

EXTENSION BULLETIN 326

*A Guide for Land Judging
in Michigan*



**MICHIGAN STATE UNIVERSITY
COOPERATIVE EXTENSION SERVICE**

EAST LANSING

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The photograph in Fig. 1 and the chart adapted for Fig. 3 are used through the courtesy of the U. S. Soil Conservation Service.

A Guide for Land Judging in Michigan

By FRANK W. TRULL¹

There is an increasing interest in the study of land and soil. Land judging contests are becoming popular especially with the F.F.A. and 4-H groups. Land judging is rather new, but is done the same as stock, grain or vegetable judging. It is done by looks and feel.

This bulletin is prepared to help teachers and agricultural leaders in conducting "Land Appreciation Schools," and "Land Judging Contests." A "Land Appreciation School" is a school where all in the class are learning about land. A "Land Judging Contest" is a contest in which one uses the information learned in the school in competition with others.

The desire of people to know more about land gives an opportunity to help them better understand the basic differences in land. People need to know why land cannot all be used or treated the same. They need to know that the use of a piece of land depends largely on how it was made by Mother Nature. Many of the land features cannot be appreciably changed. Physical features of land may be either an asset or a liability. We need to know how to take advantage of the assets and how to overcome the liabilities, or learn to live with them.

The proper management and conservation of our land is vitally important. It is estimated that by the year 1975 we will need, in the United States, the equivalent of 115 million more acres of productive crop land to feed the expected increase in population. It is necessary that we learn to use every acre for its best use, and treat it according to what it needs. By this we can be assured of a continued productive land.

JUDGING LAND

There are many kinds of soil in Michigan. The same kind of soil may occur under many different conditions of slope and erosion. Only a trained soil technician can identify all of the soils, but we can all learn to place land in its proper capability class.

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It is necessary that we look into land as well as at it in order to put it in its proper capability class. We do this by determining the texture of the topsoil and subsoil; the color of topsoil and subsoil; the slope of the area to be judged and the amount of erosion that has taken place. These four characteristics are known as physical features of the land.

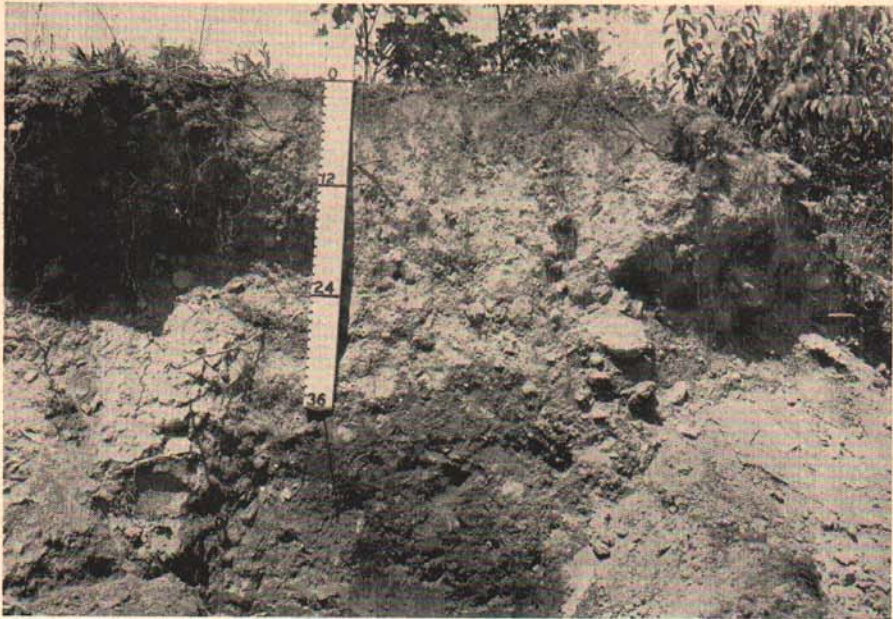


Fig. 1. A look into the soil.

I. PHYSICAL FEATURES OF THE LAND

A score card has been developed and we will describe the several items in the order they appear on the score card.

TEXTURE

We judge the texture of the soil because that tells us its ability to hold moisture and retain plant nutrients. It determines the area in which plant roots have good development.

“Texture” refers to the fineness or the coarseness of a soil. It is the relative proportion of clay, silt, and sand separates or particles. In the field we rub the moist soil between thumb and finger to determine the texture. Clay is the sticky material that we feel when rubbing the moist soil between thumb and finger. Silt is the “floury” material. Sand has a gritty feel.

Definitions of Textures

1. FINE-TEXTURED SOILS are the clays, clay loams, silty clay loams and sandy clay loams. They are made up mostly of clay and silt, but contain a noticeable amount of sand. They have a smooth feel and are sticky and plastic when moist. They can be run out in a ribbon between the thumb and finger.

