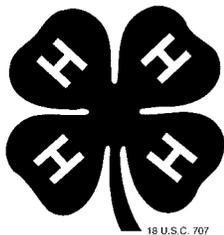


# Instructions on Land Judging in Mississippi



Soil is the basic natural resource used by humans to meet the needs of life. It is the extremely thin but precious skin covering the geologic portion of the earth's surface and serves as the platform from which all terrestrial life springs. Soil acts as an anchor and source of water and nutrients for plant roots, as a home for a vast community of microorganisms and animals, as a sanitizer of the environment, and as a source of raw materials for construction and manufacturing. It provides space for cities, highways, recreation, and wildlife. No other single resource contributes more to the overall quality of our daily lives.

Soils vary from place to place as a result of the interactions of five basic soil-forming factors: climate, vegetation, parent material, topography, and time. Even small changes in any one of these factors can create a completely different soil type. There is a tremendous amount of variation in soil types within the state of Mississippi.

Every soil consists of one to several layers called horizons, a few to several inches thick that reflect the physical, chemical, and biological processes that have taken place over time. Soils vary in the kind, number, and degree of development of these horizons, but all soils exhibit some of them. These horizons are characterized by various properties that make each a soil series. Mississippi has some 700 soil series that reflect the tremendous diversity of our state with regard to soil formation.

Preparing yourself to participate in land judging will help you gain an appreciation for the natural wonder of our state and an awareness of the fragile balance between production and sustainability. Land judging will enable you to become familiar with the factors that influence the suitability of soil

for use as a homesite, for crop production, for grazing lands, and for industrial applications. Participation in this contest requires only that you wish to learn more about the great state of Mississippi and its diverse and bountiful resources.

Any 4-H member is eligible to participate in the Land Judging Contest. Exception: If you have previously participated in the National Land Judging Contest, you cannot compete on a district or state land judging team. This rule applies regardless of the organization you were a member of at the time of international competition.



MISSISSIPPI STATE  
UNIVERSITY  
EXTENSION SERVICE

## MISSISSIPPI LAND JUDGING SCORECARD

Field No. \_\_\_\_\_

Contestant No. \_\_\_\_\_

Indicate answer by check (✓)

### PART I (30 Points)

### PART II - PRACTICES FOR LAND TREATMENT

<b>Score</b>	<b>A. SURFACE TEXTURE</b> <input type="checkbox"/> 1. Medium <input type="checkbox"/> 2. Moderately fine <input type="checkbox"/> 3. Fine <input type="checkbox"/> 4. Moderately coarse <input type="checkbox"/> 5. Coarse	<b>Score</b>	<b>VEGETATION PRACTICES</b> Use soil conserving and improving crops <input type="checkbox"/> 1. Every 4th or 5th year <input type="checkbox"/> 2. Every 3rd or 4th year <input type="checkbox"/> 3. Every 2nd year <input type="checkbox"/> 4. Do not burn crop residue <input type="checkbox"/> 5. Crop residue management <input type="checkbox"/> 6. Establish recommended grasses and/or legumes <input type="checkbox"/> 7. Proper pasture or range management. <input type="checkbox"/> 8. Protect from burning <input type="checkbox"/> 9. Control grazing <input type="checkbox"/> 10. Control noxious plants <input type="checkbox"/> 11. Plant recommended tree <input type="checkbox"/> 12. Harvest trees selectively <input type="checkbox"/> 13. Timber stand improvement <input type="checkbox"/> 14. Prevent forest fires <input type="checkbox"/> 15. Build and/or maintain fire roads
	<b>B. PERMEABILITY</b> <input type="checkbox"/> 1. Moderate <input type="checkbox"/> 2. Slow <input type="checkbox"/> 3. Very Slow <input type="checkbox"/> 4. Rapid		<b>MECHANICAL PRACTICES</b> <input type="checkbox"/> 16. Filter strips <input type="checkbox"/> 17. Terrace and farm on contour <input type="checkbox"/> 18. Construct and maintain diversion terraces <input type="checkbox"/> 19. Install drainage system <input type="checkbox"/> 20. Control gullies <input type="checkbox"/> 21. Provide vegetative outlets <input type="checkbox"/> 22. Fence <input type="checkbox"/> 23. Provide stock water
	<b>C. DEPTH, SURFACE + SUBSOIL</b> <input type="checkbox"/> 1. Deep <input type="checkbox"/> 2. Moderately deep <input type="checkbox"/> 3. Shallow <input type="checkbox"/> 4. Very shallow		
	<b>D. SLOPE</b> <input type="checkbox"/> 1. Nearly level <input type="checkbox"/> 2. Gently sloping <input type="checkbox"/> 3. Moderately sloping <input type="checkbox"/> 4. Strongly sloping <input type="checkbox"/> 5. Steep <input type="checkbox"/> 6. Very steep		<b>FERTILIZER &amp; SOIL AMENDMENTS</b> <input type="checkbox"/> 24. Lime <input type="checkbox"/> 25. Animal by-product/compost <input type="checkbox"/> 26. Nitrogen <input type="checkbox"/> 27. Phosphate <input type="checkbox"/> 28. Potash <input type="checkbox"/> 29. Nitrogen, phosphate, and potash <input type="checkbox"/> 30. No fertilizers or soil amendments needed
	<b>E. EROSION</b> <input type="checkbox"/> 1. None to slight <input type="checkbox"/> 2. Moderate <input type="checkbox"/> 3. Severe <input type="checkbox"/> 4. Very severe		
	<b>F. SURFACE RUNOFF</b> <input type="checkbox"/> 1. Good <input type="checkbox"/> 2. Fair <input type="checkbox"/> 3. Poor <input type="checkbox"/> 4. Excessive		
	<b>G. FACTORS THAT KEPT LAND FROM BEING CLASS I</b> <input type="checkbox"/> 1. Texture <input type="checkbox"/> 2. Permeability <input type="checkbox"/> 3. Depth <input type="checkbox"/> 4. Slope <input type="checkbox"/> 5. Erosion <input type="checkbox"/> 6. Surface runoff		SCORE PART I _____ (Possible 30)
	<b>H. LAND CAPABILITY CLASS</b> <i>(Circle your choice)</i> 1   2   3   4   5   6   7   8		SCORE PART II _____ (Possible 30)
	<b>I. HIGHEST LAND USE</b> <i>(Check one)</i> <input type="checkbox"/> 1. Row crops <input type="checkbox"/> 2. Pasture <input type="checkbox"/> 3. Woodland		TOTAL SCORE _____ (Possible 60)

