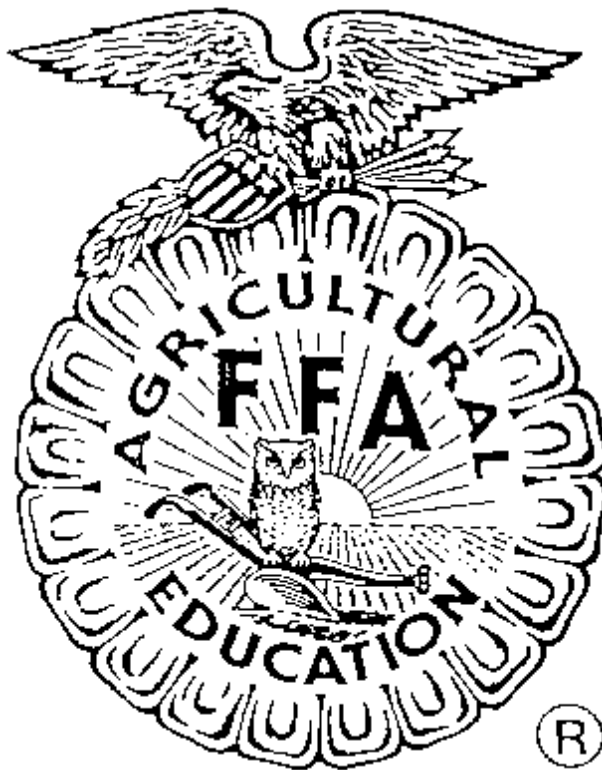


***LAND
CAREER DEVELOPMENT EVENT***

RULES AND REGULATIONS

TEAM COMPETITION



ALABAMA FFA ASSOCIATION

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Alabama State Department of Education, Mr. Michael Sentance, State Superintendent of Education

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Revised December 2016
Land CDE

LAND CAREER DEVELOPMENT EVENT

PURPOSE:

This event is designed to help students learn more about land, difference in soils and their capabilities, methods of soil conservation and improvement, treatments to help in obtaining higher production, and selection of suitable home sites.

ELIGIBILITY AND REGULATIONS:

Ground rules, such as field boundaries and previous land treatments will be given at the time of the event.

Any chapter can participate in the district event. The top **four** winners in each district will compete in the state finals.

The chapter with the state champion team will represent Alabama in the International Land Judging Event in Oklahoma City, Oklahoma, in the spring following the state event. (Should the first place state team, be unable to attend the international event, the next place team may go instead. In such case, stipends will be exchanged to take care of traveling expenses for the team.) Team members participating in the international event must be in high school at the time of the event. State second, third, and fourth place teams may be allowed to attend and participate in the National Contest with State Department of Education approval and at their own expense. Teams competing in the International Land Judging Event should visit www.landjudging.com and download the judging manual and view other pertinent information regarding the event.

STATE AWARDS/SPONSOR(S):

Refer to Alabama FFA Contests and Awards Booklet at:
<http://www.alabamaffa.org/> on the Forms and Applications page

GENERAL EVENT RULES

1. If a cell phone is seen or heard in the possession of a competitor, that individual student will be disqualified from competition and receive a score of zero.
2. Competitors must enter their name on the scorecard or they will receive a score of zero. Judges will not attempt to figure out who the card belongs to.
3. The team will consist of a maximum of four members. The team's total score will be based on the sum of the points earned by the three highest scoring participants on the team.
4. Cards will be scored by teachers and double checked if scored by hand. Cards may be scored electronically, if possible.
5. Four separate sites will be judged: cropland, pastureland, forestland, and homesite.
 - **In the event a cropland site is located in a pasture or grassed field, contestants must assume there is no vegetation.**
 - **At a cropland site, contestants must also assume that if terraces are present, they must be maintained.**
6. A contest official will explain and post written ground rules to the contestants. Ground rules shall include the following:
 - a. Use to be made of site and site no.: cropland, pastureland, forestland or homesite.
 - b. Estimated pH if soil test is not available.
 - c. Estimated soil test results for phosphate and potash (high-medium-low).
 - d. Boundaries of site to be judged.
 - e. Area where estimation of slope and runoff is to be made. A distance of either 50 or 100 feet should be marked with stakes or flags. Top of both stakes or flags should be the same distance from the ground. The distance will not be revealed. It is up to the contestant to determine distance.
 - f. A "no-pick" zone should also be marked in the pit to provide uniform conditions for each contestant. This "no-pick" zone will be used to determine factors such as depth of soil, soil drainage, and depth of soil surface and degree of soil erosion.
 - g. The number of recommended practices for cropland, pastureland, and forestland.
 - h. Original topsoil thickness should be given at site.
 - i. Area to be judged for pastureland treatments 1-5.
 - 1.) Size of area should be a minimum of 100 square feet and maximum of 10,000 square feet.
 - 2.) Flags must be set to indicate area to be considered.
 - j. Wetland areas on cropland or pastureland and soil drainage of cropland, pastureland, and forestland should be posted at site.
 - k. Management objectives for forestland.
 - l. Area to be judged for forestland practices 5 and 8.
 - m. Firebreaks outside of site boundaries that cannot be seen.
 - n. The number of Problem Area squares to be checked in Part III B will be given at the homesite.
 - o. The % chance of flooding will be given at homesite.
 - p. Container of clearly identified surface (topsoil) and subsoil sample from the soils pit will be used to determine surface and subsoil textures along with subsoil permeability.
 - q. Contestants may use water bottles to moisten soil for texture determination.
 - r. **Contestants may only use clipboards with no markings.**
 - s. Directions of concentrated flow with a conservation system installed will be given for croplands.

- t. Use of a string guide in soils pit within “no pick” zone to pre-select soil depth to be judged is an option of contest officials and when used should be clearly marked.
- 7. If there are 15 or more teams participating, contestants will be given **20** minutes to judge each site. If there are less than 15 teams participating, members will be given **15** minutes to judge each site.
- 8. The following number of points represent a perfect score for the items in Part I:

	<u>Yellow Card</u>	<u>Blue Card</u>
Surface Texture	2 points	2 points
Subsoil	2 points	2 points
Permeability	3 points	3 points
Depth of Soil	2 points	3 points
Slope	4 points	4 points
Surface Runoff	2 points	-----
Erosion	3 points	2 points
Soil Drainage	-----	4 points
Major Limiting Factor	6 points	-----
Land Capability Class	6 points	-----
Flooding	-----	3 points
Shrink Swell	-----	4 points
Rocks %	-----	<u>3 points</u>
TOTAL	<u>30 points</u>	30 points

- 9. In scoring the first seven items on Part I (Land Class Factors) of the score card, one point should be deducted for each place the contestant fails to check the item correctly.
- 10. In scoring the items under Major Limiting Factors on the Yellow Card, deduct one point for each item checked incorrectly. For each items that should have been checked but were not, deduct the full amount allotted for that item (under no circumstances should a contestant score less than zero.
- 11. Deduct two points for each place the contestant misses the Land Capability Class on the Yellow Card, and Flooding, Shrink-Swell, and Rock % on the Blue Card.
- 12. In scoring the contestants on Part II (Recommended Land Uses), the total number of practices should be determined first. Then, to determine the value to be given each practice, divide total possible points (30) by the number of practices. If by following this procedure the value arrived at for each practice is not a whole number, some practices should be given slightly higher or lower values according to the official judge in order to avoid fractions.
- 13. In judging Part II - Recommended Land Uses, conservation practices will be selected for cropland, pastureland and forestland.
- 14. If a contestant lists more practices or checks more squares that the number listed by the judges, he/she will score zero on Parts II or III.
- 15. In scoring Part III:
 - IIIA. Urban Land Limitations
Only one limitation should be checked for each use. Three points should be deducted for each place the contestant misses the urban land limitation. Each limitation should be assigned a maximum of six points.
 - IIIB. Problem Areas
The total score for Problem Areas is six. Each correct answer should be valued as a proportion of six.

