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Soil and Water Conservation Project – Project 1

Michigan State University Cooperative Extension Service

4-H Club Bulletin

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SOIL and WATER CONSERVATION

Project 1



MICHIGAN STATE UNIVERSITY
COOPERATIVE EXTENSION SERVICE
EAST LANSING



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NOTICE—To conform to the system used to identify other Michigan 4-H publications, all club bulletins in the Soil and Water Conservation series are assigned new numbers. The correct numbers designating the bulletins for each of the “Soil and Water” projects are now: Project I - 56A; Project II, 56B.

4-H Club Soil and Water Conservation*

PURPOSE OF THIS PROJECT

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, which is the same as throwing away good food. Wasting the soil means that people in the cities may sometime be unable to get enough milk to drink, or enough food to eat.

Actually, our soils *are* being slowly 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 them.

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

This 4-H Soil Conservation Project has as its purpose to help you know more about soils and what needs to be done to keep them producing well. When you know that, you'll be able to help your parents with this problem on your farm. It will pay you both 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.

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WHAT YOU ARE TO DO

Both boys and girls are eligible for this 4-H project. It is suggested that the work be done during the winter months, but if preferred it may be a summer project.

Each member enrolled in this project should complete individually each of the activities except the tour and movie. These two are club activities. Follow the suggestions given for each activity on how it should be done.

Each member should make and prepare a notebook of what was done in the activity. This may be a two or three ring notebook with pages 8½" x 11". Tablet paper, 8½" x 11", may be placed in a cover of construction paper and stapled or laced at the left hand edge with cord or leather lacing. Place in the book one or more pages of paper for each activity plus those for a scrapbook if you want this.

On the first page of the notebook write the following information:

Year

Name Age

Road or Street and number

Rural Route Number

Post Office

County Year in Project

Name of Club

Name of Local Leader

At the top right hand corner of each page list:

- Activity number
- Name of activity

Write on the top line at the left hand edge:

WHAT I DID—Tell in your own words what you did in this activity.

Next write:

WHAT I OBSERVED OR WHAT HAPPENED—Tell what happened as a result of what you did.

Next write:

WHAT I CAN DO AT HOME—Write what you may do on your home farm to improve your soil.

You may want to cut out some pictures that show things related to some of your lessons in this project. Glue them on the pages at the back of the book at the end of the activities. Group them by classes such as: erosion, contour farming, liming, fertilizing, etc. Label each page in the upper right hand corner as to group. More than three or four pictures in a group are unnecessary. If more are cut out use those that show best the lesson you have learned.

ACTIVITY 1

WHERE OUR FOODS COME FROM

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? (Fig. 1.)

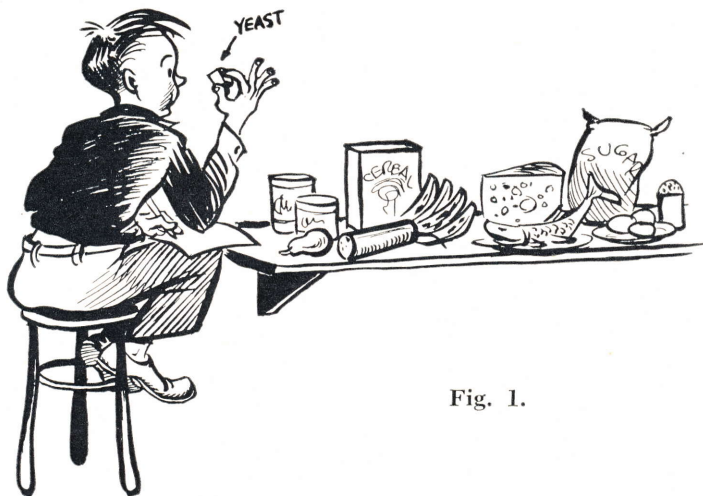


Fig. 1.

