloping, 3 percent to 5 percent, (erosion problem); C - sloping, 6 percent to 10 percent, (erosion problem); D - steeply sloping, over 10 percent, (erosion problem).

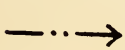
*457A. An asterisk (*) before a soil type number indicates an organic phase of that type. The organic phase is more productive than the normal phase.

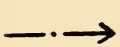

Solid line soil boundary indicates the location of a definite soil change within a space of less than 50 feet (usually a desirable location for a field boundary).


Dotted line soil boundary indicates a gradual or indefinite soil change within a space of 50 feet or more.


Tie symbol that connects two areas of the same soil type or phase.

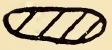

Small natural drain or low area.


Shallow artificial ditch not crossable with heavy farm machinery.


Deep ditch (artificial or natural) not crossable with heavy farm machinery.


River or large drainageway (artificial or natural).


Lake containing water all year.


Intermittent lake that is dry during a portion of the year.


Earth escarpment or steep embankment (too steep for cultivation).


Levee

Paved highway

Gravel highway

Dirt road or field road

Railroad


Section line

Sec. 1 Section number
R. 10 W. Range symbol
T. 5 S. Township symbol
County line
Permanent house
Small house or cabin
Church
School
Store
Cotton gin
Indian mound
Cemetery
Sandy spot
Bluff symbol

Scale of map

inches	0	1	2	4
mile	0	⅛	¼	½

GENERAL SOIL MANAGEMENT

This discussion of soil management is applicable to all soils in the Tunica County area. It deals with general principles which are fundamental for efficient soil use regardless of the type of soil. Specific recommendations for each soil type are given under "Management by Soil Type" (see page 14.) Table 1 contains estimates of cotton and corn yields that may be expected on each soil type where good management practices are used continuously. Many of these yields will be exceeded where good management practices are used for a number of years.

Drainage: Many Tunica County soils require artificial drainage before proper utilization is possible. In all cases involving extensive ditching, the productive capacity, crop adaptation, and fertilizer needs of the soil should be considered before going to the expense of draining. Many swampy areas have been drained where the cost was much more than the possible value of the land affected.

All ditches should be limited to the least possible width and depth that will provide sufficient drainage during any growing season. Drainage channels should be located in, or connected with, the natural low depressions in the area. The ditch banks should be plowed down as level as possible and cultivated whenever practical. Alfalfa and other hay crops give excellent yields on many ditch and canal banks. Alfalfa and sweet clover will usually grow on banks that contain lime concretions (gray or white rock-like objects).

Table 1. Key to management classes and yields produced on Tunica County soils with good management[1]

Soil type (or phase)		Management class	Yields per acre	
No.	Name		Cotton Lint (lbs.)	Corn (bu.)
Soils derived from Mississippi River alluvium				
125 A	Mhoon silt loam	I	450	45
134 A	Commerce-Tunica complex	I	450	45
135 A	Commerce silt loam	I	700	65
345 A	Commerce silt loam (shallow phase)	I	675	50
136 A	Commerce loam	I	800	75
156 A	Robinsonville loam	I	800	75
157 A	Robinsonville sandy loam	I	700	45
167 A	Crevasse sandy loam	I, V	300	20
212	Dowling clay[2]	IV	.....	....
213	Dowling silty clay[2]	IV	.....	....
223	Panther silty clay[3]	IV	175	15
225	Panther silt loam[3]	IV	250	20
235	Souva silt loam	I	425	40
*235	Souva silt loam (organic phase)	I	500	50
235 B⁻	Souva silt loam (colluvial phase)	I	600	55
256	Oakwood loam	I	700	65
*256	Oakwood loam (organic phase)	I	725	75
311 A	Horseshoe heavy clay	II	275	20
322 A	Sharkey clay	II	425	20
322 A(A⁻)	Sharkey-Tunica-Panther complex[3]	.....	.....	....
322 A°(A⁻)	Sharkey-Panther complex[3]	.....	.....	....
333 A	Tunica silty clay	II	550	25
133 A	Tunica silty clay (shallow phase)	II	600	30
344 A	Tunica-Dundee complex	II	625	35
424 A	Forestdale silty clay loam	III	425	20
425 A	Forestdale silt loam	III	475	25
434 A	Dundee silty clay loam	III	450	20
435 A	Dundee silt loam	I	600	55
*435 A	Dundee silt loam (organic phase)	I	700	65
436 A	Dundee loam	I	725	65
*436 A	Dundee loam (organic phase)	I	800	75
445 A	Dubbs silt loam	I	600	55
*445 A	Dubbs silt loam (organic phase)	I	750	65
446 A	Dubbs loam	I	725	65
*446 A	Dubbs loam (organic phase)	I	800	75
456 A	Bosket loam	I	750	65
*456 A	Bosket loam (organic phase)	I	825	75
457 A	Bosket sandy loam	I	750	65
*457 A	Bosket sandy loam (organic phase)	I	825	75
467 A	Clack sandy loam	I, V	300	20
468 A	Clack loam sand	V	100	10
Soils derived from mixed Mississippi River and Coldwater River alluvium				
534 A	Crenshaw silty clay loam	III	425	25
535 A	Crenshaw silt loam	I	700	60
612	Dooley clay[2]	IV	.....	....
613	Dooley silty clay[2]	IV	.....	....
623	Buxton silty clay	IV	150	15
625	Buxton silt loam	IV	225	20
635	Cannon silt loam	I	400	40
722 A	Savage clay	II	425	20
722 A(A⁻)	Savage-Prichard-Buxton complex[4]	.....	.....	....
722 A°(A⁻)	Savage-Buxton complex[4]	.....	.....	....