16. No contestant should be allowed to use a level or any other instrument to determine the slope of **land**. Neither should a contestant be allowed to refer to any printed material other than the scorecard during the time of the contest. A clipboard or scorecard is not considered a measuring device.
17. Holes at each area should be at least 44 inches deep where possible and officials should freshen the soil profile before judging begins. The contestant should assume that the soil at the bottom of each hole continues to 80 inches, unless otherwise indicated.
18. No scorecards will be returned to teams after a state event. The decision of the scoring committee is final.
19. Tie Breakers:
 - A. Team Tie Breakers:
 - i. In the event of a tie, the team with the highest team score on the Homesite section (all parts) will be the winner.
 - ii. If there is still a tie, the team with the highest team score on the Forestland section (Parts 1 & 2) will be the winner.
 - iii. If there is still a tie, the team with the highest team score on the Cropland section (Parts 1 & 2) will be the winner.
 - B. Individual Tie Breakers:
 - i. In the event of a tie, the individual with the highest score on the Homesite section (all parts) will be the winner.
 - ii. If there is still a tie, the individual with the highest score on the Forestland section (Parts 1 & 2) will be the winner.
 - iii. If there is still a tie, the individual with the highest score on the Cropland section (Parts 1 & 2) will be the winner.
 - C. Forestry Individual High Scorer [State Event Only] (Tie Breaker):
 - i. If there is a tie for the highest individual in the Forestry section, the member with the highest overall rank in the event will be the winner.
20. When requested, a judges-coaches conference may be held at the event site prior to the start of the event.
21. **Contestants will not be allowed to have cell phones or other electronic devices at the contest site. Violators will be disqualified.**

Sample Site Cards:

CROPLAND

1. Manage for CROPLAND
2. BOUNDARIES – Area that can be seen from hole, within the white flags.
3. ESTIMATION OF SLOPE – Between the two (2) stakes painted orange with orange ribbon and flags.
4. ESTIMATE EROSION – In hole at “No Pick” Zone.
5. Original Topsoil Thickness _____ inches.
6. “No Pick Zone” is between the ribbons in hole.
7. Cropland – Number of recommended practices are _____.
8. PH is _____.
9. Soil Test results _____.
10. No Wetlands.
11. _____ Drainage.
12. The direction of concentrated water flow is _____.
13. 15 Minutes to JUDGE SITE.

PASTURELAND

1. Manage for _____ Pasture. (Assume that it is the growing season).
2. BOUNDARIES – Pasture Area that can be seen from soils hole.
3. PH is _____.
4. Soil Test result is _____.
5. ESTIMATE OF SLOPE – Between the two (2) orange stakes with orange ribbons.
6. ESTIMATE EROSION – In hole at “No Pick” Zone.
7. Original Topsoil Thickness _____ inches.
8. “No Pick” Zone is between the ribbons in hole.
9. Area to Judge Pastureland treatment 1-5 is inside Four (4) stakes with flags.
10. Number of recommended practices for pastureland are _____.
8. No Wetlands.
9. _____ Drainage.
10. No Cows Present!
11. 15 minutes to JUDGE SITE.

FORESTLAND

1. Manage for _____.
2. BOUNDARIES – Inside pink ribbon area.
3. Consider for practices #5 & #8 within solid orange ribbon boundaries of Forestland area.
4. ESTIMATION OF SLOPE – Between the two (2) orange stakes with ribbon and flags.
5. _____ Drainage.
6. ESTIMATION EROSION – In hole at “No Pick” Zone.
7. Original Topsoil Thickness _____ inches.
8. “No Pick” Zone between the ribbons in hole.
9. Forestland – Number of recommended practices are _____.
10. 15 minutes to JUDGE SITE.

HOMESITE

1. BOUNDARIES – Area that can be seen from the hole.
2. ESTIMATION OF SLOPE – Between the two (2) stakes with flags and painted orange.
3. ESTIMATE EROSION – In hole at “No Pick Zone”
4. Original Topsoil Thickness _____ inches.
5. “No Pick” Zone is between ribbons in hole.
6. Number of squares to be checked in PART III B is _____.
7. Flood Frequency for Homesite is _____ %.
8. 15 minutes to JUDGE SITE.

FFA LAND JUDGING SCORE CARD

Name _____

School _____ County _____

Cropland
Pastureland
Forestland

Land Class Factor – Part I

TEXTURE	1	2	3
Surface:			
1. Coarse	①	②	③
2. Moderately Coarse	①	②	③
3. Medium	①	②	③
4. Moderately fine	①	②	③
5. Fine	①	②	③
Subsoil:			
1. Coarse	①	②	③
2. Moderately Coarse	①	②	③
3. Medium	①	②	③
4. Moderately fine	①	②	③
5. Fine	①	②	③
DEPTH OF SOIL			
1. Deep	①	②	③
2. Moderately deep	①	②	③
3. Shallow	①	②	③
4. Very Shallow	①	②	③

SLOPE			
1. Nearly level	①	②	③
2. Gently sloping	①	②	③
3. Moderately sloping	①	②	③
4. Strongly sloping	①	②	③
5. Steep	①	②	③
6. Very steep	①	②	③
EROSION – WATER			
1. None to slight	①	②	③
2. Moderate	①	②	③
3. Severe	①	②	③
4. Very severe	①	②	③
PERMEABILITY			
1. Rapid	①	②	③
2. Moderate	①	②	③
3. Slow	①	②	③
4. Very Slow	①	②	③
SURFACE RUNOFF			
1. Rapid	①	②	③
2. Moderate	①	②	③
3. Slow	①	②	③
4. Very Slow	①	②	③

MAJOR LIMITING FACTORS			
1. (Surface) Texture	①	②	③
2. Depth	①	②	③
3. Slope	①	②	③
4. Erosion	①	②	③
5. Permeability	①	②	③
6. Runoff	①	②	③
7. None	①	②	③
LAND CAPABILITY CLASS			
1. Class I	①	②	③
2. Class II	①	②	③
3. Class III	①	②	③
4. Class IV	①	②	③
5. Class V	①	②	③
6. Class VI	①	②	③
7. Class VII	①	②	③
8. Class VIII	①	②	③