2. MEDIUM-TEXTURED SOILS are silt loam, loam and fine sandy loam. Silt loam has 50 percent or more of silt particles; the rest is clay and sand. A loam is made up of about equal proportions of clay, silt and sand. A fine sandy loam is made up mostly of fine sand particles, but has enough silt and clay to make it hold together in a mold when moist.

3. MODERATELY COARSE-TEXTURED SOILS are the sandy loams and loamy sands. They are made up mostly of different sized sand particles. There is but little clay or silt present and so these soils are difficult to mold even when moist.

4. VERY COARSE-TEXTURED SOILS are the sands. They do not mold even when moist. They have a coarse gritty feel.

5. ORGANIC SOILS are the mucks and peats, and are made up mostly of fibrous and woody organic matter.

COLOR

The color of both topsoil and subsoil are determined in judging land. The color of the topsoil indicates the amount of organic-matter content present. The color of the subsoil indicates the natural drainage conditions under which the soil was developed. The color of soil also indicates how freely air and water move in the soil, and whether or not artificial drainage is needed for better production of crops.

Be sure to moisten the soil when determining color, for color does not show up well in dry soil.

Soils are divided into three color groupings for topsoil and three for subsoil.

Color of Topsoil

1. DARK—Usually means that the soil is high in organic-matter content. It is dark brown or black.

2. MEDIUM—There is a moderate amount of organic-matter content. It is grayish brown or gray in color.

3. **LIGHT**—This soil is low in organic-matter content. The color is light gray, pale yellow, or pale brown.

Color of Subsoil

The terms used for the color of the subsoil are: *Bright* — *Mottled* — *Dull*. Following are the definitions:

1. **BRIGHT**—By bright we mean that one solid color of red, yellow, or brown predominates. These colors indicate that the soil was formed under good drainage conditions. Artificial drainage is not needed.

2. **MOTTLED**—Mixed yellow and brown colors with some grays. Rusty brown and orange-colored spots are present. These spots indicate that the soil was formed under only fair drainage conditions. Artificial drainage is usually needed if we are to most profitably grow grain and hay crops.

3. **DULL**—The color is mostly gray, but there are some rusty brown spots present. This indicates that the soil was formed under poor drainage conditions and that artificial drainage is necessary if the soil is to be cropped.

The texture and color of soil may be termed internal factors. We have to look into the soil to determine them. The next two factors of slope and erosion may be called external factors.

SLOPE

By "slope" we mean the feet of drop or fall in 100 feet of distance. The slope of the land is important because of the erosion hazards. The steeper the slope or greater the fall, the faster water will run. Not only does this mean a loss of water, but if the water runs off very fast, it will carry soil with it and thus cause erosion.

The steepness of the slope indicates what conservation practices are necessary or how the land must be managed to combat the erosion hazard.

In the field we determine slope by the use of an Abney level, or by the use of a "slope finder" as shown in chart (Fig. 2).

In Michigan we use six different grades or ranges of slope in our land judging.

1. **NEARLY LEVEL**—0 to 2 percent or less than two feet fall in a hundred.