# Mississippi Land Judging Scorecard

## How To Use MSU Extension Form 148

1. Soil conservation is the wise use and treatment of the land.
2. The scorecard is divided into two parts. In Part I, you study six factors to determine the highest safe use for the land. In Part II, you prescribe the necessary treatment to prevent erosion and to maintain and improve productivity.
3. The total perfect score on one field is 60 points: 30 points for Part I and 30 points for Part II.
4. You will judge four fields in the organized contest.
5. Three members compose a county team. In a four-member county team, the three highest scores will make up the county team. The high-scoring team will compose the state judging team to compete in the National Land Judging Contest.
6. You will be given 20 minutes at each judging site unless otherwise noted.
7. Use an X to mark your answer on the card. Circle the correct Land Capability Class on the card.
8. You will not be told how many factors to mark.
9. Mark all factors that keep the land from being Class 1. You will be given a score of 4 points for checking the factor or factors correctly. You could receive a score of 0 if the correct factors are not checked.
10. Conservation practices are listed by numbers under Part II on the scorecard. Pick out the practices to treat the field and mark an X in the square opposite each practice selected.
11. You will not be told the number of practices needed to treat any field. If you use more practices to treat a field than scored by the officials, the count will be made from the top downward.
12. Use some of the practices (vegetative) from 1 through 5 for cropland. Practices 6 through 10 apply to pasture. Use some of practices 11 through 15 for woodland.
13. Use practices (mechanical) from 16 through 23 when needed.
14. You will be given a "condition" sheet for each field. This sheet will specify: (1) what the soil test shows; (2) whether or not animal by-product is available; (3) original depth of the topsoil; (4) if there is an overhead water problem; and (5) if uncrossable gullies are present.
15. Use practices 24 through 30 according to facts given you on the "condition" sheet. Example: If the "condition" sheet shows the soil is low in pH, phosphorus, and potash, you would use practices 24, 27, and 28. In all cases, use the least number of practices to meet the deficiencies.
16. Use animal by-product (manure/compost), practice 25, only when it is listed as being available on the "condition" sheet. If soil test shows field is low in nitrogen and animal by-product is available, use practices 25 and 26.
17. Disregard practices and/or cover on the land at the time of the contest. In other words, consider the field to be void of any treatment except for woodland and apply the recommended practices according to instructions.
18. Values for correct answers in each field may be assigned in any combination. The total for contest, including judging for agricultural purposes and homesite evaluation, is 300.

### Part I, Field 1

Texture .....	3 points
Permeability .....	3 points
Depth .....	3 points
Slope .....	3 points
Erosion .....	3 points
Surface Runoff .....	3 points
Highest Land Use .....	4 points
Factors .....	4 points
Land Class .....	4 points
<b>Total .....</b>	<b>30 points</b>

### Part II, Field 1

If six practices are needed

Practice No. 3 .....	5 points
Practice No. 4 .....	5 points
Practice No. 5 .....	5 points
Practice No. 16 .....	5 points
Practice No. 17 .....	5 points
Practice No. 26 .....	5 points
<b>Total .....</b>	<b>30 points</b>

Alternate answers may be set up in Part I or Part II on the card, if the official judges cannot agree on a correct answer. An odd number of judges should be used in deciding on correct answers. The majority's opinion will be considered the correct answer. If the minority insists on a value being given to a decision, this becomes an alternate answer. The value given to alternate answers must always be less than the value assigned to the correct answer. The values assigned to alternate answers do not come out of the 30 points assigned to Part I and Part II in each field.

## Rules for Tabulating Committee

If contestants tie for high score, the columns of the Tabulation Card will be used to break the tie. Starting with the score on Field 1, the contestant having the largest score is the winner. This is used as a first "tie breaker."

If this does not break the tie, the rule is to continue numerically through Field 2, then Field 3 and Field 4.

In case this method fails to break a tie, the tabulating committee will use a method of drawing the names from a hat.

In case of team ties, the team with the high-scoring individual will be declared the winner. Should a tie exist between the high individuals of each team, the rule for breaking individual ties will apply.

Contestants need to bring the following:

- Four field cards and a homesite card.
- Soft lead writing pencil.
- Clipboard.
- Towel or cloth rag.

*Decisions of the official judge or judges will be final.*

## Flow Diagram for Estimating Soil Texture by Feel

**Start:** Take approximately 25 grams of soil and wet by adding water in small amounts. Knead to break down all aggregates until soil is plastic and moldable, like moist putty.

**Step 1:** Try to form a ribbon of uniform thickness and width by gently pushing the soil between thumb and forefinger. Allow the ribbon to emerge and extend over the finger, breaking from its own weight.

**A:** Soil does not ribbon — **coarse texture**

**B:** Soil does ribbon — What is the length of the ribbon?

**B1:** If the ribbon is over 2 inches long: **fine texture**

**B2:** If the ribbon is 1 to 2 inches long: **moderately fine texture**

**B3:** If the ribbon is less than 1 inch long:

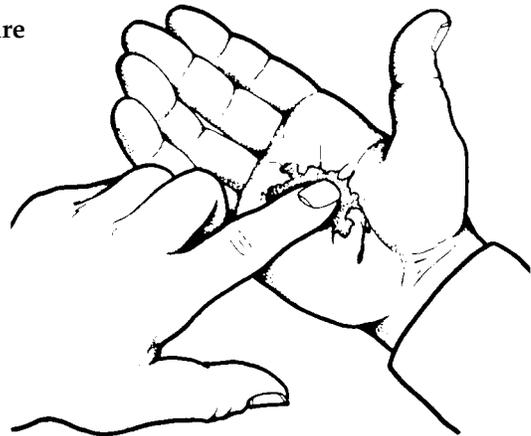
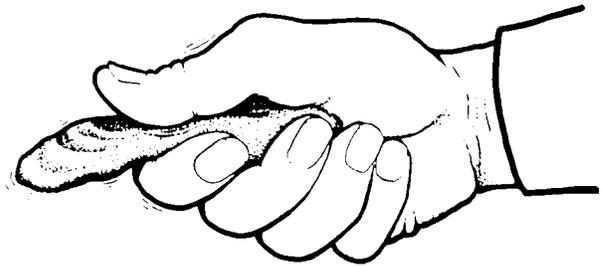
**Go to Step 2.**