Table 1. Key to management classes and yields produced on Tunica County soils with good management[1] (Continued)

Soil type (or phase) No.	Name	Management class	Yields per acre Cotton Lint (lbs.)	Corn (bu.)
Soils derived from mixed Mississippi River and Coldwater River alluvium				
733 A	Prichard silty clay	II	550	25
744 A	Prichard-Tibbs complex	II	600	30
824 A	Sarah silty clay loam	III	400	20
825 A	Sarah silt loam	III	450	25
834 A	Tibbs silty clay loam	III	425	25
835 A	Tibbs silt loam	I	600	45
935 B⁻	Wicker loam (colluvial soil)	I, III	500	40

[1]These yields are estimated for soils on A slopes that are protected from river overflow by a levee. Soils not protected by a levee will produce higher yields except when damaged by flood. As a rule, soils on B slopes produce slightly lower yields than those indicated in this table. See pages 13 and 14 for management recommendations.

[2]Crops are often damaged by standing water. Where good surface drainage is possible, yields are about the same as for Panther silty clay.

[3]These areas are forested. See Sharkey, Tunica, and Panther yields.

[4]These areas are forested. See Savage, Prichard, and Buxton yields.

Soils which have 3, 4, 5, or 6 as the middle number in their symbol should have shallow drains in the associated depressions that will take off excess surface water, but will not interfere with cultivation. Soils which have 1 or 2 as the middle number in their symbols usually require frequent, rather deep ditches. Alfalfa will not grow satisfactorily in poorly drained areas unless ditches are provided to remove excess water.

Row Direction: Erosion problem, moisture conservation, drainage, tillage convenience, soil type, and slope of soil should be considered in determining the row direction in any field.

The rows on depressional soils (no letter following the soil number) and soils with A° slope should be run so as to provide the best possible drainage.[1] Where soil types identified by the symbols 125, 135, 136, 311, 322, 333, 344, 424, 425, 434, 435, 436, 534, 535, 722, 733, 744, 824, 825, and 835 have A slopes, rows should be run so that each has enough slope to carry its drainage water to a ditch or other outlet. Rows should never be run so that the slope is steep enough to cause harmful erosion. On soil types identified by the symbols 156, 157, 167, 445, 446, 456, 457, 467, and 468, rows should be run on the contour (with the slope—not up and down) so that each row will hold the water that falls on it. Little drainage water should be allowed to run from these soils to more poorly drained soils. The rows on all B⁻, B, C, and D slopes should be run on the contour.

[1]See "Legend of Symbols on the Soil Map," page 7, for the percentage of slope indicated by each capital letter slope symbol.

Nitrogen and Organic Matter. Most farmers have recognized the necessity of adding nitrogen and organic matter to their soils. On all except depressional soils or soils that are overflowed at least once in every 3 or 4 years, nitrogen and organic matter must be added to maintain maximum productivity of non-legume crops. Properly inoculated legume crops[1] in the rotation usually provide the cheapest and best source of both nitrogen and organic matter. Where this is not practicable, commercial nitrogenous fertilizers must be used on all non-legume crops if maximum yields are to be obtained.[2] A large surplus of nitrogen in the soil may cause excessive stalk growth of cotton and corn, thus reducing the yields.

Liming: If legumes cannot be grown successfully because of soil acidity, ground limestone should be applied. Soybeans, cowpeas, lespedeza, Austrian winter peas, and vetch have the lowest lime requirements of the legume crops. If these crops do not grow well and do not produce abundant nodules on the roots, lime should be applied to correct the acidity.

Any given soil type is rather uniform in its lime content, and general recommendations of amounts to apply can be made for each type. Before limestone applications are made on a large scale, simple acidity tests should be made on soil samples. (See county agent.) To produce alfalfa or sweet clover successfully, most low terrace soils must be limed. Amounts to apply will be discussed under the "Management by Soil Type." (See page 14.)

Ground limestone[3] and basic slag are the most commonly used liming materials. Basic slag costs more than ground limestone per ton, but it contains an appreciable amount of phosphorus in which some soils are deficient. Limestone and basic slag are not immediately available to plants, so they should be applied several months beforehand where alfalfa, sweet clover, or any other leguminous crop is to be planted on an acid soil.

Phosphorus and Potassium: Experimental work with phosphorus and potassium carrying fertilizers on "delta" soils has been somewhat limited, and it is impossible to make specific recommendations for their use. Laboratory tests indicate the approximate content of phosphorus and potassium in a soil, but field tests are necessary before reliable recommendations can be made.

Phosphorus deficiency is most likely to occur in acid soils and in soils that have symbol numbers beginning with 8. Soil acidity should be corrected by liming before phosphatic fertilizers are used.

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[1]All legume crops (peas, beans, vetch, alfalfa, clovers) should be inoculated with commercial inoculants for the first and second plantings of each crop on any soil.

[2]See table 2 for composition of commercial fertilizers.

[3]Ground limestone of the best quality costs approximately $3.00 per ton delivered in carload lots of 45 to 50 tons. (See county agent.)

