

MSU Extension Publication Archive

Archive copy of publication, do not use for current recommendations. Up-to-date information about many topics can be obtained from your local Extension office.

Basic Environmental Conservation and Soil - Member's Workbook
Michigan State University Cooperative Extension Service
4-H Club Bulletin
Robert George, Environmental Conservation Education
Issued October 1974
24 pages

The PDF file was provided courtesy of the Michigan State University Library

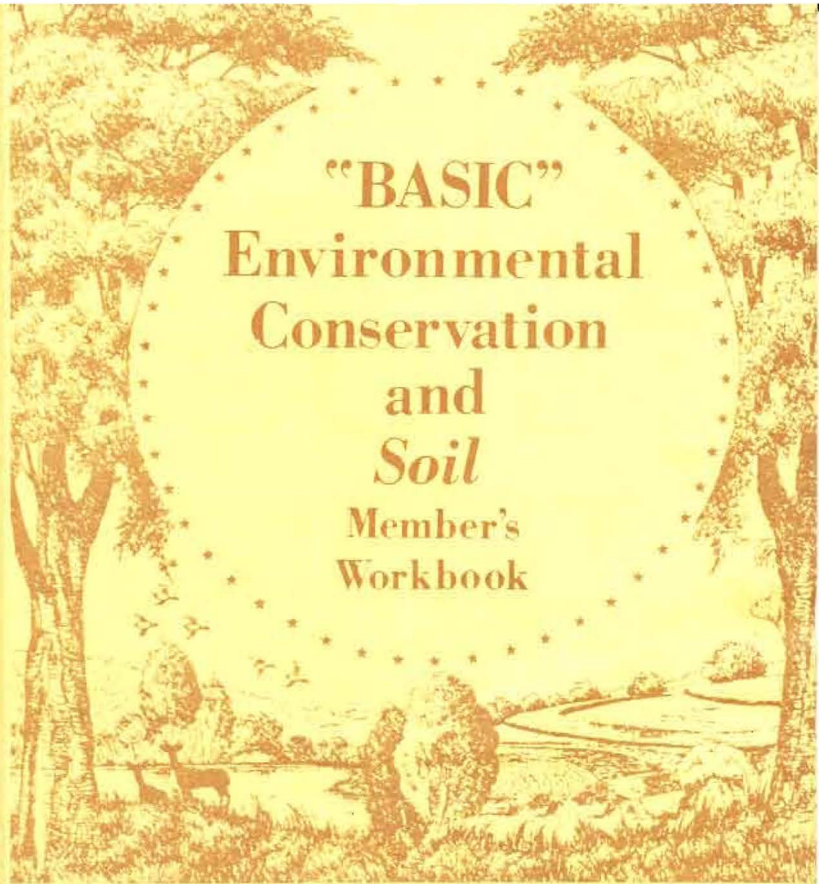
Scroll down to view the publication.

OH GREAT SPIRIT IN THE SKY..



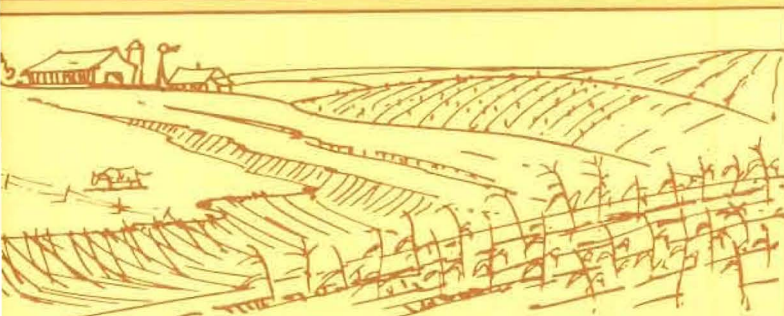
'BRING TO OUR WHITE BROTHERS THE WISDOM OF NATURE TO HEAL THE WOUNDS OF THE EARTH'

"BASIC"
Environmental
Conservation
and
Soil
Member's
Workbook



MICHIGAN STATE UNIVERSITY
Cooperative Extension Service • East Lansing

ENVIRONMENTAL CONSERVATION IS..



NOT LAND ABUSE, BUT..