**Step 2:** Excessively wet a small pinch of the soil in your palm and rub with your forefinger.

**C:** Is the soil gritty?

**C1:** The soil is not gritty — **medium texture**

**C2:** The soil is gritty — **moderately coarse texture**



Courtesy Oklahoma Extension Service

## Definitions of Land Characteristics or Factors

### Surface Texture

Texture of the surface soil is the proportion of sand, silt, and clays that make up the topsoil. Surface texture will be judged from a sample in a box designated as topsoil.

**Note:** It is necessary to moisten soil to distinguish between different textures.

**Coarse texture:** Soils are loose, very friable, and the individual grains can be readily seen or felt. It forms no ribbon. Feels extremely gritty when rubbed between fingers. Squeezed when dry, it will fall apart as pressure is released. When moist, a mold may be formed that is unstable and crumbles as the soil is handled. Soil textures classified as coarse include loamy sands and sands.

**Moderately coarse texture:** Soils feel gritty but contain silt and clay to make moist soil hold together. The individual sand grains can readily be seen and felt. Squeezed when dry, it will form a mold that breaks readily upon handling. If squeezed when moist, a mold can be formed that can be carefully handled without breaking. It forms no ribbon or very poor ribbon. The ribbon is less than 1 inch long and soil is gritty. Soil textures classified as moderately coarse-textured include sandy loam and fine sandy loam.

**Medium texture:** Soils have a slightly smooth or floury feel when moist. Squeezed when dry, it forms a mold that will bear careful handling. The mold formed by squeezing when moist can be handled freely without breaking. When the moistened soil is squeezed out between thumb and forefinger, it will form a poor rib-

bon. Soil textures classified as medium texture include very fine sandy loam, loam, silt loam, and silt.

**Moderately fine texture:** Soils usually break into clods or lumps when dry. Moist soil squeezed out between thumb and forefinger will form a 1- to 2-inch ribbon. The sandy clay loam texture has a slightly gritty feel when moist. Soil textures classified as moderately fine texture include clay loam, sandy clay loam, and silty clay loam.

**Fine texture:** Clay soils. Feels very sticky or plastic when wet. Will ribbon or leaf out when rubbed between thumb and forefinger (2-inch +) and will support itself. Sandy clay texture may have a slightly gritty feel when moist. Soil textures classified as fine texture include sandy clay, silty clay, and clay.

### Permeability

Permeability is the ability of the soil to take up water and air and give it up for plant use. Study the structure, texture, density, and color. Permeability will be judged from a sample in a box located at the hole and designated as subsoil.

**Moderate:** These soils have a granular clay loam subsoil. The texture of the subsoil is open enough to allow for movement of air and water. It is relatively free of drainage mottling throughout the sample.

**Slow:** These soils have a more dense subsoil with a higher clay or silt content. The subsoil is not as dense as those soils with very slow permeability, but the movement of air and water is restricted to some degree. Some gray drainage mottlings usually occur in the subsoil, and concretions are usually evident in terrace and bottom soils. The structure is more massive and the texture is finer than soils with moderate permeability.

**Very slow:** These soils have a dense, heavy clay or silty clay subsoil. The denseness of the subsoil restricts the movement of water through the soil and usually causes considerable drainage mottlings to occur in terrace and bottom soils.

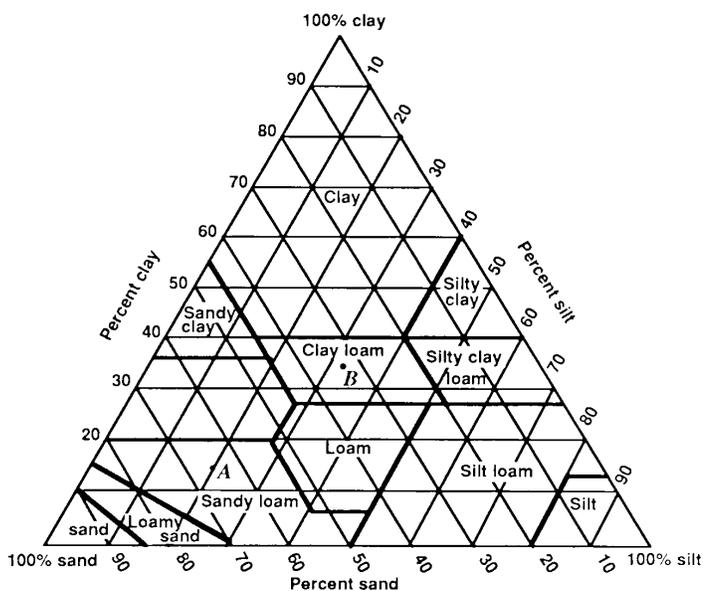
**Rapid:** These soils have sandy subsoil and exhibit little restriction of water or air.

**Note:** For the purpose of this manual, the location of an impervious layer will not affect the permeability class but will be considered in the following section (Depth of Soil).

### Guide to Soil Texture Determination

Example 1: Point A represents 15 percent clay, 65 percent sand, and 20 percent silt, and the textural or class name of this sample is sandy loam.

Example 2: A soil sample containing equal proportions of sand, silt, and clay (point B) is a clay loam.



### ***Depth of Surface Plus Subsoil***

The depth of soil is determined by the total thickness of the surface and subsoil that may be readily penetrated by plant roots. In cases of pan soils, the depth will be considered to the impervious layer.