Part I Land Class Factor	
Possible Points Per Site	30
Possible Points Per Card	90
Part II Recommended Land Uses	
Possible Points Per Site	30
Possible Points Per Card	90
Score-Part I – Site _____	
Score-Part I – Card _____	
Score-Part II – Site _____	
Score-Part II – Card _____	
Total Score – Site _____	
Total Score – Card _____	

Recommended Land Treatments – Part II

①	Circle Recommended Practices
CROPLAND	
1. Row crop each year – Maintain good soil condition	_____
2. Use for row crops – Maintain good soil condition – Apply erosion control practices on slopes that exceed two percent	_____
3. Use for row crops – Maintain good soil condition – Protect sloping upland soils with conservation tillage (or a sod rotation that provides cover two-thirds of the time) and appropriate support practices.	_____1_____
4. Use for row crops – Maintain good soil condition – Protect sloping upland soils with conservation tillage (or a sod rotation that provides cover three-fourths of the time) and appropriate support practices.	_____2_____
5. Farm on contour	_____3_____
6. Install water disposal system (underground outlets, grassed waterways, or grassed outlets	_____4_____
7. Maintain existing underground outlets, grassed waterways or grassed outlets	_____5_____
8. Build terraces	_____6_____
9. Maintain existing terraces	_____7_____
10. Install or maintain drainage system	_____8_____
11. Gully control	_____9_____
12. Establish field borders	_____10_____
13. Apply lime	_____11_____
14. Use fertilizer ratio 1-1-1	_____12_____
15. Use fertilizer ratio 1-2-4	_____13_____
16. Use fertilizer ratio 1-4-2	_____14_____

②	Circle Recommended Practices
PASTURELAND	
1. Establish recommended permanent pasture plants	_____1_____
2. Improve the stand of existing pasture	_____2_____
3. Grazing management	_____3_____
4. Control undesirable plants of existing pasture	_____4_____
5. Improve forage quality and production of existing pasture	_____5_____
6. Install drainage system	_____6_____
7. Gully control	_____7_____
8. Apply lime	_____8_____
9. Use fertilizer ratio 0-1-1	_____9_____
10. Use fertilizer ratio 0-2-1	_____10_____
11. Use fertilizer ratio 0-1-2	_____11_____

③	Circle Recommended Practices
FORESTLAND	
1. Prescribe burn	_____1_____
2. Establish firebreaks	_____2_____
3. Maintain existing firebreaks	_____3_____
4. Plant recommended trees	_____4_____
5. Harvest trees selectively	_____5_____
6. Harvest trees by clearcutting	_____6_____
7. Control undesirable species	_____7_____
8. Precommercial thinning	_____8_____
9. Prepare site for planting	_____9_____
10. Control erosion	_____10_____

YELLOW CARD

FFA LAND JUDGING SCORE CARD

Name _____

School _____ County _____

Land Class Factor – Part I

TEXTURE	
Surface:	
1. Coarse.	①
2. Moderately Coarse. ...	①
3. Medium.	①
4. Moderately fine.	①
5. Fine.	①
Subsoil:	
1. Coarse.	①
2. Moderately Coarse. ...	①
3. Medium.	①
4. Moderately fine.	①
5. Fine.	①
DEPTH OF SOIL	
1. Deep.	①
2. Moderately deep.	①
3. Shallow.	①
4. Very Shallow.	①

SLOPE	
1. Nearly level.	①
2. Gently sloping.	①
3. Moderately sloping.	①
4. Strongly sloping.	①
5. Steep.	①
6. Very steep.	①
EROSION – WATER	
1. None to slight.	①
2. Moderate.	①
3. Severe.	①
4. Very severe.	①
PERMEABILITY	
1. Rapid.	①
2. Moderate.	①
3. Slow.	①
4. Very Slow.	①

SOIL DRAINAGE	
Poor.	①
Fair.	①
Good.	①
Excessive.	①
SOIL PROPERTIES	
FLOODING	
None.	①
Protected.	①
Rare.	①
Occasional.	①
Frequent.	①
SHRINK-SWELL	
Low shrink-swell.	①
Moderate shrink-swell. ...	①
High shrink-swell.	①
ROCK (%)	
Less than 5%.	①
5 – 25%.	①
26 – 50%.	①
Greater than 50%.	①

Part I Land Class Factor	
Possible Points.	30
Part III Urban Land Limitation	
Possible Points.	30
Score-Part I	_____
Score-Part IIIA	_____
Score-Part IIIB	_____
Total Score	_____

BLUE CARD

Urban Land Limitations – Part II

	LIMITATIONS FOR SEPTIC TANK FILTER FIELDS			LIMITATIONS FOR LOCAL ROADS AND STREETS			LIMITATIONS FOR FOUNDATIONS WITHOUT BASEMENTS			LIMITATIONS FOR LAWNS AND LANDSCAPES		
	SLIGHT	MODERATE	SEVERE	SLIGHT	MODERATE	SEVERE	SLIGHT	MODERATE	SEVERE	SLIGHT	MODERATE	SEVERE
1 Surface Texture	-	-	-	-	-	-	-	-	-	Mod. Coarse, Medium, Mod. Fine	Coarse	Fine
2 Permeability	Moderate Rapid	Slow	Very Slow	-	-	-	-	-	-	-	-	-
3 Depth of Soil	>72	40-72 in.	<40 in.	Deep	Moderately Deep Shallow	Very Shallow	Deep	Moderately Deep	Shallow, Very Shallow	Deep	Moderately Deep	Shallow
4 Slope (%)	<8	8-17	>17	<8	8-17	>17	<8	8-17	>17	<8	8-17	>17
5 Soil Drainage	Good	Fair	Poor Excessive	Good Excessive	Fair	Poor	Good Excessive	Fair	Poor	Good	Fair	Poor Excessive
6 Flooding	None, Protected	Rare	Occasional, Frequent	None, Protected	Rare	Occasional, Frequent	None, Protected	-	Rare, Occasional, Frequent	None, Rare, Protected	Occasional	Frequent
7 Shrink-Swell	-	-	-	Low	Moderate	High	Low	Moderate	High	-	-	-
8 Rocks (%)	<25	25-50	>50	-	-	-	<25	25-50	>50	<5	5-25	>25

Part IIIA - Urban Land Limitations

	Slight	Moderate	Severe
Homesite Uses			
Septic Tank Filter Fields			
Local Roads and Streets			
Foundations Without Basements			
Lawns and Landscapes			

Part IIIB – Problem Areas

<input type="radio"/> None	<input type="radio"/> Soil Texture	<input type="radio"/> Permeability	<input type="radio"/> Depth of Soil	<input type="radio"/> Slope	<input type="radio"/> Soil Drainage	<input type="radio"/> Flooding	<input type="radio"/> Shrink-Swelling	<input type="radio"/> Rocks
----------------------------	------------------------------------	------------------------------------	-------------------------------------	-----------------------------	-------------------------------------	--------------------------------	---------------------------------------	-----------------------------

INSTRUCTIONS FOR PARTS I, II, AND III

The following material explains the different Land Class Factors (Part I), the Recommended Land Treatments (Part II, and Urban Land Limitations (Part III), on the Land Career Development Event Scorecard.

