



SOIL IS IMPORTANT Almost everyone likes to eat and almost all our food comes from the soil. Since we all need food, it is wise to take care of the soil so it will keep growing food. This is part of conservation.

Conservation means many things, but mainly it is using our natural resources wisely. The soil is a basic resource because so much depends on what it will grow. All plants and animals get their food from the soil.

There are many natural resources, such as forests, wild animals, coal, minerals, and oil. Some of them are called *renewable* resources, others are called *non-renewable* resources. The non-renewable ones are those that are gone forever once they are used—iron, coal, oil. The renewable ones are those that will develop again after they are

YOU ASKED ABOUT SOIL CONSERVATION
Extension Circular 334 January 1963 Extension Service Institute of Agricultural Sciences Washington State University Pullman

used. Forests, wildlife, and soil are examples. Although they can come back again, it takes a long time. If soil is misused, it may take hundreds of years to get fertile soil again.

Once there was no soil on the earth. It had to be made from solid rocks as they broke down from freezing and thawing, the beating of rain and wind, and the dissolving action of water.

Soils are still being built up and shifted around by the forces of nature—wind, water, glaciers, and gravity. This is normal and natural. But if we make it easy for water to wash soil away or for wind to blow it away, there will be less soil for the crops.

WHAT WATER DOES Soil is made up of many fine particles or tiny grains of rock. These particles are all different sizes. Each spoonful of soil contains millions of bacteria, too. These tiny living creatures are constantly active, changing the soil. The soil also

contains bits and pieces of decayed leaves and twigs. This organic matter provides food for new plants.

Try this to learn about soil particles—Fill a glass jar about two-thirds full of water. Then put in a small handful of soil. Put a lid on the jar and shake it a few minutes. Then let it stand. Watch how the sand and larger particles settle first, then the smaller particles of silt, and finally the tiny particles of clay. The clay particles are so small you can't see the individual grains. Some of the particles may be so fine that they make the water cloudy for hours. Small bits of organic matter, such as roots and stems, may float on the water.

You can see this kind of separation of soil material in nature. Along most streams you will find rocks and gravel. You may find coarse sand nearby. And farther from the stream you will find fine silt and clay. Soils in valleys were built up by streams that carried material down from the mountains. As the water slowed down and spread out, the coarse heavy particles—rocks and

gravel—dropped out first and then the finer particles. This is like the separation in the jar. Of course, there are places where there are no loose rocks or sand near the streams.

The combination of rocks, sand, silt, clay, and organic matter in the soil is important. These materials change the soil makeup and control the kind of crops that can be grown and the kind of conservation practices needed.

For example, a gravelly soil is not usually very fertile. Crops don't grow well. It is hard on farm machinery. It will not hold much water for plant growth. But it has good points, too. It absorbs rain very quickly and will not erode or wash away. It dries out quickly and isn't sticky when it is dug.

A sandy soil is not as coarse as a gravelly one, but it is quite similar. It soaks up rain quickly and doesn't wash away readily. But it may not be very fertile or hold much moisture.

Soils with finer and finer particles

—silt and clay—hold more water for plants and are richer in plant nutrients, but they may be sticky when they get wet, making them difficult to plow. They may wash away faster because the water can't soak into them as quickly as the rain may fall. The beating raindrops stir up the tiny particles and when the water can't go into the soil, it runs off the field, carrying the soil particles with it. Organic matter helps the rain soak into soils of this kind and helps prevent erosion.

As we have seen, soil particle size makes a difference in whether or not soil will erode easily. Other things influence erosion, too. One of these is slope. The steeper the slope, the more quickly the soil will wash away.

Try this to learn about slopes—Fill an aluminum pie pan with soil. Hold it flat while you sprinkle water over it and see how much soil washes off. Then lift up one edge, so the surface is like a steep hill. Sprinkle water over the soil again and see how fast the soil washes away.



WHAT WIND DOES Water isn't the only thing that causes soil erosion. Wind often blows soil away. The amount of damage wind will cause depends on such things as how dry the soil is, how fine the particles are, and whether the soil is covered or bare.

Try this to learn about wind—Put a pan of soil in front of a fan. Do this where the dust will not hurt anything. See how much dust blows away if the soil is very dry and powdery. Then wet the soil and see how the erosion stops. Take another pan of soil like the one that was dusty. Cover it with grass clippings and see how different the results are.

EROSION CONTROL By now you have already guessed some of the ways to control erosion. Different soils need different methods. You can't do much to change how steep the land is or the amount of sand, silt, and clay in the

soil. And you can't keep the wind from blowing or the rain from falling. But you can do things to stop the destructive forces of wind and rain.

For example, organic matter worked into the soil will cut down erosion on steep slopes. Soils that are plowed or cultivated across the slope will not wash away as easily as the same soils that are cultivated up and down the slope. This is called contour farming and is common in many places. If the soil erodes easily, it helps to leave the surface rough.

Strip cropping is important in dry windy areas. Instead of leaving large fields bare to soak up rain for next year's crop, only narrow strips are left bare (see picture). This keeps the wind from blowing the soil away.

Plowing stubble or the remains of crops back into the soil is a good way

to prevent erosion. So is keeping the crop residues on the surface. Soil that is covered with plant growth does not usually erode easily. In nature, soil does not stay bare very long. It is soon covered with weeds and grass. They form a protective coat of leaves and roots. We can protect our soil by growing crops that cover it during the time of year when erosion may be bad.

There are many ways of conserving soil. One that is often overlooked is using enough fertilizer. If all other things are the same, a well fertilized soil will grow a better crop than one that is not fertilized. This means more money for the person using the soil and more organic matter to return to the soil to keep it healthy.

Wise use of our soil means plenty of food for us and for those who come after us. This is conservation.

By C. B. Harston, Extension Soils Specialist, Washington State University