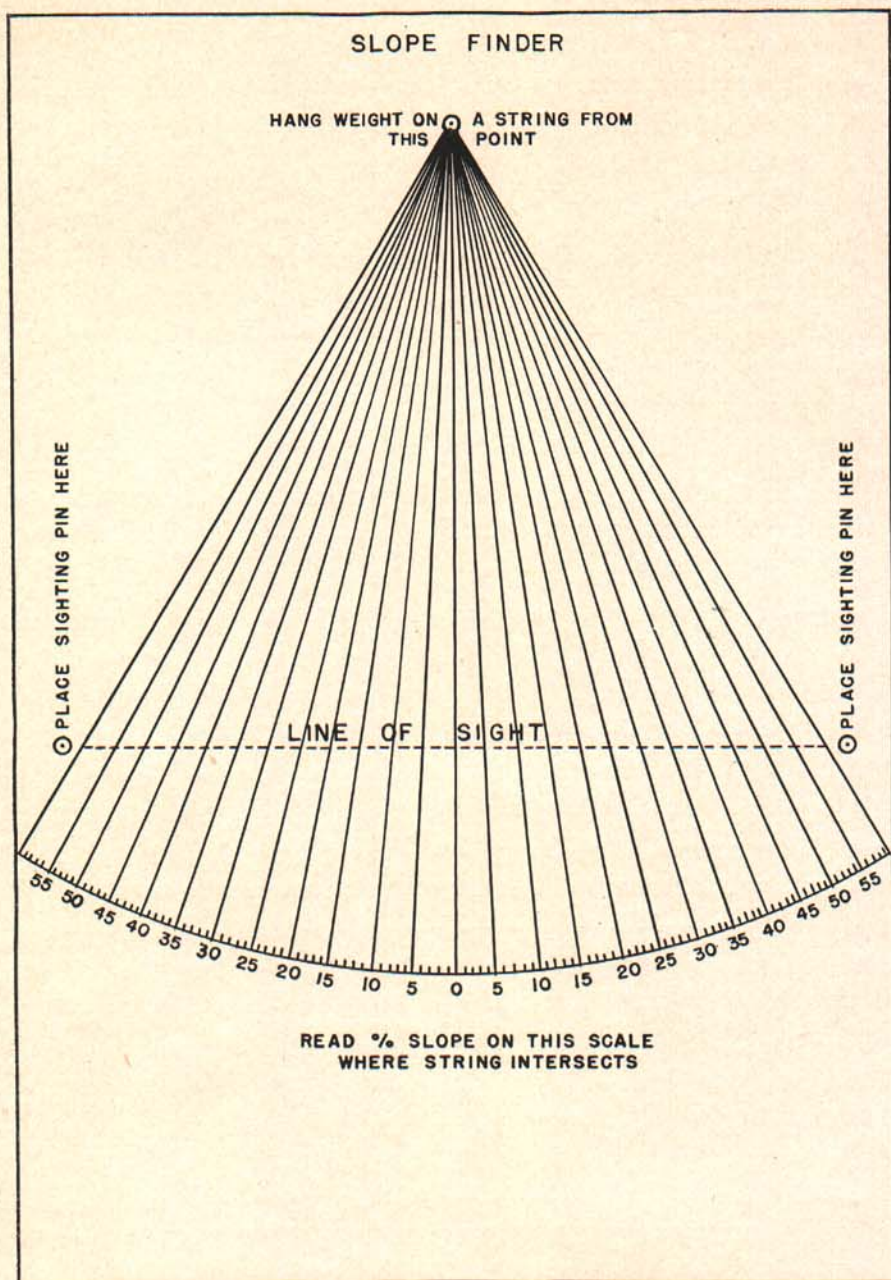


Fig. 2. A "slope finder." Land-judging groups can obtain working copies from the Department of Land and Water Conservation, Michigan State College.

2. GENTLY SLOPING—2 to 6 percent or two to six feet fall in a hundred.
3. MODERATELY SLOPING—6 to 12 percent or six to twelve feet fall in a hundred.
4. STRONGLY SLOPING—12 to 18 percent or twelve to eighteen feet fall in a hundred.
5. STEEP—18 to 25 percent or eighteen to twenty-five feet fall in a hundred.
6. VERY STEEP—over 25 percent or more than twenty-five feet fall in a hundred.

EROSION

The amount of erosion that has taken place is next in importance. There are six classes of erosion used in land classification in Michigan. The six classes are as follows:

1. SLIGHT—The plowing (usually seven inches deep) is all in the original topsoil.
2. MODERATE—The plowing is mostly in the topsoil, but some subsoil is being mixed with the topsoil.
3. SEVERE—The plow is now turning up mostly subsoil and mixing it with the little topsoil present.
4. VERY SEVERE—The topsoil is all gone and the plowing is entirely in the subsoil. There may be some gullies or some deep blowouts.
5. VERY SEVERELY GULLIED OR DEEP BLOWOUTS—There is no topsoil left. The field is badly gullied; the gullies being so deep they cannot be crossed with farm equipment. The land is destroyed for cultivated crops.
6. DEPOSITS—This refers to depressions where six inches or more of soil has been washed in over the old soil.

II. LAND CAPABILITY CLASSIFICATION

When we have determined the texture and color of the topsoil and subsoil, and have decided on the percent of slope and degree of erosion, we are ready to name the land capability class of the area being judged. This is Part Two on the Score Card.