PART I – LAND CLASS FACTORS

Texture

Soil texture refers to the relative proportion of sand, silt, and clay particles in a specific soil mass. It is easiest to determine when the soil is moist. Sand feels gritty when rubbed by the finger. Silt feels slick or velvety. Clay is usually sticky and plastic when wet and when pinched between the thumb and finger forms a flexible “ribbon.”

The *surface texture* is normally determined where organic matter has its greatest influence in topsoil plow depth, however, erosion may have removed the surface to such an extent that only 1 or 2 inches may remain.

For contests, a boxed sample of surface soil and subsoil will be provided to judge texture.

The *subsoil texture* is determined in the “B” horizon.

In soils, several subdivisions of texture are recognized and are illustrated below. For land judging we recognize five texture categories represented by the middle column of the accompanying table.

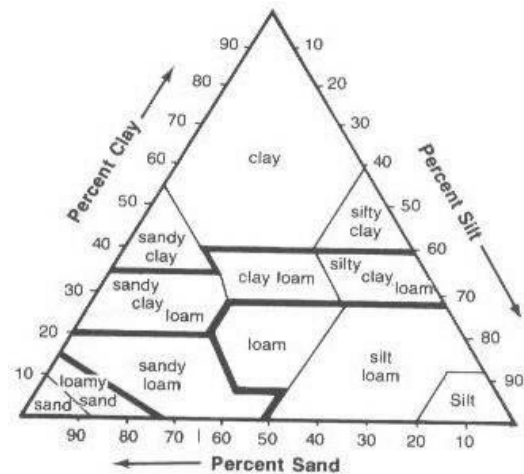
Coarse-textured soils are loose, very friable, and the individual grains can be readily seen or felt. When squeezed between thumb and forefinger, it feels gritty and will not ribbon or stain fingers. Squeezed when dry, it will fall apart as pressure is released. When moist, a mold may be formed which is unstable and crumbles as the soil is handled.

Moderately coarse-textured soils feel gritty but contain enough 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 which breaks readily upon handling. If squeezed when moist, a mold can be formed which can be carefully handled without breaking. It forms no ribbon or very poor ribbon with a dull surface.

Medium-textured soils have a slightly smooth or velvety 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 ribbon with a dull surface.

Moderately fine-textured. When the moist soil is squeezed out between thumb and forefinger, it crushes with some effort. It will form a short (1 inch to 2 inch) well-formed ribbon with a shiny surface which will tend to break or the ribbon will bend downward. The soils usually break into clods or lumps when dry. The sandy clay loam texture has a slightly gritty feel when moist.

Fine-textured soils are quite plastic and sticky when wet. When the moist soil is squeezed out between thumb and forefinger it crushes with considerable effort and will form a long (2 inch+) ribbon which will support itself and are very plastic and sticky when wet. They form very hard, massive lumps or clods when dry. The sandy clay texture may also have a slightly gritty feel when moist.



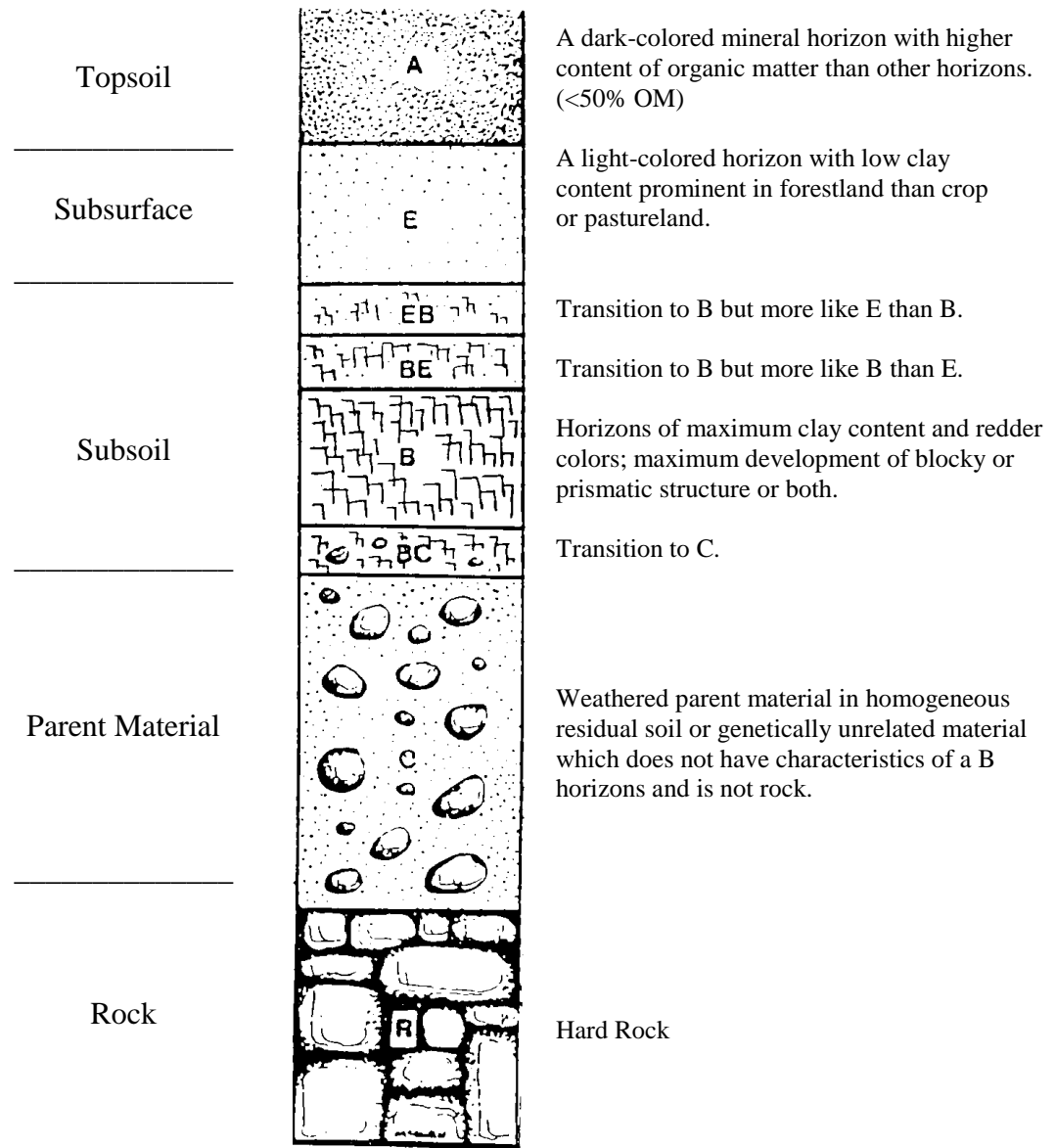
Soil textural classes shown in five different categories.