.. GOOD LAND USE !



4-H-YOUTH PROGRAMS



THIS WORKBOOK BELONGS TO:

Name..... Age.....

Address

Club

Leader's Name

THE ROLE OF YOUTH IN ENVIRONMENTAL 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.

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 be of real service to their community. Through conservation activities they can help, as they learn by doing in their homes . . . their environments.

"Basic" Environmental Conservation and SOIL is a project in which both boys and girls can take part, whether they live on the farm or in the city.

HOW WE LEARN IN THIS PROJECT

"Basic" Environmental Conservation and Soil

1. Look over the project outline. Discuss with your leader the things to do for each activity. Get copies of "The Story of Land." Also, order any film at least two weeks in advance.
2. After previewing the project, decide on the following:
 - What you are going to do for a Special Activity — a community project for soil. . . . Environmental Quality.
 - What you want to show others — a demonstration or exhibit.
3. Get a *Member's Plan and Evaluation*, 4-H Form 210A, to help evaluate the project.

WHAT WE LEARN IN THIS PROJECT

This project is designed to help us understand soil conservation. We want to learn about the importance of soil, appreciate its many uses, get acquainted with what is meant by "erosion," and find out the causes of so-called "wearing out" of the land and soil pollution.

The value of other resources such as water, forests, and wildlife (as well as our own human resources) is

very dependent upon the soil. After completing this project, we should realize that the quantity and quality of our soil, today and tomorrow, depends upon how we use and develop it. We want to appreciate our soil as a valuable resource. This can only be done by understanding more about it.

ACKNOWLEDGMENT

Special thanks are due Leonard J. Braamse, former Extension Specialist in Soil Conservation, Soil Science Department, for his help in developing this publication. 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 4-H conservation clubs has served as a guide for the presentation of this material.

All art work, by Felix Summers, was made available through the courtesy of the U.S.D.A. Soil Conservation Service, Michigan State S.C.S. office.

Robert W. George
Extension Specialist
Environmental Conservation Education

OUR SOIL ENVIRONMENT



Young people on farms know that it takes good soil to grow good crops and produce good livestock. They know that milk doesn't just "come from a bottle" (as a city boy once said); they know that milk is produced by cows which eat hay and grain. The soil must be in good condition to produce large quantities of good-quality hay and grain to feed the cows, and to grow the other crops that we all need.

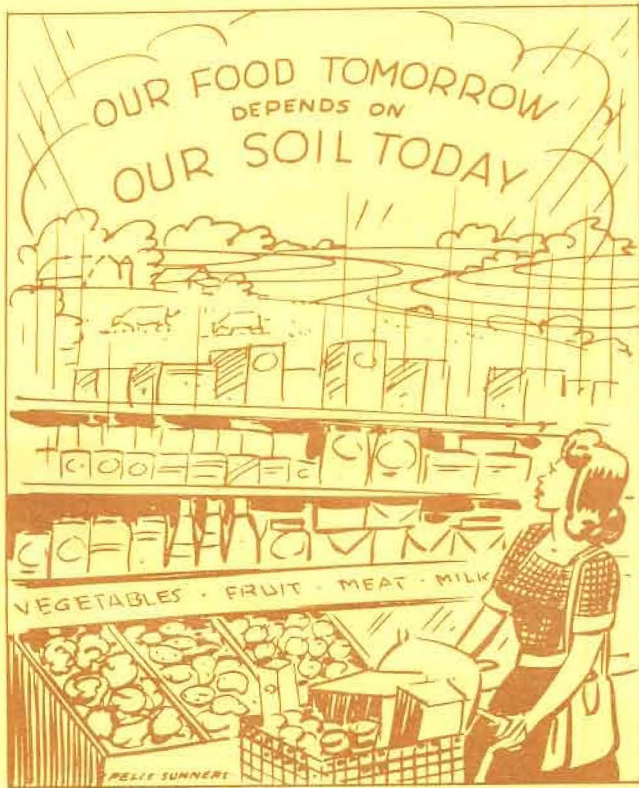
It is easy for us to use the soil without realizing its importance. We may even waste or "wear out" good soil without knowing it. This is the same as throwing away good food. Wasted soil may cause some people to go hungry.