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

- | | | |
|---|---|-----------------------------------|
| <p>Foods Directly From
The Soil
(Like potatoes, apples,
carrots, etc.)</p> | <p>Foods Indirectly From
The Soil
(Like baker’s bread, meat
from market, etc.)</p> | <p>Foods Not From Soil</p> |
|---|---|-----------------------------------|

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 2

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, a person can learn to name them correctly as *gravelly loam*; *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 club agent. These samples will include sand, sandy loam, loam, silt loam, clay loam, and muck.

2. Compare soil from your own farm with the guide samples. Do this by feeling the soil between the thumb and finger (Fig. 2) — 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*.

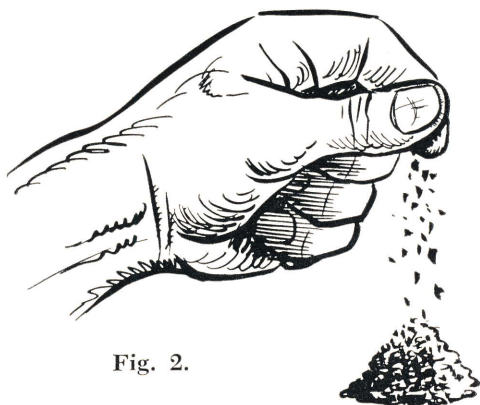


Fig. 2.

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

SANDY LOAM—There are grains of sand which feel gritty—but there are also smaller particles which make this soil less gritty than sand.

LOAM—In this there are some grains of sand, 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.

3. Take a field trip to a nearby farm:
 - a. How many different soils do you find?
 - b. Can you see any differences in the trees and crops growing on the different soils?
 - c. Why do our soils vary so much?

ACTIVITY 3

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?

The work group should make a trip to farm fields 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 “clayey.”

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 vegetable matter.

3. Put some of the sifted soil in a clear glass bottle — fill $\frac{1}{3}$ full.

4. Add water until the bottle is $\frac{4}{5}$ full, then shake vigorously for 2 minutes. If while shaking, 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. (Fig. 3.) Do they appear as they did at the start? Where are the coarse soil particles? — the finer ones? which layers are sand? — which clay?



Fig. 3.

ACTIVITY 4

HOW WERE SOIL PARTICLES (GRAINS) 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 (Fig. 4). What do you get? Can this be soil? (What effect did *glaciers* have in forming soil?)

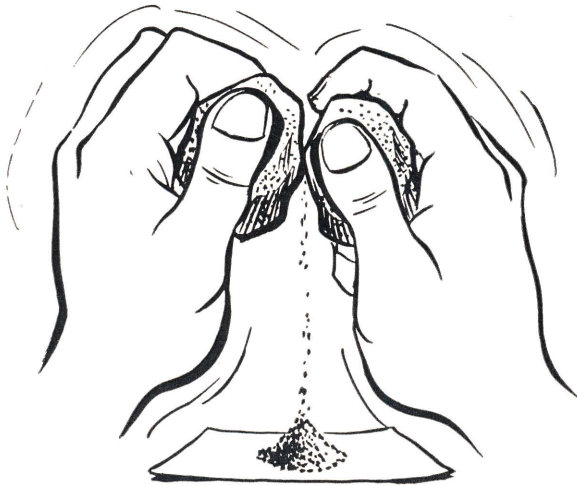


Fig. 4.

2. Take another piece of sandstone or limestone and heat it until very hot on the stove. 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 5

WHAT IS MUDDY WATER?

What color is muddy water? What gives 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. (Fig. 5.)



Fig. 5.

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.

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

ACTIVITY 6

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 of preventing 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. (Fig. 6.)

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.