Texture Groups

Groups	Categories	USDA Textures Class
Sandy Soils	Coarse	Sand
		Loamy Sand
Loamy Soils	Moderately coarse	Sandy loam
		Fine sandy loam
	Medium	Very fine sandy loam
		Loam
		Silt Loam
Clay Soils	Moderately fine	Silt
		Clay loam
		Sandy clay loam
	Fine	Silty clay loam
		Sandy clay
		Silty clay
		Clay

Additional information on soil profiles and horizons

Soils are deposited in layers, called horizons, and can be seen in road cuts, ditches, and open pits. Five or six master horizons may be present in a mineral soil profile when soil foaming factors are



Depth of Soil: The depth of soil is determined by the total thickness of soil layers that are significant to soil use and management, generally underlain by rock or shale beds. This is the depth to which plant roots are expected to develop.

<u>Deep</u>	40 inches or more
<u>Moderately deep</u>	20-40 inches
<u>Shallow</u>	10-20 inches
<u>Very shallow</u>	Less than 10 inches

Contest judges have the option to use a string guide on an area (no pick zone) that contestants use to determine soil depth and topsoil thickness.

Permeability

Permeability refers to the movement of air and water through the subsoil. Soils permeability rate is determined by the relative rate moisture and air move through the most restricting layer.

Rapidly permeable – Soils with coarse-textured subsoils that are granular or single-grained are rapidly permeable. Subsoils tend to be very friable or loose when moist, and exhibit little restriction of water or air.

Moderately permeable – Moderately coarse- and medium-textured subsoils are moderately permeable regardless of structure. They are friable to very friable with large pores. Roots are abundant.

Slowly permeable – Soils that have moderately fine-textured subsoils are slowly permeable. The subsoils are firm when moist and hard when dry. Roots are common. Length differences of vertical and horizontal cracks are negligible. Soil peds often have thin, discontinuous, clay films on soil surfaces. Grayish subsoil colors are not required for a soil to have slow permeability.

Very slowly permeable – Soils that have dense, fine-textured subsoils are very slowly permeable. Roots are few and generally follow ped faces and cracks. These subsoils are very firm when moist and very hard when dry. Soil peds have thick, continuous, clay films on surfaces. Horizontal cracks are longer than vertical ones. Grayish subsoil colors are not required for a soil to have a very slow permeability.

Subsoil sample in container will also be used to determine permeability.

Surface Runoff

Surface runoff is the relative rate water is removed by flowing over the soil surface. This includes rainfall, as well as water from adjacent slopes. Factors that determine runoff are: soil slope, position in the landscape, permeability, and infiltration rate. Runoff for contest purposes assumes a bare soil surface with no effect provided by a vegetative cover. Four classes of runoff are recognized.

Rapid – Water is removed from the surface at a rapid rate. A large amount of rainfall is lost down slope and only a small portion moves into the soil increasing the erosion hazard. This is a result of compaction, clayey textures and/or slopes greater than 2 percent and includes all permeability classes except rapid.

Moderate – Water drains away readily but yet slow enough that a large amount of the water enters the soil. This condition causes little erosion hazard and is considered a normal amount of runoff. This condition occurs on slopes of 1 to 2 percent and includes all permeability classes except rapid.

Slow – Water flows away so slowly that free water covers the soil for moderate periods. This increases the moisture supply but may interfere with farming operation. This condition occurs on slopes of 0 to 1 percent and includes all permeability classes except rapid.

Very Slow – Water is removed so slowly or stands so long that the soil remains wet or ponded for long periods. Most of the water either passes through the soil or evaporates. Generally this condition occurs on level to slightly concave slopes and includes all permeability classes. Deep sandy soils on slopes with rapidly permeable subsoils also have very slow runoff because the infiltration rate is so high that rainfall produces little or no runoff.

Slope: Percent difference in elevation between markers. Estimating slope ranges correctly is best learned by practice on an area of known slope percent.

<u>Nearly level</u>	0 to 2 percent
<u>Gently sloping</u>	2 to 5 percent
<u>Moderately sloping</u>	5 to 8 percent
<u>Strongly sloping</u>	8 to 12 percent
<u>Steep</u>	12 to 17 percent
<u>Very Steep</u>	above 17 percent

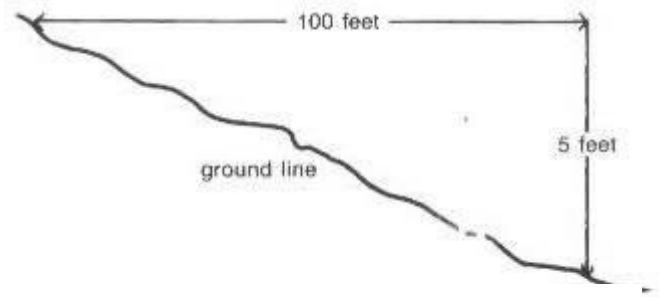


Diagram showing a 5 percent slope.

Erosion

Soil erosion in Alabama is primarily the results of water detachment and movement of soil materials. Erosion usually consists of detachment, transport and deposition of soil material from a higher slope position to a lower slope position. Organic matter and vegetative cover are important in reducing the erosion rate.

None to slight – Less than 25 percent of the surface soil (topsoil) has been removed and no gullies are present. No obvious signs of erosion are present and usually has higher organic matter content than other erosion classes.

Moderate – 25 to 75 percent of the original surface layer present. The surface layer may consist of a mixture of the surface topsoil horizon and underlying subsoil horizon.

Severe – Soils have been eroded to the extent that over 75 percent of the original surface layer is removed. The subsoil characteristics are predominate of “B” horizon. Frequent crossable gullies or occasional uncrossable gullies may be present. Organic matter content is usually very low.

Very severe – Soils of this class have no surface soil present with frequent uncrossable gullies. Areas need extensive reclamation to sustain adequate crop production and has none or very little organic matters present.

Major Limiting Factors: Only the most limiting factor or factors that determine the land capability class should be checked. Several factors may influence the capability class. For example: depth, slope, and erosion can all influence the capability of a certain soil, but if slope and erosion factors placed a soil in a capability class with a higher number, only these two factors will be checked. When only one factor determines the land class, check only the factor with the highest number.

Land Capability Class: Land class is determined by the major limiting factor or factors.

PART I – SOIL PROPERTIES

Flooding, shrink-swell, and the rock percentage in soil profile are soil properties that are important for homesite evaluation only.

Flooding Homesites will flood if located in flood plains and drainageways of streams. Sites that flood are in depressions and will have evidence of high water deposited overwash on the soil surface. The judges will indicate in percent (0-100%) the chance of flooding in any given year.

- 1) None - No reasonable possibility of flooding
- 2) Protected - No reasonable possibility of flooding due to manmade structure. An example is a dike.
- 3) Rare - Flooding unlikely but possible under unusual weather conditions (less than 5 percent chance of flooding in any year)
- 4) Occasional - Flooding is expected infrequently under usual weather conditions (5 to 50 percent chance of flooding in any one year)
- 5) Frequent - Flooding is likely to occur under usual weather conditions (more than 50 percent chance of flooding in any year).

Shrink-swell This is that quality of the subsoil that determines its volume change as moisture content changes.

