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Soil and Water Conservation Project - Supplement  
Michigan State University Cooperative Extension Service  
4-H Club Bulletin  
Robert W. George, Conservation Education 4-H; Leonard Braamse, Conservation  
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# 4-H Soil and Water CONSERVATION WORKBOOK



Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

Age \_\_\_\_\_ Grade in School \_\_\_\_\_

Club \_\_\_\_\_

Leader's Name \_\_\_\_\_

Leader's Address \_\_\_\_\_  
\_\_\_\_\_

## *PROJECT I—Let's Learn About Soil and Water Conservation*

MICHIGAN STATE UNIVERSITY  
Cooperative Extension Service  
East Lansing

THE ROLE OF YOUTH IN  
SOIL AND WATER CONSERVATION

Each young person in Michigan will stay in the youth age-group for only a short time--tomorrow these young people will be adults. They will be doing a job--adding to effective living--adding to our whole society--enjoying our American freedom and our many natural resources.

I believe that knowing and appreciating the out-of-doors can help us GROW. It can help us do a better job in our work of tomorrow.

Today, however, youth can do a real service in their community with conservation activities. They can help as they learn by doing.

Soil and water conservation is a project in which both boys and girls can take part, whether they live on the farm or in the city.

Robert W. George  
Extension Specialist  
Conservation Education, 4-H

ACKNOWLEDGMENT

Special thanks are due Leonard J. Braamse, Extension Soil Conservationist, for his help in developing this publication. He has been instrumental in completing many phases of the workbook, especially the new "Junior Land Judging Guide." Many other extension specialists and representatives of soil conservation agencies have helped. The previous work of county extension agents in planning and carrying out special projects in Soil and Water Conservation with large 4-H clubs and school 4-H conservation clubs has served as a guide for the presentation of this material. This workbook is a supplement to the basic 4-H Club Bulletin 56A.

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This publication is available to you through the Michigan Cooperative Extension Service, Michigan State University, represented in your county by the county Cooperative Extension office.



4-H PLEDGE

I pledge  
My HEAD to clearer thinking  
My HEART to greater loyalty  
My HANDS to larger service  
My HEALTH to better living

For  
MY CLUB  
MY COMMUNITY, and  
MY COUNTRY

CONSERVATION PLEDGE

I give my pledge  
as an American to faithfully defend  
from waste the natural resources  
of my country -- its SOIL and  
MINERALS, its FORESTS, WATERS,  
and WILDLIFE.

PEOPLE WHO CAN HELP US IN SOIL AND WATER CONSERVATION

PEOPLE IN MY COMMUNITY  
WHO PRACTICE CONSERVATION:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PEOPLE IN MY COMMUNITY WHO ARE  
CONSERVATION LEADERS:

4-H LEADER \_\_\_\_\_  
Address: \_\_\_\_\_  
4-H CLUB AGENT \_\_\_\_\_  
Address: Ext. Office - \_\_\_\_\_  
COUNTY AGR'L AGENT \_\_\_\_\_  
Address: Ext. Office - \_\_\_\_\_  
SOIL CONSERVATIONIST \_\_\_\_\_  
Address: SCS Office - \_\_\_\_\_  
SOIL CONSERVATION \_\_\_\_\_  
DISTRICT DIRECTOR \_\_\_\_\_  
Address: \_\_\_\_\_

# SOIL AND WATER CONSERVATION PROJECT

## (TEN MEETINGS)

### "Organization" Meeting: Getting started--

1. Elect officers--plan where and when each meeting will be held.
  - a. Learn both the 4-H Pledge and Conservation Pledge.
  - b. List 10 people who can help us in soil and water conservation.
2. Go through Project outline--review objectives and questions.
  - a. Workbook--Supplement to 4-H Club Bulletin 56A
  - b. 4-H Club Bulletin 56A
3. Make plans for:
  - a. Field trip--getting soil samples, etc.
  - b. Visiting a stream or drainage ditch after a heavy rain.
  - c. A Land Judging activity--mount and use "Slope Finder."
  - d. Assembling your material for exhibit.
  - e. Completing your soil and water conservation report.