Actually, our soils are slowly being used up by the growing of crops year after year and the removing of crops from the farm. Many soils are being wasted by

bad land use and erosion. It is important that we know more about our soils, so that we can take good care of our soil environment.

Your parents, and all people living on farms, have a big job to keep their land producing milk and other food as well as material for clothing that people need. You can help them by studying and learning more about soils and doing the things that help to keep them productive.

The purpose of this project is to help you know more about soil and what needs to be done to keep it producing well. When you know that, you'll be able to help with this problem. It will pay you to do so. Better crops bring in more money to buy the things your family would like to have and the things boys and girls especially enjoy.



What We Get From The Soil



Did you ever stop to think where your "daily bread" comes from? Does it come from the soil directly "as is"? How many of these foods do other people help get ready for eating before you use them in your home?

WHERE OUR FOODS COME FROM

Each member should, with his mother's help, make a list of all the foods found in the kitchen, pantry, cellar, freezer, and fruit room. You should then divide them into these three groups:

Foods Directly From The Soil (Like potatoes, apples, carrots, etc.)

Foods Indirectly From The Soil (Like baker's bread, meat from market, etc.)

Foods Not From The Soil

Look over this list. Do you think we should take good care of our soils? What might happen to us if we neglected our soils?

Activity 1

WHERE DO OUR FOODS COME FROM

(1)

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?

SOIL: The Key to The Land

PART (a) — ARE SOILS ALIKE?

To most of us, soil is just "dirt." But have you ever looked carefully at a handful of soil? What is it made of?

You should make a trip to a farm and collect three or four samples of soil — a quart jar of each. The samples should be quite different in appearance. Try to find one that is "sandy" and another that is quite "sticky" when moist (a clay-type soil).

1. Place each quart sample where it will dry.
2. Sieve each through a piece of window screen to take out the roots, stones, and coarse organic matter.

3. Put some of the sifted soil from each sample in clear glass (pint) bottles — fill $\frac{1}{3}$ full.

4. Add water until the bottle is $\frac{4}{5}$ full, then shake vigorously for 2 minutes. While shaking, if the soil takes up water, add more until the bottle is $\frac{4}{5}$ full after the soil is wet.

5. Allow to settle overnight.

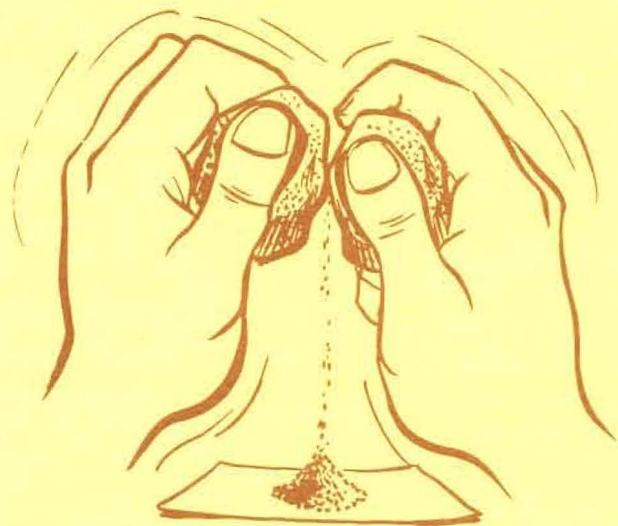
6. Examine the bottles carefully. Do they appear as they did at the start? Where are the coarse soil particles? — the finer ones? Which layers are sand? — which clay?

PART (b) — HOW WERE THEY FORMED?

Some people think stones and rocks grow in the ground. Do you believe this? How is soil formed?

1. Take two pieces of sandstone or limestone and rub them together over a white piece of paper for a few minutes. What do you get? Can this be soil? What effect did glaciers have in forming soil in Michigan?

2. Take another piece of sandstone or limestone and heat it on the stove until very hot. (**CAUTION:** Keep the stone covered with a tin can while heating!) If the stone is still in one piece, drop it into a can of cold



water. What happens? What happens when a bottle of water freezes? Could soil be formed by freezing and heating?