- 1) Low shrink-swell - Subsoils that have a coarse to moderately fine texture
- 2) Moderate shrink-swell - Subsoils that are fine textured, but only moderately sticky and plastic and do not show deep cracks when dry. (Non Prairie type clays)
- 3) High shrink-swell - Subsoils that are fine textured, extremely sticky when wet and very plastic when moist. These soils crack when dry. Evidence of cracks can often be seen in the subsoil and/or surface soil when dry. (Blackbelt Prairie Clays)

Rock Rocks are coarse fragments **greater than 3 inches in diameter**. Rock should be considered in percent by volume in the no pick zone of the hole. For lawns and landscapes consider only the top 4 inches of soil.

- 1) Less than 5 %
- 2) 5 - 25 %
- 3) 26 - 50 %
- 4) Greater than 50 %

SOIL DRAINAGE

Drainage is the frequency of and the length of time required in freeing the soil of excess water. This can be determined by oxidation of the soil profile and the depth to gray colors. Gray colors consist of spots and stains usually in the subsoil that vary in size and number and are in contrast to the dominant soil color. The soil may also contain other discoloration but only gray colors are used to determine drainage.

Poor drainage Soils have dominant (over 50%) gray color in the upper 10 inches

Fair drainage Soils have gray colors at a depth between 10 and 30 inches from the surface and may extend below 30 inches

Good drainage Soils are free of gray colors to a depth of 30 or more inches from the surface.

Excess drainage Soils are coarse textured and generally free of gray color for 40 or more inches (sands, loamy sands, or very gravelly soils). Usually have rapid permeability.

The highest number in the following table should be used in determining the Land Capability Class.

LAND CAPABILITY CLASS TABLE

<u>Texture</u> <u>Surface:</u>	<u>Movement of air and water</u> <u>in the subsoil (permeability)</u>	<u>Depth of surface</u> <u>and subsoil</u>
1 Coarse	3 Rapid	1 Deep
1 Moderately Coarse	1 Moderate	2 Moderately Deep
1 Medium	2 Slow	3 Shallow
1 Moderately Fine		
1 Fine	4 Very Slow	6 Very shallow
<u>Subsurface:</u>	<u>Erosion – Water</u>	<u>Surface Runoff</u>
1 Coarse	1 None to slight	2 Rapid
1 Moderately Coarse	2 Moderate	1 Moderate
1 Medium	3 Severe	2 Slow
1 Moderately fine	7 Very severe	3 Very Slow
1 Fine		
<u>Slope:</u>		
1 Nearly level		
2 Gently sloping		
3 Moderately sloping		
4 Strongly sloping		
6 Steep		
7 Very steep		

LAND CAPABILITY CLASSES

CLASS I	Very good land with no limitations. May be used for row crops each year.
CLASS II	Good land with moderate limitations. May be used for row crops, but sloping land should be protected with erosion control practices to control runoff.
CLASS III	Moderately good land with rather severe limitations. May be used for row crops, but sloping land should be protected with sod based rotation that provides cover two-thirds of the time to control runoff.
CLASS IV	Fairly good land with severe limitations. May be used for row crops, but sloping land should be protected with sod rotation that provides cover three-fourths of the time. If conservation tillage is used, the sod rotation may be less than three-fourths of the time to control runoff.
CLASS V	Should not be cultivated. May be used for permanent pastureland.
CLASS VI	Should not be cultivated. Use for only for pasture or forestland.
CLASS VII	Use for only for forestland or, in a few cases, for grazing crops.
CLASS VIII	Use for only recreational land purposes.

PART II - RECOMMENDED LAND TREATMENTS

CROPLAND

- 1) Row crop each year.
This land can be used for row crops each year. Practices should be used that maintain good soil condition (tilth). This description relates to Class I land.
- 2) Use for row crops.
This land can be used for row crops each year. Practices should be used that maintain good soil tilth. Erosion control practices are needed on slopes greater than two percent to control sheet, rill, and gully erosion. Nearly level bottom land soils can be used for adapted crops and may need surface drainage practices on non-wetland areas to remove excess water. This is Class II land.
- 3) Use for row crops.
This land can be used for row crops each year only if a strong conservation management system is applied. Practices should be used that maintain good soil tilth. On sloping land, sheet and rill erosion must be controlled with a high residue conservation tillage system and nearly level bottom land will need drainage practices such as mains and laterals (ditches) to remove excess surface water on non-wetland areas. If conservation tillage is not used on sloping land, a sod rotation that provides cover two-thirds of the time will be needed. This is Class III land.
- 4) Use for row crops.
This land can be used for row crops, but has severe limitations. Sloping land needs a strong erosion control system of sod crops in rotations (three-fourths of the time in sod, or less with conservation tillage). Nearly level bottom land soils can be used for only a few adapted crops (each year) and need extensive drainage practices to remove excess surface water on non-wetlands. This is CLASS IV land.
- 5) Farm on the contour.
Cultivate crops on the contour. Contour farming should be used on all cultivated soils with slopes greater than two percent.
- 6) Install water disposal system (underground outlets, grassed waterways or grassed outlets).
Install a water disposal system on sloping fields to remove excess surface runoff. This includes grassed waterways or underground outlets in natural drainageways and at the edge of fields to carry runoff from terraces and contour rows.
- 7) Maintain existing underground outlets, grassed waterways, or grassed outlets.
Maintain existing underground outlets, grassed waterways, or grassed outlets by necessary routine maintenance. Grass waterways or outlets should be 10 feet wide unless used as a field border which should be at least 20 feet wide.
- 8) Build Terraces.
A terrace is an embankment or ridge of earth constructed across the slope to control runoff and minimize erosion. Terrace fields with slopes greater than two percent on Land Classes II, III, and IV.

- 9) Maintain existing terraces
On fields that are already terraced, maintain existing terraces by proper plowing.
- 10) Install or maintain drainage system.
Construct or maintain drainage systems on nearly level soils (0-2 percent slope) that are non-wetlands and have fair to poor drainage. Poorly drained areas with an established farming history are not considered wetlands. Drainage systems usually consist of some type of open ditches; however, tile drains may be installed in some areas.
- 11) Gully control.
This consists of either filling or shaping active gullies and establishing the treated area to vegetation and/or gully control structures. This practice should apply on fields with gullies that cannot be smoothed with normal tillage equipment. The depth of gullies are 12 inches or deeper
- 12) Establish field border.
Vegetative field borders do not carry concentrated run-off and should be established at the end of rows on cropland fields. These areas are used for turning equipment where either grassed waterways or grassed outlets are not needed. This practice does not apply where grassed waterways or outlets are established, or will be established, at the end of rows-and/or terraces to carry concentrated runoff water. Field borders should be at least 20 feet wide.
- 13) Apply lime.
Apply lime according to soil test recommendations. Estimated pH will be given at time of event if the soil has not been tested. Apply lime on acid soils which have pH of 5.7 or lower.