**Deep:** Having surface and subsoil more than 40 inches for root penetration, no pan (fragipan, not traffic pan) in top 40 inches.

**Moderately deep:** Having surface and subsoil 20 to 40 inches deep for root penetration, or fragipan between 20 to 40 inches.

**Shallow:** Having surface and subsoil 10 to 20 inches deep for root penetration, or fragipan 10 to 20 inches.

**Very shallow:** Having surface and subsoil less than 10 inches deep for root penetration, or fragipan in top 10 inches of soil.

A fragipan is an impervious layer that developed in the soil as the soil developed. It is a cemented layer or horizon in a soil profile that is firm to hard when dry and friable to plastic when wet.

You can recognize fragipans by several characteristics. Some of these include a definite change in texture, a very irregular shaped structure, light red to yellow to white mottled. Aggregates tend to explode into smaller triangular-shaped particles when soil particles are pressured between fingers.

Normally, plant roots do not penetrate the fragipans. Sometimes plant roots do penetrate cracks, tree root holes, and any other cracks that may occur in the fragipans. In some instances, roots of deep-rooted crops do penetrate the gray layers in bottom and terrace soils, but depth is considered to the gray mottled drainage layers.

To determine depth of topsoil, it is always best to get in the hole so you can easily see changes in color, texture, and organic matter.



You determine permeability by feeling moist soil that is placed in a container marked "subsoil." Study structure, texture, density, and color. You can determine texture by feeling the soil placed in a container marked "topsoil."



To determine depth of topsoil, it is always best to get in the hole so you can easily see changes in color, texture, and organic matter.

## *Slope*

Slope is the number of feet fall difference in elevation in each 100 feet. Two slope stakes will be set 100 feet apart, and the slope between the stakes will be used for the slope of the field being judged. The following are definitions for slope in Mississippi.

**Nearly level:** Less than 1 feet fall in 100 feet.

**Gently sloping:** 1 to 3 feet fall in 100 feet.

**Moderately sloping:** 3 to 5 feet fall in 100 feet.

**Strongly sloping:** 5 to 8 feet fall in 100 feet.

**Steep:** 8 to 15 feet fall in 100 feet.

**Very steep:** More than 15 feet fall in 100 feet.



Persistent practice is required if you want to become proficient at estimating slope.

## *Erosion*

In Mississippi we are concerned with erosion caused by water. The following definitions pertain to the extent of erosion:

**None to slight:** Less than 25 percent of surface soil lost. No gullies.

**Moderate:** 25 to 75 percent of surface soil lost. May have a few gullies.

**Severe:** More than 75 percent of surface soil lost, with no uncrossable gullies.

**Very severe:** More than 75 percent of surface soil lost, with uncrossable gullies and eroded ditches.

**Example:** The field condition sheet shows there were 8 inches of original topsoil. The existing topsoil measured 4 inches. This is 50 percent remaining, which is between 25 and 75 percent, or moderate erosion.

**Note:** *Uncrossable gullies* refers to gullies that cannot be readily crossed with ordinary farming equipment or pasture clippers.

## *Surface Runoff*

Surface runoff is the relative rate of water removal in excess of the amount that can be absorbed by the soil.

Special attention should be given to the definition of runoff. The key words are **removal** of **excess** water over that absorbed by the soil. Land with 8 percent or greater slope will be considered to have excessive runoff. This does not mean the land must have 8 percent or greater slope in order to have excessive runoff.

For example, a severely eroded, shallow soil with slow or very slow permeability that will not allow much water to be absorbed may have excessive runoff, even if the slope is less than 8 percent.

**Good:** No water problem; normal runoff and drainage.

**Fair:** Water is removed slowly. Surplus surface water is an occasional problem.

**Poor:** Water is removed so slowly the soil remains wet a large portion of time. Drainage mottlings will be found at or near the soil surface, and soil will be predominantly gray within the top 10 inches of the profile.

**Excessive:** Water is removed rapidly in excessive amounts, causing erosion and sometimes-droughty conditions.

**Note:** Land with 8 percent slope or more will be considered to have excessive surface runoff. Any soil having 1 percent or more slope will have good or excessive surface runoff. Soils with 0-1 percent slope may have good, fair, or poor surface runoff, depending on the area.

## *Factors That Keep Soil from Being Class I*

Under this section on the scorecard, mark all factors that kept the soil from being Class 1 land. This could be any or all of the following: texture, permeability, depth, slope, erosion, and runoff. Refer to the listing for the highest possible land class for each of the factors. If Class 1 land were circled on the scorecard, then no factors would be marked.

## *Land Capability Class*

### **Mississippi Definitions\***

**Class 1.** Nearly level, none to slightly eroded, deep soils with moderate permeability and good surface runoff; productive land, can cultivate without special treatment.

**Class 2.** Gently sloping, slightly or moderately eroded, deep or moderately deep soils with moderate permeability, good surface runoff; or nearly level, slightly or moderately eroded, deep or moderately deep soils with slow permeability and good or fair surface runoff, productive land; suitable for cultivation with moderate treatment.

**Class 3.** Moderately sloping, slightly to moderately eroded, deep to moderately deep soils with slow or rapid permeability, good to excessive runoff; nearly level and fair surface runoff, slightly to moderately eroded, deep to moderately deep soils with rapid permeability; fairly productive land; suitable for cultivation with extensive treatment.

**Class 4.** Strongly sloping, slightly to severely eroded, deep or moderately deep soils with excessive runoff; or nearly level, slightly eroded, shallow soils with slow to very slow permeability and fair surface runoff, moderately productive; best suited for pastures with moderate treatment.

**Class 5.** Nearly level soils with poor surface runoff; best suited for woodland and wildlife habitat.

**Class 6.** Steep, slightly to very severely eroded, deep to very shallow soils, rapid to very slow permeability; or strongly sloping, very severely eroded, deep to very shallow soils; for pasture with extensive treatment or woodland.