### Activity 1 - Meeting: Discuss the importance of soil and water conservation.

- a. List where our foods come from.
- b. Discuss the aims of soil and water conservation.  
(Bring camera and jars for soil samples to next meeting.)

### Activity 2 - Meeting: Take a field trip--look at and collect samples of soil.

- a. Notice the different kinds of soil.
- b. Notice the crops and trees on the different soils.

### Activity 3 - Meeting: Soil testing demonstration--use 3 or 4 samples of different soils.

- a. Demonstrate how to do this testing.
- b. Record and discuss what happened to the soil particles after they settled.

### Activity 4 - Meeting: Discuss and show how soils are formed.

- a. Learn how to identify (feel) different soils.
- b. Discuss how soil is different from clean beach sand, or sand in a desert.

### Activity 5 - Meeting: Visit a stream or ditch after a heavy rain.

- a. Observe and discuss the watershed.
- b. Observe and discuss the color of the water.

### Activity 6 - Meeting: Demonstrate and discuss wind erosion.

- a. Discuss which soils blow easiest.
- b. List conservation practices to control wind erosion.

### Activity 7 - Meeting: Demonstrate lime testing--discuss plant needs.

- a. Discuss soil acidity (acid, neutral, alkaline).
- b. Discuss plant foods--what's in the fertilizer bag.

### Activity 8 - Meeting: Discuss your field trip.

- a. Record what you did on the field trip.
- b. Mount pictures, drawings, and cut-outs.

### Final Meeting: Discuss Activity 9 and answer questions--put material together for exhibit, Activity 10. Complete report.



ACTIVITY I

WHERE DO OUR FOODS COME FROM?

1. List:

Foods directly from  
the soil

Foods indirectly from  
the soil

Foods not from  
the soil

2. What is meant by soil and water conservation?

3. Why is soil and water conservation important to you?

4. Why is soil and water conservation important to businessmen?







## ACTIVITY 4

### HOW WERE SOIL PARTICLES FORMED?

Answer the following questions:

1. In what three ways is soil formed?
2. How were most of the soils in your county formed?
3. What was the parent material?
4. List the ways to identify the four kinds of soil by feeling them between your finger and thumb.

CLAY

LOAM

SAND

MUCK

5. Is soil alive? Is there life in soil?

## ACTIVITY 5

### WHAT IS MUDDY WATER?

(Visit a stream or ditch after a heavy rain)

1. Did you see any signs of erosion along the stream--on the farm land or in road ditches?
2. What color is muddy water--what gives it this color?
3. How does the water get muddy?
4. How long did it take for your quart jar of muddy water to become clear?
5. Was the soil in the muddy water good soil--topsoil from the surface layer or subsoil?
6. List at least three things that would help to keep water clear.

## ACTIVITY 6

### WHAT THE WINDS DO

1. Where does the soil come from in a dust storm? Does this help the land?
2. Which size of particles, clay or sand, tends to drift first with a strong wind?
3. What happens when the soil is moist rather than dry?
4. How does grass help to stop soil from blowing?
5. What is a windbreak?





ACTIVITY 8

YOUR FIELD TRIP

Write a story about your field trip and what you learned.

Draw or cut out a picture of a soil and water conservation practice.

## ACTIVITY 9

### WHAT DID YOU LEARN IN THIS PROJECT?

(From your movie and other activities -- answer the following questions. Check answers with leader.)

1. Why should farmers cultivate their land across the slope?
2. What is contour farming?
3. What is strip cropping?
4. What is crop rotation?
5. What is gully erosion?
6. In what two ways does a farmer lose his soil?
7. How do trees protect soil?
8. List three ways in which a farmer can stop erosion.