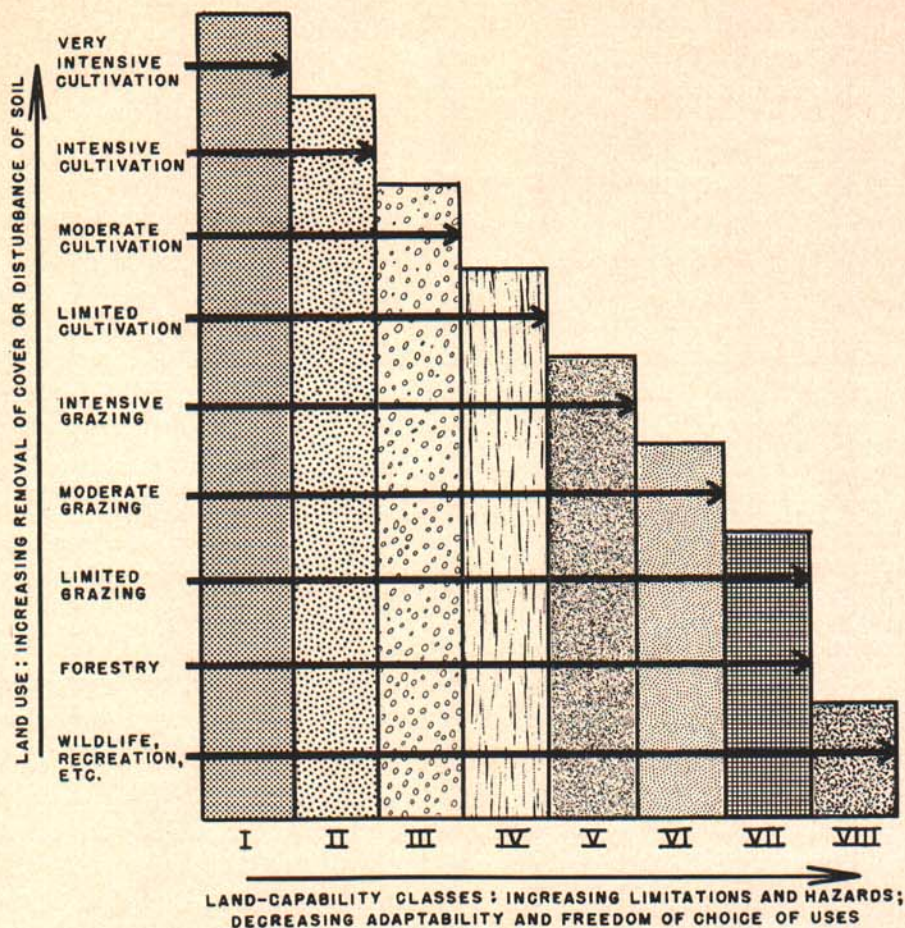


Fig. 3. Types of land use possible with the different land capability classes.

There are eight land capability classes (Fig. 3). They may be divided into two groups. The first four classes are thought of as best suited for cropland. The last four classes are best suited for permanent vegetation. (Present cover does not determine capability.)

THE LAND CAPABILITY CLASSES

Following are the definitions of the eight classes:

Best Suited for Cropland

CLASS I is very good land from all points of view. It will grow practically any crop adapted to the locality. It is nearly level, is not

droughty, holds water well, is fertile and easy to work. It is practically free from hazards, is subject to very little erosion and easily drained. It can be maintained with ordinary good farming practices such as the use of rotations, fertilizer and lime when needed.

CLASS II is good land, but certain physical characteristics prevent it being as good as Class I. It may be steep enough to have run-off water carry some soil. It may tend to be a little droughty. Some Class II land may be a little wet and require drainage. Usually the drainage is easily installed, but there may be problems in maintaining the drainage system. Any of these conditions either limits the use of the land or requires some special attention which calls for easily applied conservation practices; such as contouring, protective cover crops, and simple water management such as blinding of tile.

CLASS III is moderately good land. Most crops will grow well, but the soil will need a lot of protection and care. Its use is more limited than Class II because of one or more physical features restricting its use. There are several variations in Class III land. Some of it is so steep that it needs intensive care to control erosion when used for row crops. Poor drainage may throw it into Class III if the necessary drainage is hard to maintain. Droughty or thirsty land may also be in Class III. These features must be overcome or combatted year after year if used for crops.

CLASS IV land may grow an occasional row crop under very careful management. It is not adapted to regular cultivation, and should not grow a row crop more often than once in five or six years. It is often too steep and badly eroded for cultivation, or it may be too dry for dependable crop production. Class IV land may be wet and drainage very hard to install and maintain. It should be used mainly for hay and small grain crops.

Best Suited for Permanent Vegetation

CLASS V land is nearly level and not subject to erosion, but because of permanent wetness, stoniness, or some permanent obstruction is not suited for cultivation. Drainage of this class is not practical because of cost. There is little limitation to its use for pasture or forestry.

CLASS VI land is best adapted to the growing of grass or trees. Because of steep slopes, shallow soils, stoniness, dry condition, or excessive wetness, it is moderately limited for grazing. There is not much limitation for forestry.

CLASS VII land is best suited for forestry and grazing, but has severe limitations for that. It is usually steep or droughty or very badly eroded. It requires extreme care to prevent erosion. Grazing must be well managed and it may be necessary to scalp spots for planting trees instead of plowing furrows.

CLASS VIII land is not even suited for grazing or forestry. It produces no agricultural crop. It is of use for recreation or for wildlife. Examples of Class VIII land are leatherleaf bogs and rocky areas.

III. LAND USE

Part Three of the land judging is to determine the best use for the land. From the physical features of the land and the capability class we have decided upon, we now decide the *most intensive use* we can make of the land and still be safe so far as the erosion hazards are concerned.

What Kind of Rotation?

What kind of a rotation is necessary on the area judged? Can we grow row crops continuously with supporting conservation practices and still be safe. That would be the most intensive use. A rotation that includes a grass-legume mixture one-fourth of the time might be something like corn, wheat, oats—and one year of the grass-legume mixture.