**Class 7.** Very steep, slightly to very severely eroded, deep to very shallow soils, rapid to very slow permeability, use permanent vegetation; woodland.

**Class 8.** Extremely steep; very steep with rock outcrops; sandy beaches; permanently swampy; not suitable for agriculture; use wildlife or recreation.

For Classes 1, 2, and 3, a soil will be placed in the next lower capability class whenever it does not fit the entire description of a class. **Example:** If a soil more nearly but does not fit a description of Class 2 exactly, move to Class 3.

*\* For our purposes, surface texture will not determine the capability class. **Example:** Any surface texture can be Class 1 land except for coarse texture which is Class 3 if all other characteristics meet the requirements for Class 1.*

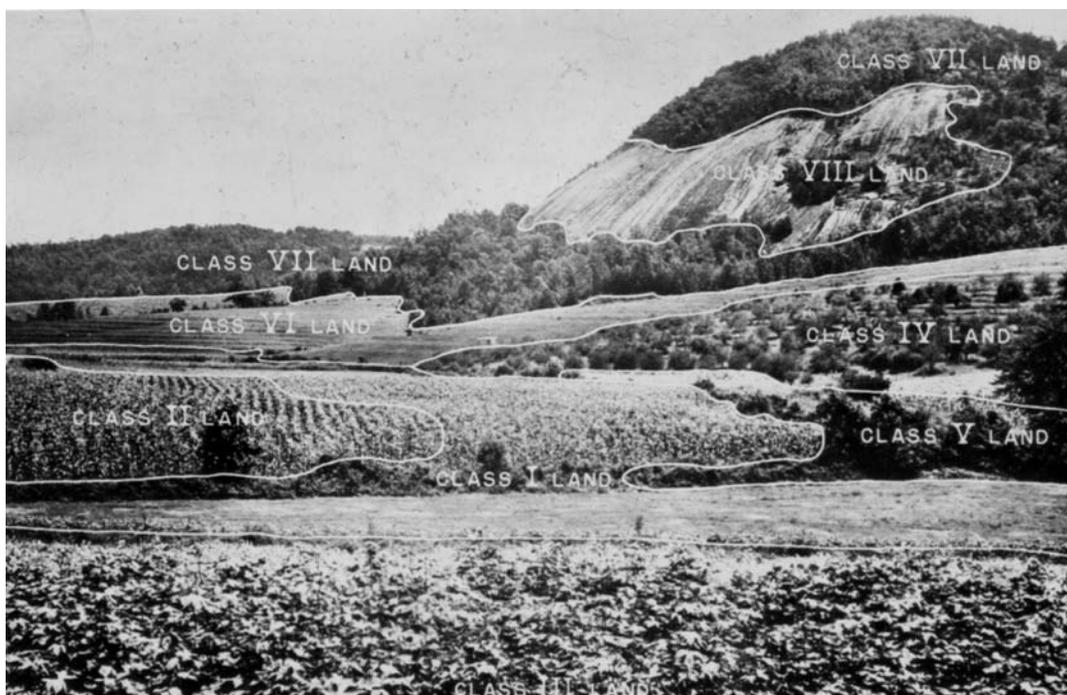
### **Highest Land Use**

*(Discussed more in detail under Treatments)*

**Crops:** Usually Capability Classes 1, 2, and 3 are used for crops.

**Pasture:** Usually the highest safe use for Capability Classes 4, 5, and 6 is pasture.

**Woodland:** Capability Classes 4, 5, and 6 are sometimes, and Class 7 is always, used for woodland. Please refer to treatment of woodlands for a possible higher use of Classes 4, 5, and 6.



## General Statements about Conservation Treatments

### *Treatment of Cropland*

Row cropland will be Capability Class 1, 2, or 3. In treating row cropland, consider use of Practices 1, 2, 3, 4, 5, 16 through 21, and 24 through 30, depending on facts given you on the field condition sheet. The combinations of practices used will depend on the Capability Class of the land and other factors. For example:

**Class 1** will always require Practices 1, 4, 5, and 16. Practices 18, 21, and 24 through 30 may be needed, depending on what you are given on your field condition sheet.

**Class 2** will always require Practices 2, 4, 5, and 16. Practice 19 will be needed if surface runoff is "fair." Practices 17, 18, 21, and 24 through 30 may be needed, depending on the field condition sheet factors.

**Note:** Practice 21 will be checked when Practice 18 is used, unless the field condition sheets specify a vegetative outlet is already established or not needed.

**Class 3** will always require Practices 3, 4, 5, and 16. Different combinations of Practices 17, 18, 19, 21, and 24 through 30 will surely be needed.

### *Treatment of Pastureland*

#### **Class 4 and 6**

Generally speaking, the highest safe use for Capability Classes 4 and 6 land is for pasture. These two classes of land require constant use of close-growing sod crops or heavy-duty vegetation. You may find certain conditions that dictate the highest safe use for these classes to be woodland. These conditions will be discussed in the section dealing with woodland.

Other conditions may indicate the highest safe use will be hay. We will not suggest treatments for lands used to grow hay. If you conclude these classes are suitable for hay, treat them as pastureland.

In treating pastureland, Practices 6, 7, 8, 9, 10, 22, and 23 will always be needed. Different combinations of Practices 18, 19, 20, 21, and 24 through 30 would be needed.

**Note:** The highest safe use for Class 6 land is pasture if:

- The land is sufficiently fertile to make it economically feasible to establish and maintain a pasture.
- The terrain is such that it can be traversed with equipment ordinarily used in building and maintaining a pasture.

### *Treatment of Woodlands*

Generally speaking, Capability Classes 5, 6, and 7 will be for woodland use. We have described some conditions under which Class 6 would have a higher safe use - pasture. In this section of instructions, regard Classes 5, 6, and 7 to be used for woodland.

In treating woodland, consider use of a combination of Practices 11, 12, 13, 14, and 15. In certain situations you may use Practices 20 and/or 22. Practices 14, 15, and 30 will always be used in treating woodland.