RECOMMEND ONLY ONE OF THE FOLLOWING THREE FERTILIZER RECOMMENDATIONS:

- 14) Use fertilizer ratio 1-1-1 - If soil test for phosphate and potash are the same (High-High, Medium-Medium, Low-Low).
- 15) Use fertilizer ratio 1-2-4 - If soil test results are higher for phosphate than for potash (High-Medium, High-Low; Medium-Low).
- 16) Use fertilizer ratio 1-4-2 - If soil test results are lower for phosphate than for potash (Medium-High, Low-High, Low-Medium)

PASTURELAND

- 1) Establish recommended permanent pasture plants.
This applies to fields that either do not contain any recommended pasture plants or fields that have such a poor ground cover of desirable pasture plants that complete land preparation fertilization, and seeding is required. Establish recommended permanent pasture plants when less than 50% stand of recommended pasture plants exist. This includes the recommended grass/legume mixtures, if applicable. This practice includes the control of perennial weeds, such as blackberry or wild roses and may require additional efforts beyond common site preparation methods.
- 2) Improve the stand of existing pasture.
This applies to fields that have an unsatisfactory ground cover of recommended permanent plants of grasses and legumes. The stand should be improved by partial seedbed preparation and overseeding, spot treatment, or sod seeding equipment. Improve the stand of existing pasture plants when there is a 50-75% stand of recommended pasture plants.
- 3) Grazing Management.
Grazing should be managed so that grasses and legumes will not be grazed closer than three inches during the grazing season. This item should be recommended only if there is evidence of over-grazing when the grasses are actively growing **and when more than 50% is overgrazed.**
- 4) Control undesirable plants of existing pasture.
Consists of either mowing or spraying pastures to remove weedy plants and brush when there is a 20% coverage of undesirable plants.
This item should be recommended only when weeds and/or brush are present at the time of the event. For a list of desirable forage species, please refer to Appendix A on Page L-21
- 5) Improve forage quality and production of existing pasture.
Apply nitrogen or overseed legumes on grass pastures that contain no legumes or less than 20% legumes. Wild clovers are legumes and qualify as legumes for this contest.
- 6) Install or maintain drainage system.
Construct drainage systems on nearly level soils (0-2 percent slopes) that are non-wetlands and have fair to poor drainage. Drainage systems usually consist of some type of open ditches; however, tile drains may be installed on some areas.
- 7) Gully control.
This consists of either filling or shaping active gullies (without vegetation) and establishing the treated areas to vegetation and/or gully control structure. This practice should apply on fields with active gullies that cannot be smoothed with normal tillage equipment. The depth of gullies is usually 12 inches or deeper.
- 8) Apply lime.
Apply lime as needed, or as recommended by a soil test. Estimated pH will be given at time of event if soil has not been tested. Apply lime on acid soils which have a pH of 5.7 or lower.
RECOMMEND ONLY ONE OF THE FOLLOWING THREE FERTILIZER RECOMMENDATIONS:
- 9) Use fertilizer ratio 0-1-1 - If soil test for phosphate and potash are the same (High-High, Medium-Medium, Low-Low).
- 10) Use fertilizer ratio 0-2-1 - If soil test results are lower for phosphate than for potash (Medium-High, Low-High, Low-Medium).
- 11) Use fertilizer ratio 0-1-2 - If soil test results are higher for phosphate than for potash (High-Medium, High-Low, Medium-Low).

FORESTLAND

Management objective should be stated. Examples are manage for: pine and hardwood sawtimber; pine sawtimber; hardwood sawtimber; with the option to add wildlife with any management practice.

- 1) Prescribe burn.
Prescribe burning should be applied: to either reduce the danger of wildfire; to improve forage resources; to improve wildlife habitat; or to control brown-spot disease in longleaf pine when the seedlings are in the grass stage. Prescribed burning should be excluded from stands managed for hardwood and from young pine stands where the desired trees are under four inches in diameter, with the exception of longleaf pine.
- 2) Establish firebreaks.
Firebreaks should be established around stands of pine, young and newly planted pine stands, stands of hardwoods and stands that are to be prescribed burned. Firebreaks should be at least 8 feet wide and may be established by plowing, disking or pushing with heavy equipment such as a bulldozer. County, state, and federal roads and highways should not be considered as firebreaks.
- 3) Maintain existing firebreaks.
Firebreaks should be maintained each year. Field roads that are at least 8 feet wide may be considered as firebreaks. Burnable materials should be removed from firebreaks prior to the spring and fall fire seasons.
- 4) Plant recommended trees.
This practice applies when either tree planting or direct seeding is needed to establish a stand of trees. This consists of either spot planting or planting a new stand. Areas to be planted should be at least one-quarter acre.
- 5) Harvest trees selectively.
This practice is the thinning of merchantable trees (5" DBH or greater) to provide adequate room for trees to grow and to improve the quality of the timber stand. Trees that are either diseased or low quality should be removed in thinnings. Trees should be thinned when the average spacing between trees is $D+4$, which is a spacing in feet equal to the DBH (diameter at 4.5 feet high) of the tree plus 4. Example: Trees averaging 6 inches in diameter should be thinned when the average distance between trees is 10 feet or less.
- 6) Harvest trees by clearcutting.
Clearcutting consists of harvesting all merchantable trees. This practice is applied when either the stocking rate of desirable trees is less than 25 percent or when the majority of the trees are mature. In managing for sawtimber, pines are considered mature when a majority of the trees are 18 inches DBH or more, and hardwoods are considered mature when a majority of the trees are 22 inches DBH or more.
- 7) Control undesirable species in existing forest.
Consists of removing undesirable trees, shrubs, vines, etc., that are in competition with desirable trees **and** top 10 invasive species. **If a top 10 invasive species exists in the stand, this practice shall be recommended.** All of these invasive species are listed on Alabama's 10 worst invasive weeds publication. The Alabama Invasive Plant Council has the 10 worst invasive weeds publication on the web at: <http://www.se-eppc.org/alabama/> (*Alabama's 10 Worst Invasive Weeds*).

- 8) Precommercial thinning.
 Consists of removing overcrowded trees that are too small to sell (less than 5 inches DBH) so that remaining trees can make maximum growth. Precommercial thinning applies primarily to natural and direct seeded stands. Planted stands would not need precommercial thinning unless they have natural regeneration within them. Precommercial thinning is needed when the average spacing between trees is two feet or less.
- 9) Prepare site for planting.
 Consists of treating open areas or understocked woodland areas where the competition from either undesirable trees, shrubs, vines or grass might cause a regeneration failure. **To include invasive species such as: kudzu, cogongrass, tallowtree, Chinese privet, or Japanese climbing fern. All of these invasive species are listed on Alabama's 10 worst invasive weeds publication. The Alabama Invasive Plant Council has the 10 worst invasive weeds publication on the web at: <http://www.se-eppc.org/alabama/>.** Site preparation is used to encourage natural reseeding of desirable trees and to allow tree planting and direct seeding.
- 10) Control erosion.
 Control erosion should be used on areas that are strongly sloping or steeper when the trees are harvested or where skid trails, logging roads, loading sites, or other areas are severely eroding and need erosion control measures and/or close growing vegetation.

PART IIIA - URBAN LAND LIMITATIONS

Part IIIA emphasizes the importance of soils and their limitations for uses as homesites. Most soil properties that were evaluated in Part I of Blue Card are significant in determining the limitations of soils for the homesite.