Potassium deficiency is most likely to occur in sandy soils and in soil types that have symbol numbers beginning with 8. Soils that are deficient in potassium produce weak plants with slender stalks and stems. Rust or blight spots in cotton fields often indicate a deficiency of potassium in the soil.

Some soils or areas have no obvious limiting physical characteristics such as poor drainage or steep slopes, yet do not produce average yields for that type when recommended practices are followed. In such cases, farmers may determine the cause of the low yields by fertilizing a small area of about six rows with several different fertilizers. These tests are most likely to be needed on low terrace soils (400 and 800 groups) that are not organic phases. Yields from the fertilized plots should be carefully weighed, then compared with some adjoining plots of the same size that received no fertilizer. The county agent should assist in selecting the fertilizers and arranging the plots.

The removal of a hay crop depletes the soil of more calcium, potassium, and phosphorus than does a corresponding yield of cotton or corn. For example, a 2-ton crop of cowpea hay removes 2½ times as much phosphorus, 12 times as much potassium, and 42 times as much calcium from the soil as a 1000-pound yield of seed cotton. Where possible, hay crops of lespedeza, soybeans, and cowpeas should be grown on the low bottom soils (300 and 700 groups, see page 18) or depressional soils (200 group, see page 17).

Pastures: Experimental work with pastures on Tunica County soil types has been very limited, but general management practices for good pasture production are similar for all regions. The soils that are best adapted to cotton and corn are usually the best adapted soils for pasture crops. The acreage of the first class soils is limited on most farms, so less productive soils are commonly used for pastures. Good management is essential to efficient use of any soil for pasture, but is seldom considered.

Soils that have symbols ending in the numbers 1, 2, or 3 seldom make good pastures regardless of the management, but the soils that have symbols ending in the numbers 5, 6, or 7 usually make excellent pastures under proper management. Soils that have 6 as the middle number in their symbol must have special management as discussed under "Management by Soil Type," page 14. Acid soils should have at least 1000 pounds of ground limestone or basic slag applied per acre before seeding.

The seedbed should be well prepared and Dallis grass should be seeded in the early spring or fall if moisture is sufficient (6). Weeds should be clipped frequently during the first summer and grazing should be light or withheld altogether. A mixture of white dutch, black medic, and hop clovers should be sown in September, and common lespedeza should be sown early the following spring.

All pastures should be divided into at least two sections so that grazing can be alternated. Best results are obtained when pastures are not kept grazed close to the ground even if the livestock is allowed to graze only a few hours each day. Italian rye grass may be sown on top of the sod each fall for a winter and early spring pasture. It is usually advisable to have some temporary pasture, such as sudan grass or sweet clover, available for use during the late summer and early fall as no permanent pasture can be expected to support as much livestock during this period as in the other months of the growing season.

Table 2. Composition and availability of fertilizer materials

Fertilizer material	Nitrogen	Phosphorus (P_2O_5 units)	Potassium (K_2O units)	Availability
	Percent	Percent	Percent	
Nitrogen carriers:				
Nitrate of soda	16	.....	.....	Quickly
Sulphate of ammonia	20	.....	.....	Quickly
Calcium cyanamid	22	.....	.....	Medium
Phosphorus carriers:				
Superphosphate	....	18 or 20	.....	Quickly
Triple superphosphate	....	40 to 48	.....	Quickly
Basic slag	....	8 to 12	.....	Medium
Potassium carriers:				
Muriate of potash	....	.....	50 or 60	Quickly
Kainit	....	.....	20	Quickly
Manure salts	....	.....	20	Quickly
Complete mixtures:				
6-8-6	6	8	6	Quickly
4-8-8	4	8	8	Quickly

Cropping Systems Recommended for Use in Tunica County

For convenience in determining adapted cropping systems for soils in Tunica County, the soil types are grouped in five management classes on the basis of fertility, drainage, adapted crops, and workability. The class of each soil type is listed in table 1 on page 9.

The cropping systems for all classes are listed in table 3, page 14. A complete discussion of the management for each soil type is given under "Management by Soil Type", beginning on page 14.

All cropping systems are planned to maintain the most efficient production of adapted crops on a permanent basis. Cotton is considered the principal cash crop and is given the most favorable position in rotations for soils where it is adapted. Supplemental rotations are also given for each class in which grain or hay production, or both, are given consideration.

Table 3. Cropping systems recommended for Tunica County soils

Management class	Year	Rotations		
		Cotton (as often as possible)	Cotton and grain	Hay or hay and grain
I	1	Continuous cotton (plant vetch each fall)	Cotton (plant bur clover in the fall)	Fallow (plant alfalfa in the fall)
	2		Bur clover seed (plant corn in June)	Alfalfa
	3		Cotton	Alfalfa
	4		Cotton	Alfalfa
	5			Alfalfa
II	1	Cotton (plant vetch in the fall).	Soybeans (plant oats in the fall)	Oats (plant in the fall)
	2	Vetch seed (plant cowpeas or soybeans in June)	Oats (plant soybeans sweet clover, or lespedeza in the spring)	Oats (plant alfalfa in the fall)
	3	Cotton	Cotton	Alfalfa
	4	Cotton	Cotton	Alfalfa
	5			Alfalfa
	6			Alfalfa
III	1	Soybeans (turned under in the fall)	Soybeans (plant oats in the fall)	Soybeans (plant alfalfa in fall)
	2	Cotton (plant vetch in the fall)	Oats (soybeans, lespedeza, or sweet clover in the spring)	Alfalfa
	3	Vetch seed (plant cowpeas or soybeans in June)	Cotton	Alfalfa
	4	Cotton	Cotton	Alfalfa
	5	Cotton	Cotton	Alfalfa
IV	1			Soybeans (for hay)
	2	Cotton not recommended	Cotton not recommended	Soybeans (turned under and followed by oats)
	3			Oats (plant soybeans or lespedeza in spring)
V		Best adapted to drouth-resistant hay and pasture crops		