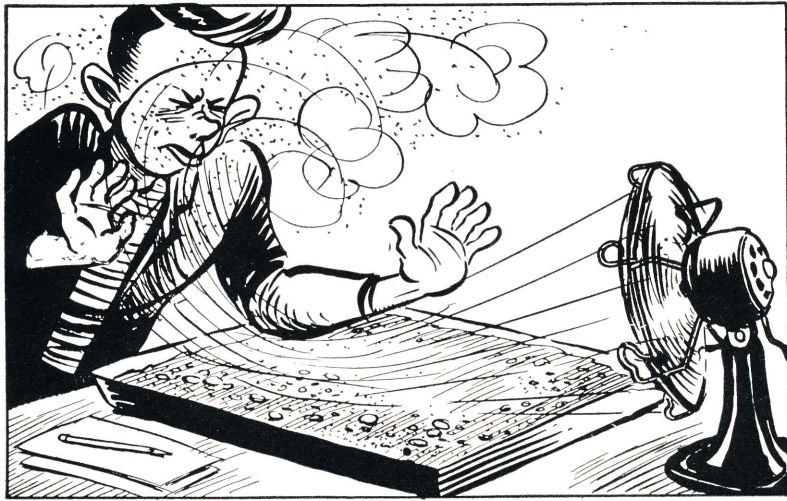


Fig. 6.

What happens now?

Can this be done on a farm?

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

ACTIVITY 7

DO CLOVER AND ALFALFA GROW WELL ON YOUR FARM?

Good crops of clover and alfalfa are valuable livestock feeds and benefit the soil. One reason why some soils do not grow good clover and alfalfa crops is because the *lime content* is too low. The only sure way of knowing whether there is enough lime is to test the soil.

1. Get a sample of soil from a field on your farm that is growing clover or alfalfa, and one from a field where new seedings are going to be made this spring.

2. Take the soil samples early in the fall and have them ready to test later in the season.

3. Take samples from the upper 6 inches of the soil.

4. Put the samples in clean tin cans.

5. After the use of the "Soiltex kit" has been explained to you, test the soil to see whether it is *sweet* or *sour*.

6. Do your fields need lime? How much?

A FIELD TRIP

A field trip offers conservation club members an excellent opportunity to observe in a practical way many of the lessons 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 after your spring achievement day. If your club is active during the summer months a club tour is easy to arrange.

If you have a tour you may or may not arrange for the conservation movie.

If you decide to have a club tour you should consult with your County 4-H Club Agent. You may also want to discuss this subject with your soil conservation farm planner.

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

Some things to look for on a trip or on your own are:

1. On 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 in extent?
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 wild-life?
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 OF FARM	GOOD PRACTICES	POOR PRACTICES
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ACTIVITY 9

SHOW A SOIL CONSERVATION MOVIE FOLLOWED BY A DISCUSSION

There are a large number of good soil conservation movies which are available for educational meetings.

Your County Agricultural Agent or your County 4-H Club Agent can suggest which ones to get for your community. It is suggested that the whole club invite parents and friends to a meeting and show one or more soil conservation movies, to be followed by a discussion of soil conservation.

1. What movie or movies were shown?

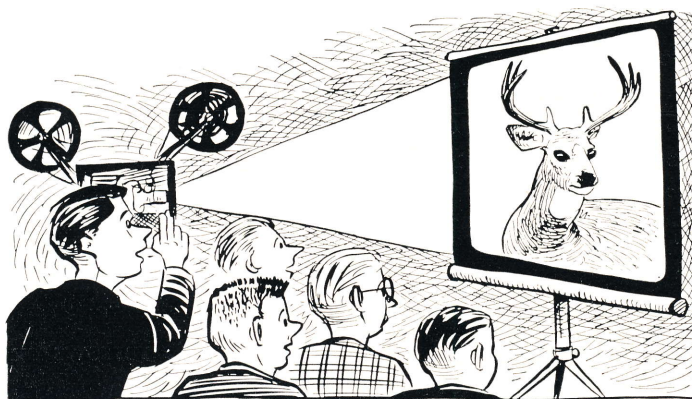


Fig. 7

2. a. How many members attended?
b. How many others attended?
3. Did you have any other entertainment or serve refreshments?
4. Give a brief description of the movie.
5. Did some of the practices shown in the movie fit the needs of the land in your community?
6. What points were brought out in the discussion?

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