## ACTIVITY 10

### DO ONE OF THE FOLLOWING FOR EXHIBIT

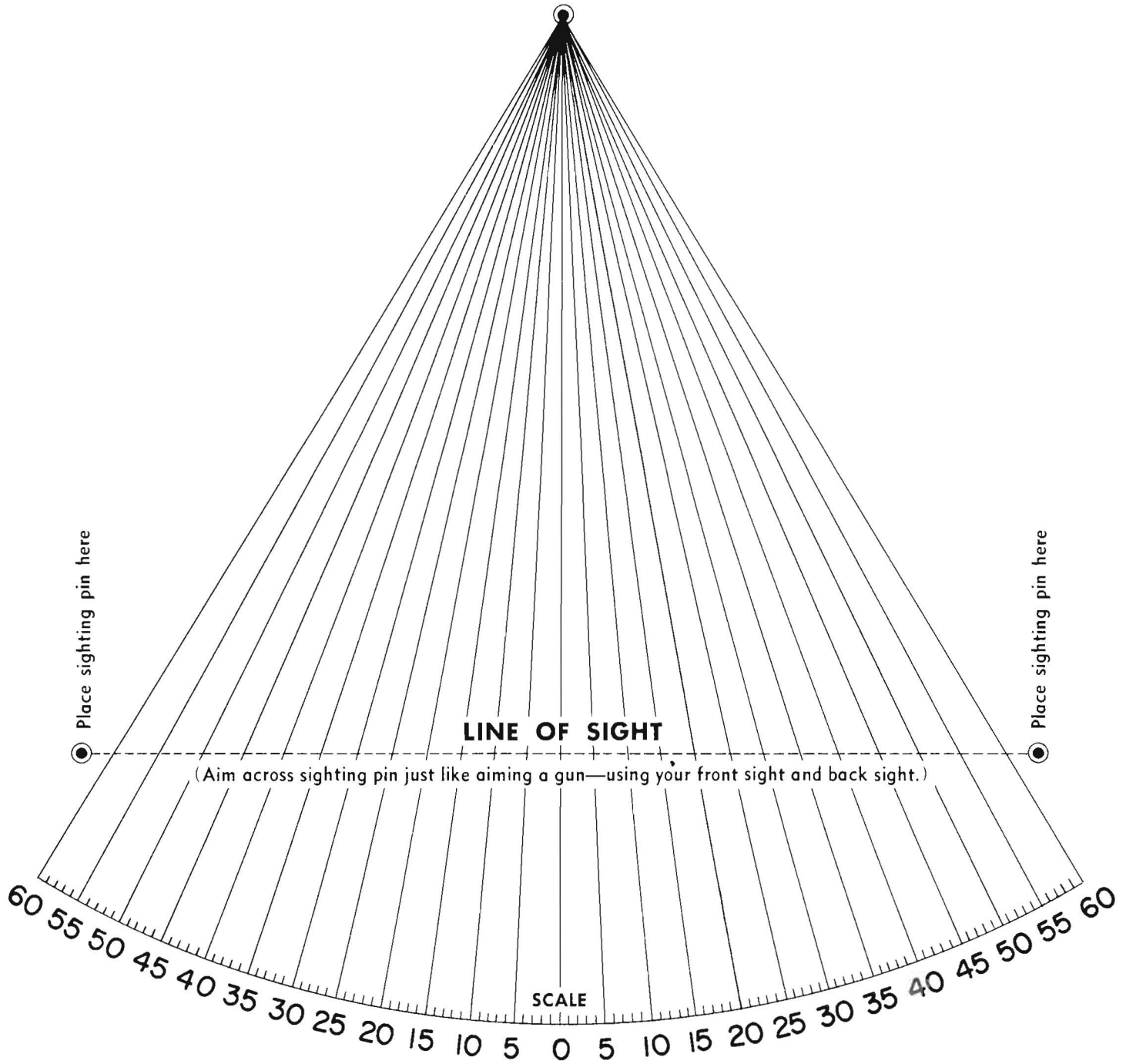
1. Write a 100 to 200 word story on "What Conservation Means to Me and My Community." Use four pictures. Use this space for your outline.
2. Make a poster showing some ways soil and water conservation pays. Use four pictures. Use this space for planning.
3. Build a model farm of plaster of paris showing good soil and water conservation. Use this space for sketching.