A rotation with legume and grass one-third of the time might be a three-year rotation such as corn, oats, and hay. One with a grass-legume mixture one-half of the time might be a four-year rotation of row crop, small grain, and two years of a grass-legume.

An example of a rotation with a grass-legume mixture two-thirds of the time might be a six-year rotation with row crop, small grain, and four years of hay.

A rotation without a row crop might be simply a crop of small grain in which a legume and grass was seeded. Then the legume-grass is used for hay or pasture until reseeding is necessary when another small grain crop is grown.

In the case of permanent meadow or pasture, no other crop is grown. When reseeding is necessary, the land is worked and seeded again to a legume-grass mixture.

IV. RECOMMENDED TREATMENT AND CONSERVATION PRACTICES

Part Four of the land judging is deciding which treatments and conservation practices are to be used with the land use determined in Part Three.

At the bottom of the first page of the score card there are several small squares in which you put the number of the practice or treatment you think should be used. At each location to be judged, the participants should be told how many practices are to be chosen for that particular area.

In determining these practices and treatments, look at the physical features that caused the land to be put into the certain capability class. Think of the most intensive cropping plan that you have picked out, and then decide which practices or treatments are needed with your previous decisions. (Fig. 4.)



Fig. 4. A land-judging group in the field, determining practices needed in the judging area.

In order that there may be a better understanding of what is meant by the twenty-seven practices and treatments listed on the second page of the score card, the definitions follow.

PRACTICES AND TREATMENTS

1. **SOD WATERWAYS** are natural or constructed courses for the flow of water, in which a sod cover has been established and which will be maintained.

2. **CONTOUR TILLAGE** is conducting plowing, planting, cultivating, and harvesting at right angles to the natural direction of the slope. The whole field is usually planted to one crop.

3. **FIELD STRIPS FOR EROSION CONTROL** are strips of alternating meadow or small grain, with row crops running straight across the field. They may be at right angles to the direction of the main slope, or at right angles to the direction of the prevailing winds, for wind protection.

4. **CONTOUR STRIP-CROPPING** is the production of crops in comparatively narrow strips planted on the contour and at right angles to the direction of the slope. Strips of meadow are alternated with strips of row crops or small grain.

5. **TERRACES OR DIVERSIONS**. A terrace is a ridge or embankment of earth constructed on a slight grade across a slope to control run-off water and minimize erosion. A series of these on a slope are called a "terrace system."

A diversion or diversion terrace is a channel with a supporting ridge on the lower side, running across the slope to intercept run-off water and to prevent an excess of water from going onto lower portions of slope and lower lying flat areas.

6. **OPEN DITCH DRAINAGE**. An open ditch to carry off surplus surface water. It may also be used as an outlet for tile drainage.

7. **TILE DRAINAGE**. The use of tile to drain off excess water from within the soil.

8. **APPLY AVAILABLE BARNYARD MANURE**. Just what it implies—spread it immediately.

9. **LIMING MATERIALS**. Apply liming materials if a test of the soil shows a need for it.

10. **COMMERCIAL FERTILIZER MATERIALS FOR LEGUMES**. If test is not available, we can figure that in general on clays, clay loams, and silty clay loams, phosphorous is more needed than potash and a 0-2-1 ratio would be recommended.

11. **SILT LOAMS, LOAMS, AND FINE SANDY LOAMS** usually need phosphorous and potash in equal amounts. A 0-1-1 ratio would be recommended.

12. SANDY LOAMS AND LOAMY SANDS usually need more potash than phosphorous. A 0-1-2 ratio is recommended. Mucks are very low in potash, and for most crops would require a 0-1-2 ratio.

13. COVER AND GREEN MANURE CROPS. A "cover crop" is a close-growing crop grown primarily for the purpose of soil protection, between periods of regular crop production, or between vines and trees in vineyards or orchards. Examples are rye, buckwheat, rye grass, and sweet clover.

A "green manure crop" is any crop grown for the purpose of being plowed under or worked into the soil while green or soon after maturity, for soil improvement. Usually sweet clover, red clover or a mixture containing a legume.

14. PLOW UNDER OR WORK CROP RESIDUES INTO SURFACE. The plowing under or working into the surface soil such materials as corn stalks, grain straw, bean straw or residue from other crops.

15. APPLY SURFACE MULCH TO CONSERVE SOIL AND WATER. The bringing in of vegetative materials such as straw, hay, etc., to be spread on the surface to conserve soil and water or to aid in establishing a seeding.

16. ESTABLISH AND/OR MAINTAIN LEGUME-GRASS MIXTURE FOR MEADOW OR PASTURE, RESEEDING ONLY WHEN NECESSARY. This practice applies to land that is planned for continued meadow or pasture. When necessary to reseed, the land is worked up and seeding made without a nurse crop.