MANAGEMENT BY SOIL TYPE

This discussion covers drainage, crop adaptation, rotation, and fertilizer recommendations for each soil type. Fertilizer recommendations are omitted where no experimental work or apparent deficiency symptoms indicate a need for commercial fertilizers. Rotation and management recommendations are based on experiment station results, practices followed by the best farmers, and practices that should prove satisfactory under Tunica County conditions. Where there is a possibility that a crop or practice may not be adapted, a notation advises that it be tried on a small scale at first. Cotton is assumed to be the principal cash crop on all farms. The principles discussed under "General Soil Management," (see page 8), must be followed if best yields are to be obtained from any soil.

A. FIRST BOTTOM SOILS, GROUP 100 (derived from Mississippi River alluvium).

Soil type 125—Mhoon silt loam

This is a fertile and easily managed soil that needs artificial drainage for maximum production. A few small V-type ditches and one main outlet ditch usually drain an area satisfactorily.

This soil is well adapted to all local crops but is generally used for cotton and corn production. Most areas must have additional drainage before truck crops can be grown successfully. High yields of cotton and corn can be maintained if leguminous winter cover crops are grown. Bur clover and vetch are excellent winter crops for this soil. From 150 to 200 pounds of a nitrogenous fertilizer should be applied to corn and cotton if a legumnious cover crop is not grown (2 and 4).

Suggested cropping systems are:

Year	Rotation No. 1	Rotation No. 2	Rotation No. 3
1	Continuous cotton (plant vetch each fall)	Cotton (plant bur clover in the fall)	Fallow (plant alfalfa in the fall)
2		Bur clover seed (plant corn in June)	Alfalfa
3		Cotton	Alfalfa
4		Cotton	Alfalfa
5			Alfalfa

Unless the area is needed for cotton production every year, rotation No. 2 probably offers the best and cheapest way to insure good cover crops at a minimum cost. Alfalfa should not be planted where a thick stand of bur clover is likely to volunteer. Rotation No. 1 or No. 2 should be used on an area after rotation No. 3 is used.

Soil type 125 A (A⁻)—Mhoon-Panther complex[1]

This complex of soils is unfit for agricultural use because of its low elevation and danger of overflow.

Soil type 133—Tunica silty clay (shallow phase)

This is a very fertile soil that responds to the same management as 322, Sharkey clay (see page 19), except that little artificial drainage is necessary. This soil will grow excellent alfalfa without lime applications. Deep plowing is desirable, as it brings sandy material to the surface in many cases.

Soil type 133 A (A⁻)—Tunica-Commerce-Panther complex[1]

This complex of soils contains, for the most part, Tunica silty clay, shallow phase. Some areas are not overflowed for long periods of time. They are very fertile and are excellent for pastures

[1]This complex of soils is not protected by the levee.

and hay production. Good corn can also be grown except when damaged by floods. It should be profitable to clear and cultivate the higher areas of this complex as high yields can be maintained without fertilizer additions or rotations, so long as overflows occur every few years.

Soil type 134—Commerce-Tunica complex

This is a very fertile soil that responds to the same management as 125, Mhoon silt loam (see page 15), except that little artificial drainage is needed and bur clover may be more difficult to grow. This is an excellent soil for alfalfa and oat production.

Soil type 134 A (A⁻)—Commerce-Tunica-Souva complex[1]

This complex of soils contains, for the most part, Commerce silt loam and Tunica silty clay with some Souva silt loam. Many areas of this complex are very fertile and are not overflowed for long periods. Such areas are excellent for corn, hay, or pasture production. It should be profitable to clear and cultivate the higher areas of this complex, as high yields can be maintained without fertilizer additions or rotations, so long as overflows occur every few years.

Soil type 135—Commerce silt loam

This is a very fertile soil that responds to the same management as 125, Mhoon silt loam (see page 15), except that little artificial drainage is needed. It is an excellent soil for truck crop and alfalfa production as well as for cotton and corn.

Soil type 136—Commerce loam

This soil responds to the same management as 124, Mhoon silt loam (see page 15), except that little artificial drainage is needed. This is an excellent soil for truck crop and alfalfa production as well as for cotton and corn.

Soil type 136 A(A⁻)—Commerce-Robinsonville-Oakwood complex[1]

This complex of soils contains, for the most part, Commerce loam and Robinsonville loam and sandy loam. This complex usually occurs on higher elevations than 134 A(A⁻), Commerce-Tunica-Souva complex (see above), but responds to the same management. These are the most desirable soils that occur in the area not protected by the levee.

Soil type 156—Robinsonville loam

This soil responds to the same management as 125, Mhoon silt loam (see page 15), except that no artificial drainage is needed. This is an excellent soil for truck crop and alfalfa production as well as for cotton and corn.

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[1]This complex of soils is not protected by the levee.