Activity 2

PART (a) — ARE SOILS ALIKE? HOW DO THEY DIFFER?

- (1) Collect three or four samples of different soil. Describe each of the soil samples and tell where you got them. Samples should be taken just beneath the surface, 2 to 4 inches deep.
- (2) Examine your bottles of soil after they have settled.

Do they appear as they did at the start? What happened?

Where are the coarse soil particles?

Which layers are sand? Which clay?

PART (b) — HOW WERE THEY FORMED?

- (1) How were most of the soils in your county formed?

- (2) What was the parent material?

- (3) In what three ways is soil formed?

The Soil In Our Environment

We know that life has certain requirements and that three things are absolutely necessary for life — *air*, *water*, and *food*. But, since most of our food comes from the soil, we might put the word "soil" in place of the word "food." We can think of our soil and its quality as being one of the essentials in our lives!

Soil environments that are healthy tend to have adequate nutrients for plant growth.

Soils do differ! Some are very sandy while others are mixtures of sand, silt, and clay. These differences affect our use of soil, *and* how we use the soil makes a real difference in its quality.

WHAT KINDS OF SOIL DO YOU HAVE IN YOUR COMMUNITY?

The most common way of naming soils is by the size of the particles that make up the soil. From coarse to fine, the soil particles are: Gravel, Sand, Silt and Clay. Soils are made up of all or nearly all of these size groups. Sandy soils contain large amounts of sandy particles while clay soils have large amounts of clay particles. By comparing soils and learning to observe the "feel" of them, one can learn to name them correctly as *sand*, *sandy loam*, *loam*, *silt loam*, or *clay loam*.

- (1) To serve as a guide, obtain *soil* samples, which have been named and labeled from your *county extension agent*. These samples should include sand, sandy loam, loam, silt loam, clay loam, and muck.
- (2) Compare the soil from your own samples with the "guide samples." Do this by feeling the soil between the thumb and finger, not merely by comparing the color of the soil. If the soil samples are dry dampen them before feeling. *The soil should be damp, but not wet.*

Sand — The large sand grains feel gritty; there are very few small particles.

Sandy loam — There are sand grains which feel gritty — but there are also smaller particles which make this soil less gritty than sand.

Loam — In this there are some sand grains, but so many smaller particles that you do not feel much grit.

Silt loam — Very little sand; the soil feels quite "smooth." When you press the damp soil into a ball, it holds that shape.

Clay loam — You notice here very little grittiness; the damp soil feels almost greasy. The soil clings firmly when pressed into a ball.

Muck — These soils were made from decaying refuse of plants and trees. They are usually dark or even black in color, and contain almost no grit. They hold much water, and when dry, are light and will burn.

Activity 3

WHAT KINDS OF SOILS DO YOU HAVE IN YOUR COMMUNITY?

- (a) How many different kinds of soil did you find in your community?

- (b) Did you see any differences in the trees and crops growing on the different soils?

- (c) Take a sample of each of the following soils:
(Describe how you identified your four kinds of soil, and make a *lime test* of each. Record each test and the location where each sample was taken.)

CLAY SOIL:

pH (lime test) _____, location _____

LOAM SOIL:

pH (lime test) _____, location _____

SANDY SOIL:

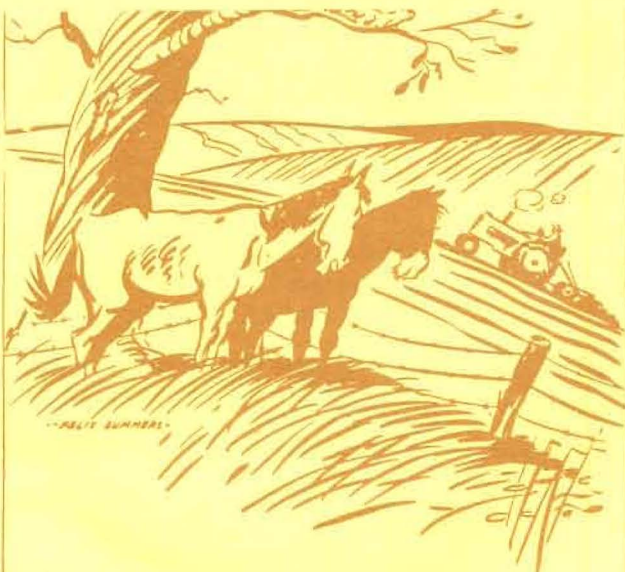
pH (lime test) _____, location _____

MUCK SOIL:

pH (lime test) _____, location _____

NOTE: "A Simplex Lime (testing) Kit" may be purchased from your county extension office. For an *OFFICIAL TEST*, you should send your samples to the County Soil Testing Laboratory.