17. ESTABLISH AND/OR MAINTAIN GRASSES FOR PERMANENT COVER, RESEEDING ONLY WHEN NECESSARY. This applies to land that is to be kept in grass. If reseeding becomes necessary, ground is worked with surface tillage tools and reseeded alone.

18. MANAGED GRAZING OF PASTURE FOR EROSION CONTROL. Protect the pasture from being overgrazed because erosion is common on steep overgrazed pastures.

19. TOPDRESS WITH PHOSPHOROUS AND POTASH. On meadows or pastures of legume-grass mixtures that are used over two years, top-dressing with phosphorous and potash is recommended.

20. TOPDRESS PERMANENT VEGETATION WITH COMMERCIAL NITROGEN. This applies to grass meadows or pastures that are kept in grass continuously.

21. ERADICATE WEEDS AND BRUSH. On lands used for meadow or

pasture practically all of the time, weeds and brush need to be eradicated.

22. DO NOT BURN CROP RESIDUES, MEADOWS, PASTURES, WOODLOTS AND WILDLIFE AREAS. All vegetative matter should be returned to the soil instead of being destroyed by fire.

23. WINDBREAKS FOR EROSION CONTROL. The planting of shrubs or trees to protect fields from wind erosion.

24. PLANT FOOD AND COVER FOR WILDLIFE. The planting of shrubs or trees that will furnish food and cover for birds or small animals.

25. PLANT ADAPTED SPECIES OF TREES. On sites to be forested, plant species of trees that are adapted to the particular site.

26. PROTECT TREE AND SHRUB AREAS FROM GRAZING. Present woodlots and new plantings of trees or shrubs should be protected from grazing.

27. MANAGE WOODS—HARVEST MATURE TREES, REMOVE CULL TREES, ETC. Remove trees that are not growing any more, remove undesirable species or weed trees. Remove deformed trees.

LAND JUDGING CONTESTS

Land appreciation schools and land judging contests are valuable for young people, farmers, business, professional and women's groups.

The land appreciation schools may be held in doors or out doors and at any season of the year. Land judging is best done in the field and can be done whenever the frost is out of the ground. Weather and field conditions should be suitable.

The land appreciation school and land judging contest go well together. Use the first part of the available time for the appreciation school, then follow with the land judging activity.

In the National Land Judging Contest and in the State F.F.A. Contest, four fields are judged. In local contests or for training purposes, use only as many fields as you can judge and still have time for discussion of the judges decisions.

Procedures for staging a contest are about as follows: Pick a farm that is easy to get to. Of course, have the owner's permission. Have plenty of parking space handy.

Decide which fields or land areas you will judge and in each of them dig a pit approximately 2 feet wide, 3 feet long and 3 feet deep.



Fig. 5. Receiving instructions before a land judging contest.

Put some topsoil in a box or in a pile and some subsoil in another. Place these back a few feet from the pit. Put a sign "Topsoil" and "Subsoil" in the respective boxes or piles.

Locate the areas to be judged, dig the pits, and have the judges make their decisions before the contestants arrive.

Put a sign at each location to be judged giving the number of the location or field, the size of the area to be judged, the pH of the soil and the number of practices to be used in Part IV on the score card. If you wish, you may show the results of tests for phosphorus and potash.

When contestants have arrived, give them their necessary number of score cards and any instructions you may have. (Fig. 5.) Then divide the contestants into groups. No group should have over 25 members.

Have a leader or guide for each group. He will go with the group to each location to be judged. He will pick up the completed score cards when the judging is completed at each location.

If you are planning a land judging contest, consult your County Agricultural Agent and your Soil Conservation Service Technician for further details.