Soil type 157—Robinsonville sandy loam

This soil responds to the same management as 125, Mhoon silt loam (see page 15), except that no artificial drainage is needed. This is an excellent soil for truck crop and alfalfa production as well as for cotton and corn.

Soil type 167—Crevasse sandy loam

This is a very difficult soil to manage because of its "drouthy" nature. Crop yields are uncertain on this soil, so little cotton or corn should be grown. If cover crops are turned under frequently, and 100 to 200 pounds of sulphate of ammonia, nitrate of soda, or cyanamid are applied, fair yields of cotton and corn may be obtained. Ordinarily, drouth-resistant hay or pasture crops should be grown. Sudan grass, sagrain, soybeans, and cowpeas often produce good growth that may be used for either hay or pasture. Sweet clover should be planted for pasture and as a green manure crop on a trial area. Where a permanent pasture is desired, Bermuda grass, early clovers, and lespedeza should be used. Bur clover often makes good growth and should be used with cultivated crops. This soil can be used for bur clover seed patches, followed by corn or sudan grass. Black locust seedlings for fence post production should be grown on a small trial area. Soybeans may make fair yields of seed during favorable seasons.

Soil type 167 B(A⁻)—Crevasse-Oakwood complex[1]

This complex of soils contains, for the most part, Crevasse sandy loam, which occurs on high elevations, but it is too sandy to cultivate profitably.

Soil type 169—Crevasse sand-clay complex[1]

This complex of soils is unfit for any agricultural use because it is frequently overflowed by the Mississippi River.

B. DEPRESSIONAL SOILS, GROUP 200 (derived from Mississippi River alluvium).

Soil type 212—Dowling clay

This is a fertile soil that is difficult to manage because of its very poor drainage. Deep ditches must be provided before cultivation is possible.

This soil is adapted to soybeans, sagrain, sorghum, and sudan grass. Corn makes fair yields when the season is favorable, but may fail completely when moisture conditions are not satisfactory. A 100- to 200-pound application of a nitrogenous fertilizer should be applied when corn is grown if the soil has been in cultivation many years.

[1]This complex of soils is not protected by the levee.

For row crops, this soil should be bedded with three furrows early in the fall and left until spring.

Soil type 213—Dowling silty clay

This is a fertile soil that responds to the same management as 212, Dowling clay (see page 17). Without artificial drainage this soil remains under water most of the year and normally supports cypress or tupelo gum tree growth.

Soil type 214—Dowling-Panther complex[1]

This complex of soils consists of large swamps and depressional areas and is unfit for agricultural use.

Soil type 223—Panther silty clay

This soil responds to the same management as 212, Dowling clay (see page 17), except that shallow ditches often provide adequate drainage. Cotton and corn occasionally make fair yields.

Soil type 225—Panther silt loam

This soil responds to the same management as 212, Dowling clay (see page 17), except that shallow ditches often provide adequate drainage and it is better adapted for cultivated crops. Cotton and corn often make fair yields.

Soil type 253—Souva silt loam

This soil can ordinarily be used to best advantage when it receives treatment similar to that of the bordering soils. Shallow ditches are needed to obtain good drainage except when it is on a B slope. It is not necessary to follow rotations on this soil, and applications of commercial fertilizers should be light. Rows should usually be arranged to run in the same general direction as the strips of soil. This permits these areas to be planted and cultivated when they have the proper moisture content without having to delay or disrupt cultivation of the remainder of the field. An arrangement of rows such as this prevents a concentration of drainage water in the depression where it is not needed and helps avoid poor crop stands. Soil type *235—Souva silt loam (organic phase) has higher fertility than is usual for normal Souva silt loam.

Soil type 256—Oakwood loam[1]

This soil responds to the same management as 235, Souva silt loam and *235, Souva silt loam (organic phase). (See above).

C. LOW BOTTOM SOILS, GROUP 300 (derived from Mississippi River alluvium).

Soil type 311—Horseshoe heavy clay

This is a fertile soil that is limited in productivity by character-

[1]This complex of soils is not protected by the levee.

istics due to its fine texture (heavy clay), its low position, and poor internal drainage. Frequent ditches are necessary to provide satisfactory drainage.

Alfalfa, soybeans, and sorghums are adapted crops for this soil. Cotton usually makes fair yields and oats make good yields if they are fertilized with 150 to 200 pounds per acre of a nitrogenous fertilizer (2 and 4). If alfalfa is to be grown on this soil, 2 tons of ground limestone should be applied per acre. Some areas produce good alfalfa without limestone applications. The soil should be fallowed for most of the summer and then planted to alfalfa in September. For best yields, cotton, oats, and sorghum should follow a crop of soybeans or alfalfa that has been plowed under. Corn should be planted only on "new ground" and on areas where alfalfa or soybeans have been turned under.

Soil type 322—Sharkey clay

This is a fertile soil that is limited in productivity by characteristics due to its fine texture (clay) and its poor internal drainage. Frequent ditches are necessary to provide satisfactory drainage for this soil where it has either A or A° slopes.

Soybeans, oats, cotton, vetch, Austrian winter peas, and alfalfa are adapted crops for this soil. Corn should not be grown except on "new ground" or areas where heavy crops of legumes have been plowed under. Sweet clover is adapted where the soil is neutral or alkaline and should be tried on a small scale as a pasture and green manure crop. Alfalfa should not be planted on poorly drained areas unless adequate drainage ditches are provided.