- (d) Is soil alive? Is there life in soil? _____



"IF HE IS SO BLAMED MODERN, HOW COME HE STILL FARMS UP AND DOWN HILL?"

WHAT IS MUDDY WATER?

What color is muddy water? What gave it this color? How does water get muddy?

After a heavy spring rain, visit a small stream or ditch and fill two quart jars with this water.

Compare it with a jar of water from the well or faucet.

Let the muddy water settle for several days.

Notice how long it takes for the water to become clear.

Notice the amount of silt in the bottom of the jar. Save one jar for exhibit purposes, if you wish.

Take the second jar and carefully pour off the water. With a spoon dip out the mud. Feel it between the thumb and fingers. Place some on a tin where it will dry.

Soil and Water



FARMING UP AND DOWN HILL IS - SAME
UNTIL THE FIRST - RAIN



When it is dry, powder it up and feel it. Is the material SAND, SILT, or CLAY? Is this good soil? Why?

Activity 4

SOIL POLLUTION

(Report on your visit to a stream or road ditch
after a heavy rain)

- (1) Did you see any signs of erosion along the stream
— on the 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 — top-
soil from the surface layer or subsoil?

- (6) List at least three things that would help to keep
water clear.

Soil and the Wind

WHAT THE WINDS DO

Were you ever out in a dust or sand storm? Where did the storm come from? Where did it go?

In this activity we will study some ways to prevent soil from blowing.

Take a shallow pan or box; fill it with dry soil.

Place it on a table against the wall.

Place an electric fan in front of the pan with the air passing over the soil.

What happens?

Could this take place in a field of dry soil?

What size of soil particles drifted against the wall?

Next, wet this box of soil and plant some seeds of wheat, rye or oats. Keep the soil moist. When the seeds have germinated and are well above the ground (1 to 2 inches high), repeat the fan treatment.

What happens now?



NOTE: If your room is not heated throughout the day so seeds can germinate, stick evergreen twigs in the moist soil to represent growing plants.

Activity 5

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?

SOIL: Forests and Wildlife

Forests and Wildlife can well be recognized as an indicator of wise LAND USE. *Our Land* can be used wisely if we recognize that some land is best suited for cropland and grassland while other land is needed in forests for production of wood products and watershed protection. Still other land may be best suited for recreational centers, residential and industrial sites or for one of the many new uses of land that we need today.

As Russell Lord said in his interesting book, "Forest Outings":

"Early American explorers and pioneers beheld a remarkable profusion of wildlife at Plymouth Rock and other eastern ports-to-be. As they moved west and settled the Ohio and Mississippi Valleys, the Lake States, the Great Plains, and California, they found the same profusion. Only in parts of Utah and Nevada, the heavily timbered country of north Idaho and eastern Montana, and a few other places was any scarcity of game noted by the pioneers. Lewis and Clark recorded surprise at the abundance of wildlife in most of the country crossed by their expedition from St. Louis to the Pacific. The Hudson Bay Company, the Astors, and others built great fortunes from the exploitation of wildlife in the early days.

"But as the frontiers were pushed westward, civilization and settlement claimed for the plow and for domesticated livestock, more and more of the new land — most of it the choicest range for some species of wildlife. Many species whose former habitat was on the plains, in low-lying valleys, or in the foothills, were pushed back into higher and more inaccessible mountain regions of the West or into rougher or swampier or less fertile lands of the East. Always it was a retreat."

In our country, wildlife reached its lowest ebb around 1900. About that time there was an awakening among the people of the United States to the need for a program of wild land and wildlife conservation.

