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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 Institute
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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 1—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:

<table>
<thead>
<tr>
<th>Foods directly from the soil</th>
<th>Foods indirectly from the soil</th>
<th>Foods not from the soil</th>
</tr>
</thead>
</table>

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 2

WHAT KINDS OF SOILS DO YOU HAVE IN YOUR COMMUNITY?

1. Where did you go on your field trip?

2. How many different kinds of soil did you find?

3. Did you see any differences in the trees and crops growing on the different soils?
ACTIVITY 3

ARE SOILS ALIKE? - HOW DO THEY DIFFER?

1. Collect three or four samples of different soils--list the kinds of soil and tell where you got them.

2. How do the samples differ? (a) in color, (b) in texture (feel or size of particles)?

3. Examine your bottles of soil after they have settled.
   a. Do they appear as they did at the start? What happened?
   b. Where are the coarse soil particles?
   c. Which layers are sand? Which clay?
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 7

DO CLOVER AND ALFALFA GROW WELL ON YOUR FARM OR IN YOUR COMMUNITY?

1. Make a list of two crops which like a low pH (acid soil).

2. List two crops which prefer a medium pH (neutral soil).

3. List two crops which like a high pH (alkaline soil).

4. How many pounds of each of the following is in this 100-lb. sack of fertilizer?
   - a. Nitrogen
   - b. Phosphorus
   - c. Potash

5. Where is your county soil-testing laboratory? How much does a soil test cost?
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.
ACTIVITY 11 (OPTIONAL)

CONSERVATION MAP

Draw a map of your father's farm or a friend's farm and show where conservation practices could be or are now being used. Also show the slope measured in one field. (Use colored pencils to indicate soil and water conservation practices.)
SLOPE FINDER

Hang weight on a string from this point

(LINE OF SIGHT)

(Aim across sighting pin just like aiming a gun—using your front sight and back sight.)

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.? ___________________________

MICHIGAN STATE UNIVERSITY
Cooperative Extension Service
East Lansing
(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)
PART ONE - (Check one box in each group - □□)

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: 20 points

**MOST IMPORTANT PROBLEMS WHICH AFFECT THE USE OF THE LAND:**

- Cloddy
- Sandy (dry)
- Stony
- Wet uniformly
- Seepage Areas
- Flooding (seasonal)
- Slope
- Wind Erosion
- Water Erosion
- Low Fertility

**PART THREE** - (CHECK ONE)

**HOW WOULD YOU USE THE AREA?**

- Cropland
- Pasture land (permanent)
- Woodland (including tree planting)

**PART FOUR** - Check most important practices for the "Use" that you chose in Part Three.

**CROPLAND - PRACTICES**

1. Grass waterways
2. Contour tillage, strip cropping, terraces, etc.
3. Drainage
4. Apply barnyard manure
5. Apply lime
6. Apply fertilizer
7. Plant cover crops
8. Use green manure
9. Field windbreaks
10. Leave food and cover for wildlife.

**PASTURE LAND - PRACTICES**

1. Protect from overgrazing
2. Top dress with fertilizer
3. Kill or cut weeds and brush
4. Do not burn
5. Plant or conserve food and cover for wildlife.
6. Seed and maintain adapted plants.
7. __________
8. __________
9. __________
10. __________

**WOODLAND - PRACTICES**

1. Protect woodland from grazing, fire, insects, and disease.
2. Reforest open areas.
3. Thin stand to give adequate room for each tree.
4. Improve stand by removing cull trees, weed trees, and those of low value.
5. Harvest mature trees on a selection basis.
6. Harvest entire stand by clear cutting.
7. Plant a border of evergreens for wildlife and wind protection.
8. Plant food and cover species for wildlife.
9. Develop and maintain roads and/or fire lanes for woodland mgmt.
10. __________

**TOTAL SCORE**

<table>
<thead>
<tr>
<th>Part 2</th>
<th>Part 3</th>
<th>Part 4</th>
</tr>
</thead>
<tbody>
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