Cotton and oats should be fertilized with 150 to 200 pounds of nitrogenous fertilizer unless a leguminous crop has been turned under the preceeding year (2 and 4).

Suggested cropping systems are:

Year	Rotation No. 1	Rotation No. 2	Rotation No. 3
1	Cotton (plant vetch in the fall)	Soybeans (plant oats in the fall)	Oats (plant in the fall)
2	Vetch seed (plant cowpeas or soybeans in June)	Oats (plant soybeans, sweet clover, or lespedeza in the spring)	Oats (plant alfalfa in the fall)
3	Cotton	Cotton	Alfalfa
4	Cotton	Cotton	Alfalfa
5			Alfalfa
6			Alfalfa

These rotations are arranged to provide sufficient green manure crops to maintain a satisfactory content of organic matter and nitrogen in the soil. The presence of organic matter in large quantities makes cultivation of this soil easier and will raise the productivity level.

[1]The presence of the organic phase symbol (*) in front of this soil number denotes higher fertility than is usual for this soil type.

In the second year of rotation No. 1, the vetch stubble and straw should be turned under as soon as the vetch seed are harvested, and cowpeas or soybeans should be planted. In the fall, the cowpeas or soybeans should be turned under before frost and the land bedded.

In rotation No. 2, soybeans should be turned under in late July or early August, and the oats planted in October. In early spring, soybeans, lespedeza, or sweet clover should be drilled in the oats and then turned under in the fall when maximum growth has been reached. It may be desirable in some cases to harvest the soybean or lespedeza seed with a combine and then plow under the stubble and straw. The soil should be left on beds or "lands" through the winter.

In rotation No. 3, the oats should be harvested in early summer, then the soil should be turned as deeply as practical with a pan or flat-bottomed breaking plow and fallowed until early fall. If the soil is acid, 2 tons of ground limestone should be applied after the oats are harvested (see county agent). Before alfalfa is planted, the field should have surface drains plowed out with a grader, plow, or single disk section. These drains should be used on most A slopes and on all A° slopes and should be placed every 20 or 30 feet for satisfactory surface drainage.

After 3 or 4 years, when the alfalfa stand has become thin, the field should be plowed in August and prepared for winter oats. Cotton or corn should be grown for two or three years after alfalfa has been plowed under. Then either rotation No. 1 or No. 3 should be used before reseeding the area to alfalfa.

Soil type 322 A(A⁻)—Sharkey-Tunica-Panther complex

This complex of soils contains gently undulating, forested ridges and poorly drained depressions. The predominating soils are 322, Sharkey clay, with 212, Dowling clay; 213, Dowling silty clay; and 223, Panther silty clay. Small areas of 424, Forestdale silty clay loam, and 333, Tunica silty clay, are also included. After these areas are cleared, corn or cotton can be grown continuously until yields start dropping. Then, the soils will respond to the same management as 322, Sharkey clay (see page 19), and 212, Dowling clay (see page 17).

Soil type 322 A°(A⁻)—Sharkey-Panther complex

This complex of soils is similar to 322 A(A⁻), Sharkey-Tunica-Panther complex (see above), except that the topography is nearly flat and there is no 333, Tunica silty clay, in the area. Extensive drainage systems are usually necessary before these areas can be cultivated successfully. When properly drained, these soils will respond to the same management as 322, Sharkey clay (see page 19), and 212, Dowling clay (see page 17).

Soil type 333—Tunica silty clay

This soil responds to the same management as 322, Sharkey

clay (see page 19), except that little artificial drainage is necessary. Most areas can be adequately drained by a few small ditches.

Soil type 334—Low bottom escarpment

This soil is similar to 322, Sharkey clay (see page 19), except that it occurs on steep slopes and requires no artificial drainage. Wherever possible, this soil should be put into a permanent pasture and seeded with white clover, lespedeza, and dallis grass. If the slope is smooth enough for mowing, alfalfa hay can be grown. Two tons of ground limestone should be applied per acre before alfalfa is planted. If cultivated crops are grown, rows should be run on the contour rather than up and down the slope.

Soil type 341—Tunica-Dundee complex

This soil responds to the same management as 322, Sharkey clay (see page 19), except that little artificial drainage is necessary. Some of the areas are sandy and suitable for corn and truck crop production. In this case, management suggestions made for 424, Forestdale silty clay loam (see below) are applicable.

Soil type 345—Commerce silt loam (shallow phase)

This soil responds to the same management as 125, Mhoon silt loam (see page 15), except that some areas are not well adapted to truck crop production if the underlying clay is close to the surface. Rows on sloping areas should be run on the contour so that erosion will not remove the surface soil and expose the underlying clay.

D. LOW TERRACE SOILS, GROUP 400 (derived from Mississippi River alluvium).

Soil type 424—Forestdale silty clay loam

This soil is low in fertility and requires careful management to produce profitable returns. Frequent small drains leading to fairly deep outlet ditches are necessary to provide adequate drainage where this soil has an A slope. No artificial drainage is necessary where this soil has a B slope.

Soybeans, oats, cotton, Austrian winter peas, and vetch are fairly well adapted to this soil. Corn should not be grown except on "new ground", or areas where large quantities of organic matter have been plowed under. Alfalfa and sweet clover are usually adapted to this soil if 2 tons of ground limestone per acre are applied. Alfalfa should not be planted on areas where the water table remains high or where there is no surface drainage. Sweet clover should be used as a pasture and green manure crop if it is adapted.