This retreat of wildlife populations was our first sign of what we were doing to our land: *Then*, we began to realize that our forests were rapidly being destroyed. *Remember*, wildlife and forests are part of nature's scheme in keeping SOIL "alive," our WATER and AIR clear and unpolluted, and our LAND "Livable!"

Activity 6

LAND IS CLOSELY RELATED TO FORESTS AND WILDLIFE. WE USE LAND IN MANY WAYS

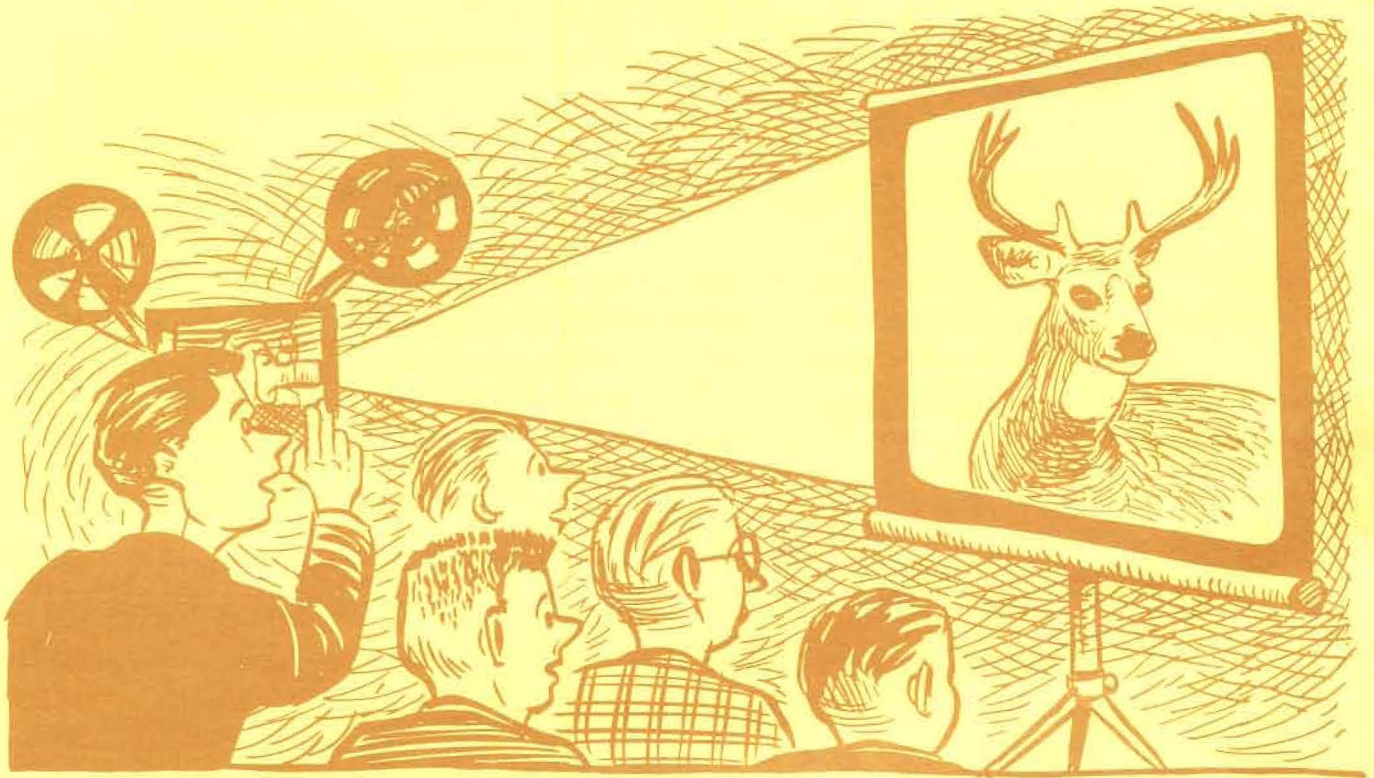
PART A

LIST ON SEPARATE SHEET THE
DIFFERENT USES OF LAND
IN YOUR COMMUNITY

PART B

MAKE A LAND-USE MAP (DRAWING) OF
YOUR NEIGHBORHOOD, YOUR HOME.
MAY BE A CITY BLOCK OR
A COUNTRY MILE.