Practice 20 is used when you determine that nature needs some help to heal an active gully. Practice 22 is advisable when young seedlings are planted in an area where cattle have access to them. There may be areas where volunteer young seedlings may need protection from cattle where you would use Practice 22. See the description of Conservation Practices to determine under what conditions you would use Practices 11, 12, and 13.

Your field sheet will also tell you what the soil test shows for woodland areas. Disregard what it shows on woodland areas. Don't use fertilizers and soil amendments on woodland areas.

## Description of Conservation Practices

### *Vegetative Practices*

#### **Practices 1, 2, and 3**

**Soil-conserving crops** prevent or retard erosion and maintain rather than deplete organic matter. Grasses and legumes are regarded as soil-conserving crops.

**Soil-improving crops** improve and replenish soil organic matter, improve soil structure and tilth, and increase water intake.

**Practice 4.** Do not burn crop residue. Self-explanatory.

**Practice 5.** Residue management. Provides for a protective cover by leaving crop residue of any previous crop as a mulch on or mixed in the surface (first few inches) of the soil. At least 30 percent residue should remain on or near the soil surface after planting.

**Practice 6.** Establish recommended grasses, legumes, or both. This practice is used to build a new pasture or completely rebuild an old pasture.

**Practice 7.** Proper pasture management. This covers a multitude of management decisions and is always to be used in prescribing treatment for pasture.

**Practice 8.** Protect pastures from burning. Self-explanatory. Always used in treating pastures.

**Practice 9.** Control grazing. Rotation grazing. Proper stocking or any other method to keep an abundance of forage. Always used.

**Practice 10.** Control noxious plants by mowing, spraying with chemicals, or by using other methods to keep undesirable plants to a minimum. This practice is always used for pastures.

**Practice 11.** Plant recommended trees. This practice is used to do spot planting to increase the number of trees on an existing forestry area, to plant an open area, or to underplant undesirable hardwood trees that are later to be removed.

**Practice 12.** Harvest trees selectively. This practice is to be used when there are trees that are ready to be sold.

(This may be mature trees or trees that are saleable and should come out to favor more desirable trees.) If trees are not present, do not use this practice.

**Practice 13.** Timber stand improvement. This practice is to be used when there are undesirable trees that cannot be sold but removal will give room for better trees to grow. If trees are not present, do not use this practice.

**Practice 14.** Prevent forest fires. Self-explanatory. Always used as one of the practices in prescribing treatment for any woodland area.

**Practice 15.** Build or maintain fire roads. Always used in treating woodland. Most of Mississippi has organized forest fire protection, but many times the fire fighting equipment cannot get close enough to the actual fire in time to use the equipment.

### *Mechanical Practices*

**Practice 16.** Filter strip. A strip or area of vegetation for removing sediment, organic matter, and other pollutants from field water runoff, usually constructed at the lower edge of cropland fields or above conservation practices such as diversion terraces, or on fields adjacent to streams, ponds, and lakes. A key practice used to protect water quality. Apply to Cropland Classes 1, 2, and 3.

**Practice 17.** Farm on the contour. Conduct tillage and planting operations on or near the contour (perpendicular to the field slope). Apply to Cropland Classes 2 and 3, unless it is a nearly level slope.

**Practice 18.** Construct and maintain diversion terraces. Diversion terraces are larger and have greater horizontal fall than regular terraces. Diversion terraces are used to divert water away from an area. Use Practice 18 when your field condition sheet tells you there is a water problem above the field you are judging. Practice 18 should always be supported by Practice 21.

**Practice 19.** Install drainage system. Land with fair surface drainage will benefit from installation of a drainage system. Installing a drainage system on wetland (Class 5 soil) is not recommended.

**Practice 20.** Control gullies. Gully control is done where circumstances require it and where it is economically feasible.

**Practice 21.** Provide vegetative outlets. All terraces, including diversion terraces, should empty water onto a good vegetative outlet. Practice 21 is always used when Practice 17 or 18 is used.

**Practice 22.** Fence. Self-explanatory. All pastures must be fenced. Fences are generally used to keep stock away from young tree seedlings and from treated gullied areas.

**Practice 23.** Provide stock water. Self-explanatory. All pastures must have stock water provided.

### *Fertilization and Soil Amendments*

**Practice 24.** Lime is recommended on soils with a pH up to, and including, 5.9. Above this pH, no lime is recommended. Therefore, use this practice when any pH value given for a field is less than 6.0.

**Practice 25.** Animal by-product (manure/compost) should be applied to the field, if available. Animal by-product is produced in confined animal feeding operations of dairy, poultry, and swine. The by-product may be land-applied—according to an approved waste management system—thereby adding organic matter and nutrients to the soil. Use this practice whenever the field condition sheet says animal by-product is available.

**Practice 26.** Nitrogen. No established level of nitrogen in the soil adequately indicates sufficiency and deficiency for all crops. Therefore, nitrogen will be given as “adequate” or “deficient.” Check this practice when nitrogen is indicated to be deficient.

**Practice 27.** Phosphorus. Soils in Mississippi with phosphorus levels up to and including 72 pounds per acre require the addition of phosphorus to achieve maximum production. Therefore, use this practice when any soil phosphorus is less than 73 pounds per acre.

**Practice 28.** Potassium. Soils in Mississippi with potassium levels up to and including 290 pounds per acre require the addition of potassium to achieve maximum production. Therefore, use this practice when any soil potassium is less than 291 pounds per acre.

**Practice 29.** Soil report indicates nitrogen, phosphorus, and potassium deficiency.

**Practice 30.** Soil has adequate pH (above 5.9), adequate nitrogen, phosphorus, and potassium levels.

Use combined practices any time possible.

**Example:** Field condition sheet indicates:

Soil pH	5.9
Phosphorus	72 pounds per acre
Potassium	290 pounds per acre
Nitrogen	Deficient

Animal by-product is available.

On the scorecard, mark practices 24, 25, and 29.