Cotton and oats should be fertilized with 150 to 200 pounds of a nitrogenous fertilizer unless a good crop of soybeans, sweet clover, or alfalfa has been turned under (2 and 4).

Suggested cropping systems are:

Year	Rotation No. 1	Rotation No. 2	Rotation No. 3
1	Soybeans (turned under in the fall)	Soybeans (plant oats in the fall)	Soybeans (plant alfalfa in fall)
2	Cotton (plant vetch in the fall)	Oats (soybeans, lespedeza or sweet clover in the spring)	Alfalfa
3	Vetch seed (plant cowpeas or soybeans in June)	Cotton	Alfalfa
4	Cotton	Cotton	Alfalfa
5	Cotton	Cotton	Alfalfa

The above rotations are similar to those recommended for soil type 322, Sharkey clay (see page 19), and the individual crops should be managed in the same way.

Because of low fertility, soybeans are included in rotation No. 3 to insure good growth of the alfalfa. The soybeans should be turned under in July or early August and the soil fallowed until September when the alfalfa is planted.

Soil type 425—Forestdale silt loam

This soil is low in fertility but is responsive to good management. Small drains leading to shallow outlet ditches should be used to drain this soil where it has an A slope.

All local crops are fairly well adapted to this soil after adequate surface drainage is provided. Two tons of lime per acre should be applied if alfalfa or sweet clover is to be grown. One ton of lime per acre should be applied where soybeans and winter cover crops are grown. Cotton and corn may give profitable response to applications of a complete fertilizer. A small area should be fertilized in order to determine its effect (see county agent). Cotton and corn should be fertilized with 200 pounds of a nitrogenous fertilizer unless a good legume crop has been plowed under (2 and 4).

Suggested cropping systems are:

Year	Rotation No. 1	Rotation No. 2	Rotation No. 3
1	Soybeans (plant vetch or bur clover in fall)	Cotton (vetch or bur clover in the fall)	Soybeans (plant alfalfa in fall)
2	Vetch or clover seed (plant corn in June)	Clover seed (followed by corn)	Alfalfa
3	Cotton	Cotton	Alfalfa
4	Cotton	Cotton	Alfalfa
5	Cotton	Soybeans	Alfalfa
6		Oats (lespedeza, sweet clover, or soybeans)	Corn

In rotation No. 1, seed may be harvested from the soybeans before the straw and stubble are plowed under. However, best results will be obtained from the succeeding crop if the soybeans are plowed under while green. Following winter cover crops, corn should not be planted until the cover crop has matured enough seed to reseed itself the following fall, or in the case of bur clover, it may be desirable to harvest a seed crop.

In rotation No. 3, soybeans should be plowed under during the latter part of July and the land fallowed until early September. Alfalfa should be planted in September whenever moisture conditions are favorable. Excellent yields of corn and cotton are produced following alfalfa, so rotation No. 2 should be used for 6 years.

Winter cover crops should be planted on this soil when possible. If winter crops are grown, the land should be disked thoroughly and bedded at least 2 weeks before cotton is planted. Where winter cover crops are not grown, this soil should be flat broken and bedded, or disked and bedded in the late fall or early winter.

Soil type 434—Dundee silty clay loam

This soil responds to the same management as 424, Forestdale silty clay loam (see page 21), except that less artificial drainage is necessary.

Soil type 435—Dundee silt loam[1]

This soil responds to the same management as 425, Forestdale silt loam (see page 22), except that less artificial drainage is necessary. Also, this soil is adapted to truck crop production. The organic phase of Dundee silt loam (*435) responds to the same management as 125, Mhoon silt loam (see page 15), except that little artificial drainage is necessary.

Soil type 436—Dundee loam[1]

This soil responds to the same management as 125, Mhoon silt loam (see page 15), except that little artificial drainage is necessary, and it is well adapted for truck crop production. One ton of ground limestone should be applied before alfalfa is grown.

Soil type 445—Dubbs silt loam[1]

This is a moderately fertile soil adapted to all crops. It responds to the same management as 125, Mhoon silt loam (see page 15), except that no artificial drainage is necessary. On the most infertile areas, rotations suggested for soil type 425, Forestdale silt loam (see page 22), should be used. Two tons of ground limestone should be applied per acre where alfalfa or sweet clover is to be grown. If soybeans and winter cover crops do not grow well, one ton of lime should be applied per acre.

Soil type 446—Dubbs loam[1]

This is a fertile soil adapted to all crops. It responds to the same management as 125, Mhoon silt loam (see page 15), except that no artificial drainage is necessary. A ton of ground limestone per acre should be applied for alfalfa or sweet clover unless the soil is an organic phase.

[1]The presence of the organic phase symbol (*) in front of this soil number denotes higher fertility than is usual for this soil type.

Soil type 447—Terrace escarpment (sand and clay beds)

This soil occurs on slopes similar to those of 334, low bottom escarpment (see page 21), and responds to the same management. Some areas make excellent bur clover seed patches. This soil with a C slope often produces good yields of all crops. Bur clover or vetch should be grown when this soil is used for cotton or corn production.

Soil type 456—Bosket loam[1]

A fertile soil that responds to the same management as 125, Mhoon silt loam (see page 15), except that no artificial drainage is necessary. This is one of the most productive soils in the county. The organic phase (*456) is unsurpassed in productivity.