What effect have forests and wildlife had on land use and land values in your community?



**SHOW A SOIL CONSERVATION MOVIE;
FOLLOW WITH DISCUSSION**

There are a large number of good soil conservation movies which are available for educational meetings. Your county Extension agent can suggest which ones to get for your community. It is suggested that the

entire club invite parents and friends to a meeting and show one or more soil conservation movies. Follow this with a discussion of environmental conservation and our soil.

What movie or movies were shown? _____

What were they about? _____

Activity 7

PROJECT REVIEW What Did You Learn In This Project?

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

(1) Why should land be cultivated 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 do we lose our soil?

(7) How do trees protect soil?

(8) List three ways to stop erosion.

Let Your Final Meeting Be *A Field Trip*

A field trip offers a conservation group an excellent opportunity to observe, in a practical way, many of the practices studied in this project. (If your club is active during the winter months, it may not be easy to arrange a field trip. You may have to wait until spring to plan a special field day.)

When you decide to have a tour, you should consult with your county Extension agent. You may also

want to discuss this subject with your soil conservation service district conservationist.

If you have a demonstration farm or soil conservation district cooperator in your vicinity or close by, you have a good start. You may have in your neighborhood many examples of good and poor soil practices. You will see them if you are alert and looking for these things. Often we pass by them day after day and give them no attention or thought.

Activity 8

Some things to look for on your field trip:

1. On the rolling or hilly land, which way do the furrows and rows run? — with the slope or across the slope?
2. Are there any evidences of erosion? What type; wind or water?
3. Is the erosion little, moderate or severe?
4. Are any farmers using strip cropping?
5. Are any farmers using sod waterways?
6. Do the field fencerows provide good shelter and food for wildlife?
7. Are woodlots pastured?
8. Do farmers in your neighborhood burn their pasture, marsh areas, fencerows and roadsides each spring?
9. There are many others. Make a list of these evidences of good or poor land use. Report these in your notebook in the following manner:

Name or Location of Area	Good Practices	Poor Practices
_____	_____	_____
_____	_____	_____

Special Activity

"Junior Land Judging"

Take a hike to a nearby farm or open field. Select a site to judge. Dig a hole at least 24" deep and determine the size of the area to include in your judging.

Assemble your *Slope Finder* before you go out into the field (see instructions on page 18), and take along your *Junior Land Judging Guide*.

Ask your leader to help set up a (club) land judging contest. (Tear out the last two pages of this workbook for your copy of *Slope Finder* and *Junior Land Judging Guide*.)

DEMONSTRATION SUGGESTIONS ("Showing Others")

- (1) Show "how water causes erosion; use run-off plots."
- (2) Show "how soils differ and how to tell them apart."
- (3) Show "a watershed; land features and conservation practices."

EXHIBIT SUGGESTIONS

- (1) Write a 100 to 200 word story on "What Environmental Conservation Means to Me and My Community." Use at least four pictures to illustrate.
- (2) Make a poster showing some ways soil, water and air (land) conservation pays. Use at least four pictures to illustrate "before and after" treatment.
- (3) Build a model farm of plaster of paris showing effective soil, water, and air (land) conservation.

HOW TO
MEASURE SLOPE

(Four Steps)