Degree of Limitations Soils are rated for homesite use in terms of the degree of limitations that have to be overcome. The limitations are defined as follows:

<u>Slight</u>	Those soils or locations that have properties favorable for the planned use and presenting little or no problems.
<u>Moderate</u>	Those soils or locations that have properties only moderately favorable for the planned use. Limitations can be overcome or modified with special planning, design, or maintenance. Special treatment of the site for the desired use may be necessary.
<u>Severe</u>	Those soils or locations that have one or more properties unfavorable for the planned use. Limitations are difficult and costly to modify or overcome for the use desired.

Place a mark in slight, moderate, or severe urban limitations according to the degree of limitations. Only the highest degree of limitation should be marked in each column.

Homesite uses - Four uses of soils that effect the suitability of a site for home dwellings are: septic tank absorption fields, local roads and streets, foundations without basements, and lawns and landscapes. Tables showing the effects of soil properties and the degree of limitations for homesite use are given in the following section.

Septic Tank Filter Fields

Septic Tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into natural soil. Only the soil from the container is considered in making the ratings. The soil

properties and site features involved are those affecting the absorption of the effluent, the construction of the system, and public health.

Six properties are considered in determining the suitability of a site for septic tank absorption fields. These are permeability, depth of soil, slope, soil drainage, rocks, and flooding.

<u>Property</u>	<u>Limitations of septic tank filter fields</u>		
	<u>Slight</u>	<u>Moderate</u>	<u>Severe</u>
Surface texture	-----	-----	-----
Permeability	Rapid-moderate	Slow	Very slow
Depth of soil (inches)	> 72	40-72	< 40
Slope (%)	< 8	8-17	> 17
Soil drainage	Good	Fair	Poor, Excessive
Flooding	None, protected	Rare	Occasional, Frequent
Shrink-swell	-----	-----	-----
Rock (%)	< 25	25-50	> 50

Local Roads and Streets

The limitation ratings given in this table apply to use of soils for construction and maintenance of improved roads and streets that have all-weather surfacing.

The properties that effect local roads and streets are depth of soil, soil drainage, flooding and shrink-swell.

<u>Property</u>	<u>Limitations for local roads and streets</u>		
	<u>Slight</u>	<u>Moderate</u>	<u>Severe</u>
Surface texture	-----	-----	-----
Permeability	-----	-----	-----
Depth of soil	Deep	Moderately Deep, shallow	Very shallow
Slope (%)	< 8	8-17	> 17
Soil drainage	Good, Excessive	Fair	Poor
Flooding	None, protected	Rare	Occasional, Frequent
Shrink-swell	Low	Moderate	High
Rock (%)	-----	-----	-----

Foundations Without Basements

The emphasis in rating soils for dwellings without basements is in the properties that affect foundations.

These are flooding, soil depth, drainage, permeability, slope, shrink-swell, rocks and soil texture. Properties affecting soil strength, settling, excavation, or filling costs are some of the most important.

<u>Property</u>	<u>Limitations for foundations without basements</u>		
	<u>Slight</u>	<u>Moderate</u>	<u>Severe</u>
Surface texture	-----	-----	-----
Permeability	-----	-----	-----
Depth of soil (inches)	Deep	Moderately deep	Shallow, very shallow
Slope (%)	< 8	8-17	> 17
Soil drainage	Good, Excessive	Fair	Poor
Flooding	None, protected	-----	Rare, Occasional, Frequent
Shrink-swell	Low	Moderate	High
Rock (%)	< 25	25-50	> 50

Lawns and Landscapes

The soils are rated for their use in establishing and maintaining lawns and landscapes. The properties considered are those that affect plant growth and trafficability after establishing vegetation. These properties are depth of soil, rocks, surface texture, soil drainage, and slope.

<u>Property</u>	<u>Limitations for Lawns and Landscapes</u>		
	<u>Slight</u>	<u>Moderate</u>	<u>Severe</u>
Surface texture	Medium	Coarse	Fine
Permeability	----	----	----
Depth of soil	Deep	Moderately deep	Shallow
Slope (%)	< 8	8-17	> 17
Soil drainage	Good	Fair	Poor, Excessive
Flooding	None, rare protected	Occasional	Frequent
Shrink-swell	----	----	----
Rock (%) *	< 5	5-25	> 25

*Consider upper 4" of soil in no pick zone of hole.

PART III B – PROBLEM AREAS

The problem area squares to be checked in Part IIIB should be those that place any of the homesite uses into either moderate and/or severe limitations. Anything other than slight is a problem area. If the limitation is slight for all uses, only none should be checked.

Example:

Surface Texture: Medium
Permeability: Very Slow
Depth of Soil: Greater than 72"
Slope: 8-17%
Soil Drainage: Poor
Flood: None
Shrink-Swell: High
Rock: less than 5%

Part IIIA:

All four columns or categories would be marked severe.

Part IIIB:

Four problem areas should be marked: Permeability(Severe); Slope(Moderate); Drainage(Severe); and Shrink-Swell(Severe)

**Most Common Desirable Forages in Alabama for
FFA Land Judging**

Common Name	Annual/Perennial
Alfalfa	P
Alyceclover	Annual
Annual Clovers	A
Austrian Winter pea	A
Bahiagrass	P
Bermudagrass	P
Big Bluestem	P
Black medic	A
Caleypea	A
Chicory	A
Cowpea	A
Crabgrass	A
Dallisgrass	P
Eastern Gamagrass	P
Indiangrass	P
Johnsongrass	P
Kentucky Bluegrass	P
Kudzu	P
Lespedezas	BOTH
Little Bluestem	P
Milletts	A
Oats	A
Orchardgrass	P
Perennial Peanut	P
Red Clover	Biennial
Reed Canary grass	P
Rye	A
Ryegrass	A
Smooth Bromegrass	P
Soybean	A
Switchgrass	P
Tall Fescue	P
Triticale	A
Velvetbean	A
Vetchs	A
Wheat	A
White Clover	P

<http://plants.usda.gov/> Link for online pictures

Reference: Southern Forages, 4th Edition, D. M. Ball, et.al.

A = Annual

P = Perennial

LAND
CAREER DEVELOPMENT EVENT

CHAPTER _____

Participant	Participant Number	Event Phase	Participant Score	Participant Total
Name of Participant # 1	Pasture	(60 points)		
	Cropland	(60 points.)		
	Forestland	(60 points.)		
	Homesite	(60 points.)		
			Participant # 1's Total (Maximum score possible is 240 points.)	
Name of Participant # 2	Pasture	(60 points)		
	Cropland	(60 points.)		
	Forestland	(60 points.)		
	Homesite	(60 points.)		
			Participant # 2's Total (Maximum score possible is 240 points.)	
Name of Participant # 3	Pasture	(60 points)		
	Cropland	(60 points.)		
	Forestland	(60 points.)		
	Homesite	(60 points.)		
			Participant # 3's Total (Maximum score possible is 240 points.)	
Name of Participant # 4	Pasture	(60 points)		
	Cropland	(60 points.)		
	Forestland	(60 points.)		
	Homesite	(60 points.)		
			Participant # 4's Total (Maximum score possible is 240 points.)	
TEAM RANKING				TOTAL TEAM SCORE (The three highest individual participant scores will make up the team score. Maximum score possible is 720 points.)