MICHIGAN LAND CONSERVATION SCORE CARD

NAME _____ GROUP _____ STOP No. _____

PART ONE—PHYSICAL FEATURES OF THE LAND

Check ONE description in EACH column

Potential Score 36

Your Score

TEXTURE OF TOPSOIL (6 points)	SUBSOIL (6 points)	COLOR OF TOPSOIL (6 points)	COLOR OF SUBSOIL (6 points)	SLOPE Steepness (6 points)	EROSION Degree of (6 points)
<input type="checkbox"/> FINE Clay, clay loam, silty clay loam, sandy clay loam—sticky when moist		<input type="checkbox"/> DARK High organic matter content, very dark brown or black	<input type="checkbox"/> BRIGHT Solid red, yellow or brown colors predominate. Indicates artificial drainage usually not needed	<input type="checkbox"/> NEARLY LEVEL 0-2 ft. fall in 100 ft.	<input type="checkbox"/> SLIGHT Plowing in topsoil
<input type="checkbox"/> MEDIUM Silt loam, loam, fine sandy loam — easy to mold when moist		<input type="checkbox"/> MEDIUM Moderate organic matter content, gray or grayish brown	<input type="checkbox"/> MOTTLED Mixed yellow and brown colors with some grays. Rust brown and orange spots are common. Indicates artificial drainage usually needed if cropped	<input type="checkbox"/> GENTLY SLOPING 2-6 ft. fall in 100 ft.	<input type="checkbox"/> MODERATE Plowing mostly in topsoil, some subsoil being mixed with topsoil
<input type="checkbox"/> MODERATELY COARSE Sandy loam, loamy sand—difficult to mold even when moist		<input type="checkbox"/> LIGHT Low organic matter content, light gray, pale yellow, pale brown	<input type="checkbox"/> DULL Grays predominate with some rust brown spots. Indicates artificial drainage most always needed if cropped	<input type="checkbox"/> MODERATELY SLOPING 6-12 ft. fall in 100 ft.	<input type="checkbox"/> SEVERE Plowing mainly in subsoil, some topsoil mixed with subsoil, shallow blow outs
<input type="checkbox"/> VERY COARSE Sand—will not mold even when moist				<input type="checkbox"/> STRONGLY SLOPING 12-18 ft. fall in 100 ft.	<input type="checkbox"/> VERY SEVERE Topsoil gone, plowing subsoil, some gullies, some deep blow outs
<input type="checkbox"/> ORGANIC Mucks and peats				<input type="checkbox"/> STEEP 18-25 ft. fall in 100 ft.	<input type="checkbox"/> VERY SEVERELY GULLIED OR DEEP BLOWOUTS Topsoil gone, badly gullied, destroyed land
				<input type="checkbox"/> VERY STEEP Over 25 ft. fall in 100 ft.	<input type="checkbox"/> DEPOSITS Considerable washed-in material

PART TWO—LAND CAPABILITY CLASSIFICATION

Select one class. Write class selected in this box

Potential Score 12

Your Score

BEST SUITED FOR CROPLAND				BEST SUITED FOR PERMANENT VEGETATION			
Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII
Few limitations for cropland	Moderate limitations for cropland	Severe limitations for cropland	Very severe limitations for cropland	Few limitations for permanent vegetation	Moderate limitations for permanent vegetation	Severe limitations for permanent vegetation	Not suited for cultivation, grazing or forestry

PART THREE—LAND USE

Write land use selected in this box

Select the Most Intensive Safe Use for the Location

Potential Score 12

Your Score

- A. Can be maintained by use of a rotation of continuous row crops.
 B. Can be maintained by use of a rotation which includes legumes and grasses, $\frac{1}{4}$ of the time.
 C. Can be maintained by use of a rotation which includes legumes and grasses, $\frac{1}{2}$ of the time.
 D. Can be maintained by use of a rotation which includes legumes and grasses, $\frac{3}{4}$ of the time.
 E. Can be maintained by use of a rotation which includes legumes and grasses, $\frac{3}{4}$ of the time.
 F. Can be maintained by use of a rotation which includes small grains, grasses and legumes with no row crops.
 G. Permanent meadow or pasture, except for re-establishment.
 H. Woodland and wildlife.
 I. Wildlife and recreation.

PART FOUR—RECOMMENDED TREATMENT AND CONSERVATION PRACTICES

Potential Score 40

Your Score

Choose treatments and practices which are most needed from the list on back of score card.

.....NUMBER OF TREATMENTS AND PRACTICES TO BE SELECTED

Start from left

TOTAL SCORE

(OVER)

Fig. 6A. Front side of the Michigan Land Conservation score card.

SUGGESTIONS FOR SCORING

To avoid complications and misunderstandings, a definite method of conducting and scoring is highly desirable. It is suggested that the judging committee meet ahead of time to (1) decide upon the correct placings and answers for each stop and (2) how the points will be allocated in each part of the score card. The method of scoring should be explained before the judging begins. It is suggested that the following method of scoring be used:

Part 1—Six points will be allowed for each of the headings—texture of topsoil, texture of subsoil, color of topsoil, color of subsoil, slope and erosion.

Part 2—Full credit of 12 points will be given for correct placing.

Part 3—Full credit of 12 points will be given for the correct placing. The judging committee may decide upon partial credit in PARTS ONE, TWO and THREE for each location depending upon conditions. This is especially true for borderline cases.

Part 4—The judging committee will decide upon the number of practices which will give credit. The contestants should be informed to choose the NUMBER OF PRACTICES which the committee has decided upon and to write the number of each practice he selects in the squares starting from the left end. The 40 points for Part Four can be divided by the number of practices decided upon by the committee to give equal value for each. A perfect score for Part Four should equal 40. If the contestant answers more than the number of practices specified, he will be scored on the indicated number of practices starting from the left end of the squares.

Additional copies of this score card may be obtained from the State Soil Conservation Committee, 412 Agriculture Hall, East Lansing, Michigan.