# SLOPE FINDER

Hang weight on a string from  
this point



Read percent of slope directly on this scale. At the point where string rests on scale, the number indicates percent of slope, or the number of feet of fall in 100 feet.

HOW TO  
MEASURE SLOPE

(Four Steps)

1. Mount "Slope Finder" sheet on a 9 x 12 inch board. (Use 1/2 inch thick plywood or 3/4 inch thick lumber.)
2. Place three (3) "finishing nails" at points shown. Hang string from top nail. Attach a weight, such as a large nut to bottom of string. Let the bottom of the string with the nut, hang about 2 inches below the scale.
3. When measuring slope--sight at a point that is the same height as your own eye-level. It is best to work as a team with a boy or girl about your same height. "Sight on your partner's eyes."
4. Hold Slope Finder as steady as possible. After you have sighted properly--pinch the string against the scale--Read percent slope, or number of feet fall in 100 feet, directly from the scale. Record this measurement.

NOTE: Using this simple "Slope Finder" you can measure the percent slope on any slope or in any field.

(Turn this sheet over and use as described above.)



# 4-H Soil and Water CONSERVATION REPORT



Name \_\_\_\_\_ County \_\_\_\_\_

Address \_\_\_\_\_  
(House No.) (Street or Road) (RFD - Post Office)

Project Leader \_\_\_\_\_

Years in project, including this year \_\_\_\_\_

Check the project you have just completed with an X:

Project I \_\_\_\_\_ Project II \_\_\_\_\_ Project III \_\_\_\_\_ Advanced \_\_\_\_\_  
List Project No. \_\_\_\_\_  
(IV to X)

What Project ACTIVITIES did you do?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

What project exhibits did you choose to make? Where did you exhibit? \_\_\_\_\_

Title of demonstration and where given \_\_\_\_\_

How did you apply this project at home, school, etc.? \_\_\_\_\_

(Use This Side for Pictures and Additional Information, and Insert This Report in Your Michigan 4-H Club Member's Report (Folder) for District or State Awards)





# Michigan 4-H Conservation Junior Land Judging Guide



Name \_\_\_\_\_ Address \_\_\_\_\_ Club \_\_\_\_\_

PART ONE - (Check one box in each group -  )

Part I   
40 points   
(5 points for each item)

1. TEXTURE (FEEL) OF SURFACE LAYER

- Fine - (Clay) sticky when moist.
- Medium - (Loam) easy to mold when moist.
- Moderately coarse - (Sandy Loam) gritty, difficult to mold when moist.
- Very coarse - (Sand) will not mold even when moist.
- Organic soil - muck or peat.

2. TEXTURE (FEEL) OF THE SUBSOIL

- Fine - (Clay) sticky when moist.
- Medium - (Loam) easy to mold when moist.
- Moderately coarse - (Sandy Loam) gritty, difficult to mold when moist.
- Very coarse - (Sand) will not mold even when moist.
- Organic soil - muck or peat.



3. COLOR OF SURFACE LAYER

- Black - high organic matter content.
- Medium dark - moderate organic matter content.
- Light colored - low organic matter content.

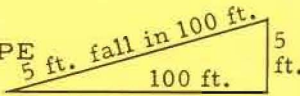
4. COLOR OF THE SUBSOIL

- Bright - uniformly red, yellow, or brown colors - indicates good natural drainage.
- Spotted - mixed yellow and brown with orange spots common - artificial drainage usually needed before it can be tilled.
- Dull - grays predominate, some mixed colors may occur - artificial drainage needed before it can be tilled.

5. SLOPE PATTERN

- Regular - smooth, uniform slopes. 
- Irregular - many changes of slope, wavy, short slopes, pot holes, etc. 

6. STEEPNESS OF SLOPE

- 
- Nearly level (0 to 2 feet fall in 100 feet)
  - Gently sloping (2 to 6 feet fall in 100 feet)
  - Moderately sloping (6 to 12 feet fall in 100 feet)
  - Strongly sloping (12 to 18 feet fall in 100 feet)
  - Very steep (over 25 feet fall in 100 feet)

7. AMOUNT OF EROSION

- None to slight - mainly original surface soil (usually dark colored.)
- Moderate - mixture of original surface soil and subsoil.
- Severe - mainly subsoil on surface, or deep gullies or blowouts. Clay knobs may be exposed.