Soil type 457—Bosket sandy loam[1]

This soil responds to the same management as 125, Mhoon silt loam (see page 15), except that no artificial drainage is necessary. The organic phase (*457) is unsurpassed in productivity.

Soil type 467—Clack sandy loam

This soil responds to the same management as 167, Crevasse sandy loam (see page 17). A 1000-pound application of ground limestone every 5 years may increase the growth of legumes.

Soil type 468—Clack loamy sand

This soil is extremely "drouthy" and no row crops should be grown. The drouth-resistant pasture crops suggested for 167, Crevasse sandy loam (see page 17), are recommended for use on this soil. It is unsuitable for anything but pasture, hay, and timber growth. Black locust seedlings for fence post production should be grown on a small area to determine their adaptability.

E. FIRST BOTTOM SOILS, GROUP 500 (derived from Coldwater River alluvium or mixed Mississippi and Coldwater River alluvium).

Soil type 534—Crenshaw silty clay loam

This is a moderately fertile soil that overflows frequently unless it is protected by levees or diversion channels. A few small ditches will provide adequate drainage for most areas except during floods.

This soil where protected from overflow, is adapted to all local crops. Cotton or alfalfa should not be grown if there is danger of annual overflow. Corn, soybeans, and sorghum make good growth without fertilizer so long as overflows are frequent enough to maintain soil fertility. Where this soil is protected by a levee, it will

[1]The presence of the organic phase symbol (*) in front of this soil number denotes higher fertility than is usual for this soil type.

respond to the same management as soil type 424, Forestdale silty clay loam (see page 21). Two tons of ground limestone should be applied per acre before alfalfa is planted.

Soil type 535—Crenshaw silt loam

This is a moderately fertile soil that is very responsive to good management. Many areas of this soil overflow frequently, and should be used only for corn, soybeans, and sorghum. Artificial drainage of this soil is seldom necessary.

Where protected from overflow, this soil is well adapted for the growing of all local crops. It is an excellent soil for truck crop, cotton, and corn production. It will respond to the same management as 125, Mhoon silt loam (see page 15), except that phosphorus and potassium fertilizers may be needed to maintain maximum production permanently and little artificial drainage is necessary.

F. DEPRESSIONAL SOILS, GROUP 600 (derived from mixed Mississippi and Coldwater River alluvium).

Soil type 612—Dooley clay

This soil responds to the same management as 212, Dowling clay (see page 17).

Soil type 613—Dooley silty clay

This soil responds to the same management as 212, Dowling clay (see page 17), except that more extensive drainage systems are usually necessary.

Soil type 623—Buxton silty clay

This soil responds to the same management as 213, Dowling silty clay (see page 18), except that shallow ditches often provide adequate drainage. Cotton and corn occasionally make fair yields.

Soil type 625—Buxton silt loam

This soil responds to the same management as 213, Dowling clay (see page 18), except that shallow ditches often provide adequate drainage and it is better adapted for cultivated crops. Cotton and corn often make fair yields.

Soil type 635—Cannon silt loam

This soil responds to the same management as 235, Souva silt loam (see page 18).

G. LOW BOTTOM SOILS, GROUP 700 (derived from mixed Mississippi and Coldwater River alluvium).

Members of this group of soils are inundated by flood water more frequently than the corresponding members of group 300 (see page 18).

Soil type 722—Savage clay

This soil responds to the same management as 322, Sharkey clay (see page 19).

Soil type 722 A(A⁻)—Savage-Prichard-Buxton complex

This complex of soils is similar to 322 A(A⁻), Sharkey-Tunica-Panther complex (see page 20), and responds to the same management.

Soil type 722 A°(A⁻)—Savage-Buxton complex

This complex of soils is similar to 322 A°(A⁻), Sharkey-Panther complex (see page 20), and responds to the same management as 322, Sharkey clay (page 19).

Soil type 733—Prichard silty clay

This soil responds to the same management as 322, Sharkey clay (see page 19).

Soil type 744—Prichard-Tibbs complex

This complex responds to the same management as 344, Tunica-Dundee complex (see page 21) or 322, Sharkey clay (see page 19).

H. LOW TERRACE SOILS, GROUP 800 (derived from mixed Mississippi and Coldwater River alluvium)

Soil type 824—Sarah silty clay loam

This soil responds to the same management as 424, Forestdale silty clay loam (see page 21). It is possible that alfalfa or sweet clover will not grow well on some of this soil, so it is advisable to plant a very small area to determine its adaptability. Some areas of this soil are inundated by flood water occasionally.

Soil type 825—Sarah silt loam

This soil responds to the same management as 425, Forestdale silt loam (see page 22). An application of a complete fertilizer (6-8-6) or a potassium-carrying fertilizer may give profitable response when applied to corn or cotton. Small areas should be fertilized with each fertilizer (see county agent). Six hundred pounds of basic slag or 1 or 2 tons of ground limestone per acre should be applied to this soil before alfalfa or sweet clover is planted.

Soil type 834—Tibbs silty clay loam

This soil responds to the same management as 434, Dundee silty clay loam (see page 23).

Soil type 835—Tibbs silt loam

This soil responds to the same management as 425, Forestdale silt loam (see page 22), except that less artificial drainage is necessary and it is adapted to truck crop production.

Soil type 935B⁻—Wicker loam (colluvial soil)

This soil responds to the same management as 835, Tibbs silt loam (see page 26).

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