**Summary of Factors Determining  
Land Capability Classes  
Highest Possible Land Class**

<i>Soil Factors</i>	<i>Best Land Class</i>
<b>TEXTURE</b>	
Coarse .....	3
Moderately Coarse .....	1
Medium .....	1
Moderately Fine .....	1
Fine .....	1
<b>PERMEABILITY</b>	
Moderate .....	1
Slow .....	2
Very slow .....	4
Rapid .....	3
<b>DEPTH</b>	
Deep or moderate deep .....	1
Shallow .....	3
Very Shallow .....	7
<b>SLOPE</b>	
Nearly Level .....	1
Gently Sloping .....	2
Moderately Sloping .....	3
Strongly Sloping .....	4
Steep or very steep .....	6
<b>EROSION</b>	
None to Slight .....	1
Moderate .....	2
Severe or very severe .....	6
<b>SURFACE RUNOFF</b>	
Good .....	1
Fair.....	2
Poor .....	5
Excessive .....	3

A combination of several of these factors can reduce the capability class. But in no instance can the class be higher than is listed for that factor above.

**Field Condition Sheet**

A field condition sheet will be passed out at each judging site. This sheet will contain all the additional information necessary to judge the soil profile.

1. Thickness of original topsoil will be given in inches. Use this measurement to determine the amount of erosion that has occurred.
2. If an overhead water problem exists, as will be stated on the condition sheet, mark Practices 18 and 21 on the scorecard.
3. If number 4 is marked animal by-product/compost available, then Practice 25 would be marked if the soil site were cropland or pasture, not woodland.
4. Soil report will provide pH, phosphorus, and potassium levels for practices 24, 26, 27, 28, 29, and 30. Please refer to the example given in the Fertilization and Soil Amendments section of this publication.
5. Size of field will be given in acres. Assume that the flagged area around the site is this size. Use this to determine the general lay of land and severity of erosion, if such exists.
6. Other conditions that may exist but are not stated above, and which should be noted in judging the soil site, will be listed here. If no conditions are listed here, then assume none exist.

**FIELD CONDITION SHEET FOR MISSISSIPPI LAND JUDGING**

1. Thickness of original topsoil was \_\_\_\_\_ inches.
2. Overhead water problem (is or is not) \_\_\_\_\_ present.
3. Animal by-product/compost (is or is not) \_\_\_\_\_ available.
4. Soil tests are pH\_\_\_\_\_, N\_\_\_\_\_, P\_\_\_\_\_, K\_\_\_\_\_.
5. Size of field to consider is \_\_\_\_\_ acres.
6. Other conditions (vary with the site) \_\_\_\_\_.



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**Form 148 (1000-10-08)**

## Homesite Evaluation

One of the four sites used for land judging for agricultural purposes will be selected and judged for use as a homesite. The soils are judged for the same factors. Instead of making recommendations on practices, you judge homesites for degree of limitation. The major difference is the recommended practices. Homesites are evaluated primarily for four uses: (1) roads and streets, (2) building foundations, (3) septic tanks, and (4) gardens and landscape.

**Roads and streets-** The use of soil for roads and streets is influenced less by soil factors (such as texture and depth) than for other uses. The reason is that roads and streets are usually graded and built according to an engineer's specifications. If the soil texture or permeability is not correct, roadbeds are usually amended with some product (clay, sand, gravel, or limestone) to correct the deficiency. Therefore, only extreme soil conditions (such as steep slope) affect the use of a soil for roads and streets.

**Building foundations-** Building foundations are affected by all soil factors. A soil that has a fine texture or very slow permeability may contain too much clay, thus increasing its shrink-swell potential; this can result in a foundation shifting and cracking over a long time. A coarse texture or rapid permeability would indicate a high sand content. Foundations in sandy soils are sometimes unstable and need additional soil amendments.

A shallow soil may cause foundation problems since excess water may be held in the upper part of a soil. This may also be true with fair to poor surface runoff.

Slope and erosion affect foundations only to the extent that construction may be more difficult as slope is increased and erosion is more severe.

**Septic tanks-** Septic tanks and septic lines are affected by slope, depth, drainage, and soil texture. A nearly level to moderately sloping soil with a high sand content is desirable. This will allow rapid percolation of liquids, thus keeping the tank from overflowing. A soil too steep may cause liquid to move too fast, thus reducing percolation. Shallow soils or soils containing too much clay may cause slow water movement, resulting in an overfilled septic tank or field.

**Gardens and landscape-** A soil that is desirable for agricultural production is also desirable for lawn grasses, shrubs, and vegetable gardens. Soils with coarse texture or rapid permeability may not hold enough water for desirable plant growth, and this would result in the need for frequent irrigation. A soil with too much clay (fine texture or slow permeability) may hold too much water, causing poor drainage and reduced root growth. The more shallow a soil, the less the rooting area for plants. A deep soil is desirable.

Slope and surface runoff also affect the use of a soil for plant growth. The more the slope, the less desirable

the area for gardens and landscape. The rate of surface runoff affects the loss of desirable topsoil containing organic matter and nutrients through erosion.

The table shows the results of the soil factors on the four uses discussed above. Study this table carefully for the contest; it determines the answers to Part I of the scorecard.

## Effect of Soil Factors on Land Use Limitations for Homesites

Soil Factors	Roads & Streets	Building Foundations	Septic Tanks	Gardens & Landscapes
<b>Texture</b>				
medium	none to slight	none to slight	none to slight	none to slight
moderately fine	none to slight	none to slight	none to slight	none to slight
fine	moderate	severe	severe	severe
mod. coarse	none to slight	none to slight	none to slight	none to slight
coarse	moderate	moderate	moderate	moderate
<b>Permeability</b>				
moderate	none to slight	none to slight	moderate	none to slight
slow	moderate	none to slight	severe	moderate
very slow	severe	severe	very severe	severe
rapid	moderate	moderate	none to slight	moderate
<b>Depth</b>				
deep	none to slight	none to slight	moderate	none to slight
mod. deep	none to slight	moderate	severe	moderate
shallow	none to slight	severe	very severe	severe
very shallow	moderate	very severe	very severe	very severe
<b>Slope</b>				
nearly level	none to slight	none to slight	none to slight	none to slight
gently sloping	none to slight	none to slight	none to slight	none to slight
mod. sloping	none to slight	none to slight	moderate	none to slight
strongly sloping	moderate	none to slight	moderate	severe
steep	severe	severe	severe	very severe
very steep	very severe	very severe	very severe	very severe
<b>Erosion</b>				
none to slight	none to slight	none to slight	none to slight	none to slight
moderate	none to slight	none to slight	none to slight	none to slight
severe	none to slight	none to slight	none to slight	severe
very severe	moderate	severe	severe	very severe
<b>Surface runoff</b>				
good	none to slight	none to slight	none to slight	none to slight
fair	none to slight	moderate	moderate	moderate
poor	moderate	severe	very severe	severe
excessive	moderate	none to slight	none to slight	severe

