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Weathering and Soil Formation • Section Summary

How Soil Forms *READ AND ANNOTATE*

Guide for Reading

- What is soil made of, and how does soil form?
- How do scientists classify soils?
- What is the role of plants and animals in soil formation?

ANSWER Q'S ON FRONT COVER OF BOOKLET

Soil is the loose, weathered material on Earth's surface in which plants can grow. **Bedrock** is the solid layer of rock beneath the soil.

Soil is a mixture of rock particles, minerals, decayed organic material, air, and water. The decayed organic material in soil is **humus**, a dark-colored substance that forms as plant and animal remains decay. Humus helps create spaces in soil for air and water that plants must have. The **fertility** of soil is a measure of how well the soil supports plant growth.

Soil texture depends on the size of individual particles. The largest soil particles are gravel. Next in size are sand particles, followed by silt particles. Clay particles are the smallest. Texture is important for plant growth. Plants can "drown" for lack of air in clay soil, and they may die from lack of water in sandy soil. The best soil for growing most plants is **loam**, which is soil that is made up of about equal parts of clay, sand, and silt.

Soil forms as rock is broken down by weathering and mixes with other materials on the surface. It is constantly formed wherever bedrock is exposed. Soil formation continues over a long period, and gradually soil develops layers called horizons. A **soil horizon** is a layer of soil that differs in color and texture from the layers above or below it. The top layer, the A horizon, is made up of **topsoil**, a crumbly, dark brown soil that is a mixture of humus, clay, and other minerals. The next layer, the B horizon, often called **subsoil**, usually consists of clay and other particles washed down from the A horizon, but little humus. Below that layer is the C horizon, which contains only partly weathered rock.

Scientists classify different types of soil into major groups based on climate, plants, and soil composition. The most common plants found in a region are also used to help classify the soil. Major soil types in North America include forest, prairie, desert, mountain, tundra, and tropical soils.

Soil teems with living things. **Some soil organisms make humus, the material that makes soil fertile. Other soil organisms mix the soil and make spaces in it for air and water.** Plants contribute most of the organic remains that form humus. The leaves that plants shed form a loose layer on the ground called **litter**. Humus forms in a process called decomposition, in which organisms that live in the soil turn dead organic material into humus. The organisms that break the remains of dead organisms into smaller pieces and digest them with chemicals are called **decomposers**. Fungi, bacteria, worms, and other organisms are the main soil decomposers. Earthworms do most of the work of mixing humus with other materials in soil. Earthworms and burrowing animals also help aerate, or mix air into, the soil.

Soil Formation