8. WHAT KIND OF EROSION WOULD OCCUR IF THE LAND WERE LEFT BARE?

- Wind erosion
- Water erosion
- Streambank erosion
- Other \_\_\_\_\_

PART TWO - (Check the most important problems that you have found)  
 \_\_\_\_\_ Number of problems to be selected.

Part 2   
 20 points

MOST IMPORTANT PROBLEMS WHICH AFFECT THE USE OF THE LAND:

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> 1. Cloddy        | <input type="checkbox"/> 5. Seepage Areas       | <input type="checkbox"/> 9. Water Erosion  |
| <input type="checkbox"/> 2. Sandy (dry)   | <input type="checkbox"/> 6. Flooding (seasonal) | <input type="checkbox"/> 10. Low Fertility |
| <input type="checkbox"/> 3. Stony         | <input type="checkbox"/> 7. Slope               | <input type="checkbox"/> 11. _____         |
| <input type="checkbox"/> 4. Wet uniformly | <input type="checkbox"/> 8. Wind Erosion        | <input type="checkbox"/> 12. _____         |

PART THREE - (CHECK ONE)

Part 3   
 10 points

HOW WOULD YOU USE THE AREA?

- |  |
|--|
| <input type="checkbox"/> 1. Cropland                           |
| <input type="checkbox"/> 2. Pasture land (permanent)           |
| <input type="checkbox"/> 3. Woodland (including tree planting) |

PART FOUR - Check most important practices for the "Use" that  
 you chose in Part Three.  
 \_\_\_\_\_ Number of practices to be selected.

Part 4   
 30 points

CROPLAND - PRACTICES

PASTURE LAND - PRACTICES

WOODLAND - PRACTICES

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> 1. Grass waterways                                 | <input type="checkbox"/> 1. Protect from overgrazing                       | <input type="checkbox"/> 1. Protect woodland from grazing, fire, insects, and disease.                |
| <input type="checkbox"/> 2. Contour tillage, strip cropping, terraces, etc. | <input type="checkbox"/> 2. Top dress with fertilizer                      | <input type="checkbox"/> 2. Reforest open areas.  |
| <input type="checkbox"/> 3. Drainage  | <input type="checkbox"/> 3. Kill or cut weeds and brush                    | <input type="checkbox"/> 3. Thin stand to give adequate room for each tree.                           |
| <input type="checkbox"/> 4. Apply barnyard manure                           | <input type="checkbox"/> 4. Do not burn                                    | <input type="checkbox"/> 4. Improve stand by removing cull trees, weed trees, and those of low value. |
| <input type="checkbox"/> 5. Apply lime                                      | <input type="checkbox"/> 5. Plant or conserve food and cover for wildlife. | <input type="checkbox"/> 5. Harvest mature trees on a selection basis.                                |
| <input type="checkbox"/> 6. Apply fertilizer                                | <input type="checkbox"/> 6. Seed and maintain adapted plants.              | <input type="checkbox"/> 6. Harvest entire stand by clear cutting.                                    |
| <input type="checkbox"/> 7. Plant cover crops                               | <input type="checkbox"/> 7. _____  | <input type="checkbox"/> 7. Plant a border of evergreens for wildlife and wind protection.            |
| <input type="checkbox"/> 8. Use green manure                                | <input type="checkbox"/> 8. _____  | <input type="checkbox"/> 8. Plant food and cover species for wildlife.                                |
| <input type="checkbox"/> 9. Field windbreaks                                | <input type="checkbox"/> 9. _____  | <input type="checkbox"/> 9. Develop and maintain roads and/or fire lanes for woodland mgmt.           |
| <input type="checkbox"/> 10. Leave food and cover for wildlife.             | <input type="checkbox"/> 10. _____   | <input type="checkbox"/> 10. _____  |

TOTAL SCORE   
 Perfect Score  
 100 points