# HOMESITE EVALUATION SCORECARD

Contestant No. \_\_\_\_\_

1. Total perfect score is 60.
2. Total perfect score on Part I is 6 points, 48 points on Part II, and 6 points on Part III.
3. Part I (A through F) of the scorecard is determined in the field and is the same as used in determining the land capability class for agriculture use. Each correct answer is worth 1 point.
4. Part II is the rating of the soil factors as to limitation for four important homesite uses. Limitations of none to slight, moderate, severe, or very severe will apply for each use except soil texture. Each correctly marked limitation on Part II of the scorecard is worth two points. Soil factors with appropriate limitations are included in the table. Learn the table before completing Part II of the scorecard.
5. The final evaluation of the site for suitability as a homesite is rated under Part III of the scorecard. The correct answer as to limitation of use in this section is worth 6 points.

PART I		PART II			
(1 point each)		Check (✓) the correct factor (2 points each)			
Factors	Degree of Limitation	Road & Streets	Building Foundations	Septic Tanks	Gardens & Landscape
<b>A. TEXTURE</b>					
<input type="checkbox"/> 1. Medium	none to slight				
<input type="checkbox"/> 2. Moderately fine	moderate				
<input type="checkbox"/> 3. Fine	severe				
<input type="checkbox"/> 4. Moderately coarse					
<input type="checkbox"/> 5. Coarse					
<b>B. PERMEABILITY</b>					
<input type="checkbox"/> 1. Moderate	none to slight				
<input type="checkbox"/> 2. Slow	moderate				
<input type="checkbox"/> 3. Very Slow	severe				
<input type="checkbox"/> 4. Rapid	very severe				
<b>C. DEPTH, SURFACE + SUBSOIL</b>					
<input type="checkbox"/> 1. Deep	none to slight				
<input type="checkbox"/> 2. Moderately deep	moderate				
<input type="checkbox"/> 3. Shallow	severe				
<input type="checkbox"/> 4. Very shallow	very severe				
<b>D. SLOPE</b>					
<input type="checkbox"/> 1. Nearly level	none to slight				
<input type="checkbox"/> 2. Gently sloping	moderate				
<input type="checkbox"/> 3. Moderately sloping	severe				
<input type="checkbox"/> 4. Strongly sloping	very severe				
<input type="checkbox"/> 5. Steep					
<input type="checkbox"/> 6. Very steep					
<b>E. EROSION</b>					
<input type="checkbox"/> 1. None to slight	none to slight				
<input type="checkbox"/> 2. Moderate	moderate				
<input type="checkbox"/> 3. Severe	severe				
<input type="checkbox"/> 4. Very severe	very severe				
<b>F. SURFACE RUNOFF</b>					
<input type="checkbox"/> 1. Good	none to slight				
<input type="checkbox"/> 2. Fair	moderate				
<input type="checkbox"/> 3. Poor	severe				
<input type="checkbox"/> 4. Excessive	very severe				
<b>PART III</b> Final evaluation for Homesite (6 points)					
<input type="checkbox"/> Excellent (all factors none to slight) <input type="checkbox"/> Good (one or more factors moderate, none severe or very severe) <input type="checkbox"/> Fair (one or more factors severe) <input type="checkbox"/> Poor (one or more factors very severe)					
SCORE PART I _____ (Possible 6)		SCORE PART II _____ (Possible 48)			
SCORE PART III _____ (Possible 6)					
TOTAL SCORE _____ (Possible 60)					



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**Form 560 (rev-1M-11-04)**

## Glossary

**Aggregate:** A clustered mass of individual soil particles varied in shape, ranging in size from a microscopic granule to small crumb, and considered the basic structural unit of soil.

**Concretion:** A local concentration of a chemical compound, such as calcium carbonate or iron oxide, in an aggregate or nodule, of varying size, shape, hardness, and color.

**Fragipan:** A layer in soils that is strongly compacted, indurated (hardened), or very high in clay content.

**Friable:** Soil material crushes easily under gentle pressure.

**Grain:** Lack of soil in incoherent materials.

**Indurated:** Having become firm or hard.

**Mottling:** Spots or blotches of different color or shades of color within the subsoil horizon.

**Porosity:** The quality or state of being porous.

**Soil:** The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for growth of land plants.

**Tilth:** The physical condition of the soil in relation to its ease of tillage, fitness as a seedbed, and its impedance to seedling emergence and root penetration.

**Topography:** The configuration of a surface including its relief and position of its natural or man-made features.

**Traffic pan:** A subsurface horizon or soil layer having a high bulk density and a lower total porosity than the soil directly above or below it as a result of pressure by normal tillage operations or by other artificial means.



## 4-H Pledge

I Pledge

My head to clearer thinking

My Heart to greater loyalty

My Hands to larger service, and

My Health to better living for my Club,  
my Community, my Country, and my World.



## Motto

To make the best better

## Slogan

Learn by Doing

## Colors

Green and White

*Green is nature's most common color and is symbolic of springtime, life, and youth.*

*White symbolizes purity and high ideals.*

Expand your learning resources:

For more information regarding Mississippi 4-H, go to  
[http://msucare.com/4h\\_Youth/4hindex.html](http://msucare.com/4h_Youth/4hindex.html).

To learn more soil science terms, visit the Soil Science Society of America's glossary on the web at <https://www.soils.org/publications/soils-glossary>.

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