

CHAPTER 10 Weathering and Soil Formation

SECTION 4 **Soil Conservation**

BEFORE YOU READ

After you read this section, you should be able to answer these questions:

- Why is soil important?
- How can farmers conserve soil?

Why Is Soil Important?

You have probably heard about endangered plants and animals. Did you know that soil can be endangered, too? Soil can take many years to form. It is not easy to replace. Therefore, soil is considered a nonrenewable resource.

Soil is important for many reasons. Soil provides nutrients for plants. If the soil loses its nutrients, plants will not be able to grow. Soil also helps to support plant roots so the plants can grow well.

Animals get their energy from plants. The animals get energy either by eating plants or by eating animals that have eaten plants. If plants are unhealthy because the soil has few nutrients, then animals will be unhealthy, too.

Soil also provides a home, or *habitat*, for many living things. Bacteria, insects, mushrooms, and many other organisms live in soil. If the soil disappears, so does the habitat for these living things. ✓

Soil is also very important for storing water. It holds water that plants can use. Soil also helps to prevent floods. When rain falls, the soil can soak it up. The water is less likely to cause floods.

What does soil provide?	Why is it important?
Nutrients	
Habitat	
Water storage	

If we do not take care of soils, they could become unusable. In order to keep our soils usable, we need to conserve them. **Soil conservation** means protecting soils from erosion and nutrient loss. Soil conservation can help to keep soils fertile and healthy.

STUDY TIP

Compare Create a chart that shows the similarities and differences in the ways that farmers can help conserve soil.

READING CHECK

1. Explain Why is soil important for animals?

TAKE A LOOK

2. Identify In the table, fill in the reasons that nutrients, habitat, and water storage are important.

SECTION 4 Soil Conservation *continued*

How Can Soil Be Lost?

Soil loss is a major problem around the world. One cause of soil loss is soil damage. Soil can be damaged if it is overused. Overused soil can lose its nutrients and become infertile. Plants can't grow in infertile soil.

Plants help to hold water in the soil. If plants can't grow somewhere because the soil is infertile, the area can become a desert. This process is known as *desertification*.

EROSION

Another cause of soil loss is erosion. **Erosion** happens when wind, water, or gravity transports soil and sediment from one place to another. If soil is not protected, it can be exposed to erosion.

Plant roots help to keep soil in place. They prevent water and wind from carrying the soil away. If there are no plants, soil can be carried away through erosion. ✓

READING CHECK

3. Describe How do plant roots prevent erosion?

How Can Farmers Help to Conserve Soil?

Farming can cause soil damage. However, farmers can prevent soil damage if they use certain methods when they plow, plant, and harvest their fields.

CONTOUR PLOWING

Water that runs straight down a hill can carry away a lot of soil. Farmers can plow their fields in special ways to help slow the water down. When the water moves more slowly down a hill, it carries away less soil. *Contour plowing* means plowing a field in rows that run across the slope of a hill.



Contour plowing helps water to run more slowly down hills. This reduces erosion because _____

TAKE A LOOK

4. Identify Fill in the blank line in the figure to explain how contour plowing reduces erosion.

SECTION 4 Soil Conservation *continued*

TERRACES

On very steep hills, farmers can use terraces to prevent soil erosion. *Terraces* change one very steep field into many smaller, flatter fields.



Terraces keep water from running downhill very quickly.

NO-TILL FARMING

In *no-till farming*, farmers leave the stalks from old crops lying on the field while the newer crops grow. The old stalks protect the soil from rain and help reduce erosion.



The stalks left behind in no-till farming reduce erosion by protecting the soil from rain.

COVER CROPS

Cover crops are crops that are planted between harvests of a main crop. Cover crops can help to replace nutrients in the soil. They can also prevent erosion by providing cover from wind and rain.

CROP ROTATION

If the same crop is grown year after year in the same field, the soil can lose certain nutrients. To slow this process, a farmer can plant different crops in the field every year. Different crops use different nutrients from the soil. Some crops used in crop rotation can replace soil nutrients.

Critical Thinking

5. Infer What do you think is the reason farmers use terraces only on very steep hills?

Critical Thinking

6. Apply Concepts How can crop rotation affect the number of plants that soil can support?