PART FOUR—RECOMMENDED TREATMENT AND CONSERVATION PRACTICES (Continued)

- | | |
|--|--|
| 1. Sod waterways. | 16. Establish and/or maintain legume-grass mixture for meadow or pasture, reseeding only when necessary. |
| 2. Contour tillage. | 17. Establish and/or maintain grasses for permanent cover, reseeding only when necessary. |
| 3. Field strips for erosion control. | 18. Managed grazing of pasture for erosion control. |
| 4. Contour strip cropping. | 19. Top dress with phosphorus and potash. |
| 5. Terraces or diversions. | 20. Top dress permanent vegetation with commercial nitrogen. |
| 6. Open ditch drainage. | 21. Eradicate weeds and brush. |
| 7. Tile drainage. | 22. Do not burn crop residues, meadows, pastures; woodlots, and wildlife areas. |
| 8. Apply available barnyard manure. | 23. Windbreaks for erosion control. |
| 9. Liming materials. | 24. Plant food and cover for wildlife. |
| 10. Commercial fertilizer for legumes which is higher in phosphorus than potash (0-2-1 ratio). | 25. Plant adapted species of trees. |
| 11. Commercial fertilizer for legumes which is equal in phosphorus and potash (0-1-1 ratio). | 26. Protect tree and shrub areas from grazing. |
| 12. Commercial fertilizer for legumes which is higher in potash than phosphorus (0-1-2 ratio). | 27. Manage woods—harvest mature trees, remove cull trees, etc. |
| 13. Cover and green manure crops. | |
| 14. Plow under or work crop residues into surface. | |
| 15. Apply surface mulch to conserve soil and water. | |

Fig. 6B. Back side of the land conservation score card.

LAND CONSERVATION SCORE CARD

The actual Michigan Land Conservation score card now in use is reproduced in Figs. 6A and 6B (front and back). Study it carefully, keeping in mind that the discussion in this bulletin is organized to correspond with the main divisions.

THIS PAGE RESERVED FOR FIELD NOTES:

Publications That Will Help You Judge and Use Land Properly

Extension Bulletin 314 – Lime and Its Use

In a series of questions and answers, this 36-page bulletin discusses the need for lime in the soil, types to use, where to get it, and how to use it.

Extension Bulletin 307 – Conservation of Michigan's Muck Soil

Tells how a farmer can restore muck soil to usefulness by controlling drainage, erosion, excessive decomposition, and nutrients in the soil. 24 pages.

Extension Bulletin 300 – Farm Manure

Describes the value and composition of farm manure, how to manage it before application to prevent loss, how to apply it, and what crops respond best to manure. 24 pages.

Extension Bulletin 264 – Forest Trees and Shrubs: What, Where, How to Plant

Forest plantings will produce a valuable crop, prevent loss of topsoil, provide a windbreak, improve a farm's appearance, and serve other useful purposes. This 24-page bulletin tells how to use forest trees and shrubs.

Extension Bulletin 203 – Conserving Soil by Better Land-Use Practices

This bulletin points out the serious threats to Michigan farm soil and lists practical ways to prevent them. Clear pictures help tell the story in 32 pages.

Extension Bulletin 159 – Fertilizer Recommendations for Michigan Crops

Kinds of fertilizers and how to use them; instructions are fitted to specific crops and soil types. 40 pages, recently revised.

Extension Folder F-174 – Test Your Soil for Better Crops and Higher Profits

This 10-page folder describes how to take soil samples, where to send them and what use they can be.

Extension Folder F-171 – Pave Your Waterways With Grass

Many pictures help show the steps in planting grass waterways to carry off excess water without damage to farm land.

Extension Folder F-118 – Wind Protection for Rural Michigan

Discusses, with help of drawings, where to locate and how to plant windbreaks, shelterbelts and snowbreaks on Michigan farms.

Extension Folder F-8 (revised) – Keep Soil Sweet! Use Lime

Tells how to use results of soil test to apply lime properly and discusses timing. Also recommends fertilizers that should be added along with lime.

Special Bulletin 402 – Soils of Michigan

Students of land judging will want this 52-page bulletin which reveals the history of various types of soil, shows a map of soil types in Michigan, and gives fertilizer recommendations.

USDA Farmers' Bulletin No. 2035 – Making Land Produce Useful Wildlife

How to strike a balance between crops and wildlife on the farm, allowing for recreation and other factors, fills this 32-page bulletin with helpful material.

(If you live in Michigan, you can get a free copy of the above publications from your county agricultural agent.)

USDA Leaflet No. 249 – What Is a Conservation Farm Plan?

Tells the steps in obtaining a land capability map and farm plan with the help of Soil Conservation Service employees.

USDA-SCS PA-128 – The Measure of Our Land

Points out the need for concern about good land use; describes the eight land capability classes and how to use each type properly.

(The above two USDA publications are available from the SCS Unit Conservationist in counties having soil conservation districts.)