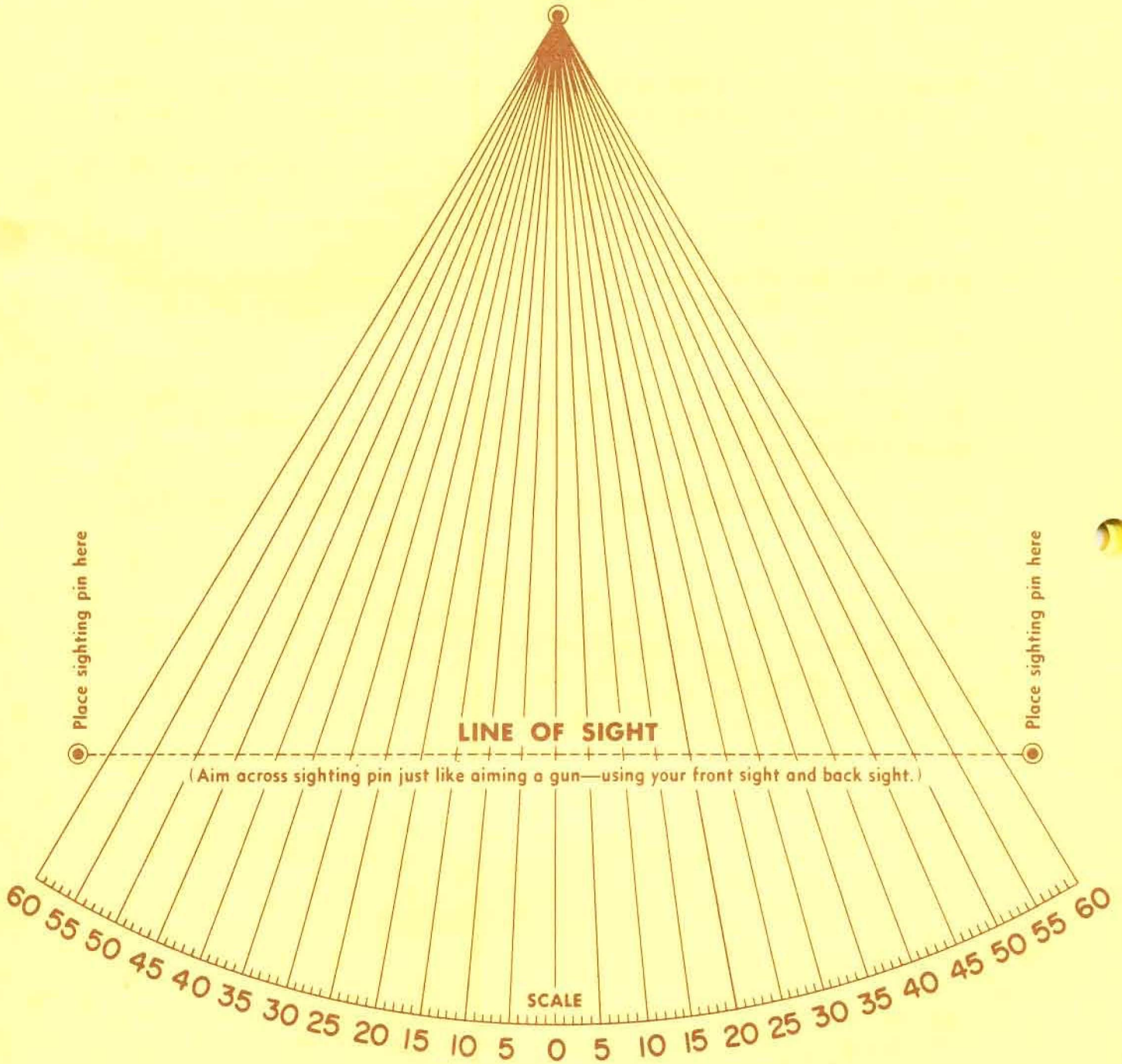
1. Mount "Slope Finder" sheet on a 9 x 12 inch board. (Use 1/2 inch thick plywood or 3/4 inch thick lumber.)
2. Place three (3) "finishing nails" at points shown. Hang string from top nail. Attach a weight, such as a large nut to bottom of string. Let the bottom of the string, with the weight attached, 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.)

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.



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.

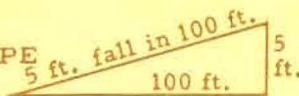
4. COLOR OF THE SUBSOIL

- 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)
 - Steep (18 to 25 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

ENVIRONMENTAL CONSERVATION

CREED

I pledge myself, as a responsible human, to assume my share of man's stewardship of our natural resources.

I will use my share with gratitude, without greed or waste.

I will respect the rights of others and abide by the law.

I will support the sound management of the resources we use,
the restoration of the resources we have despoiled,
and the safekeeping of significant resources for posterity.

I will never forget that life and beauty, wealth and progress depend on how wisely man uses these gifts . . . the soil, the water, the air, the minerals, the plant life, and the wildlife. This is my pledge!

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, E. Lansing, Mich. 48824.
6P-10:74-10M-DB