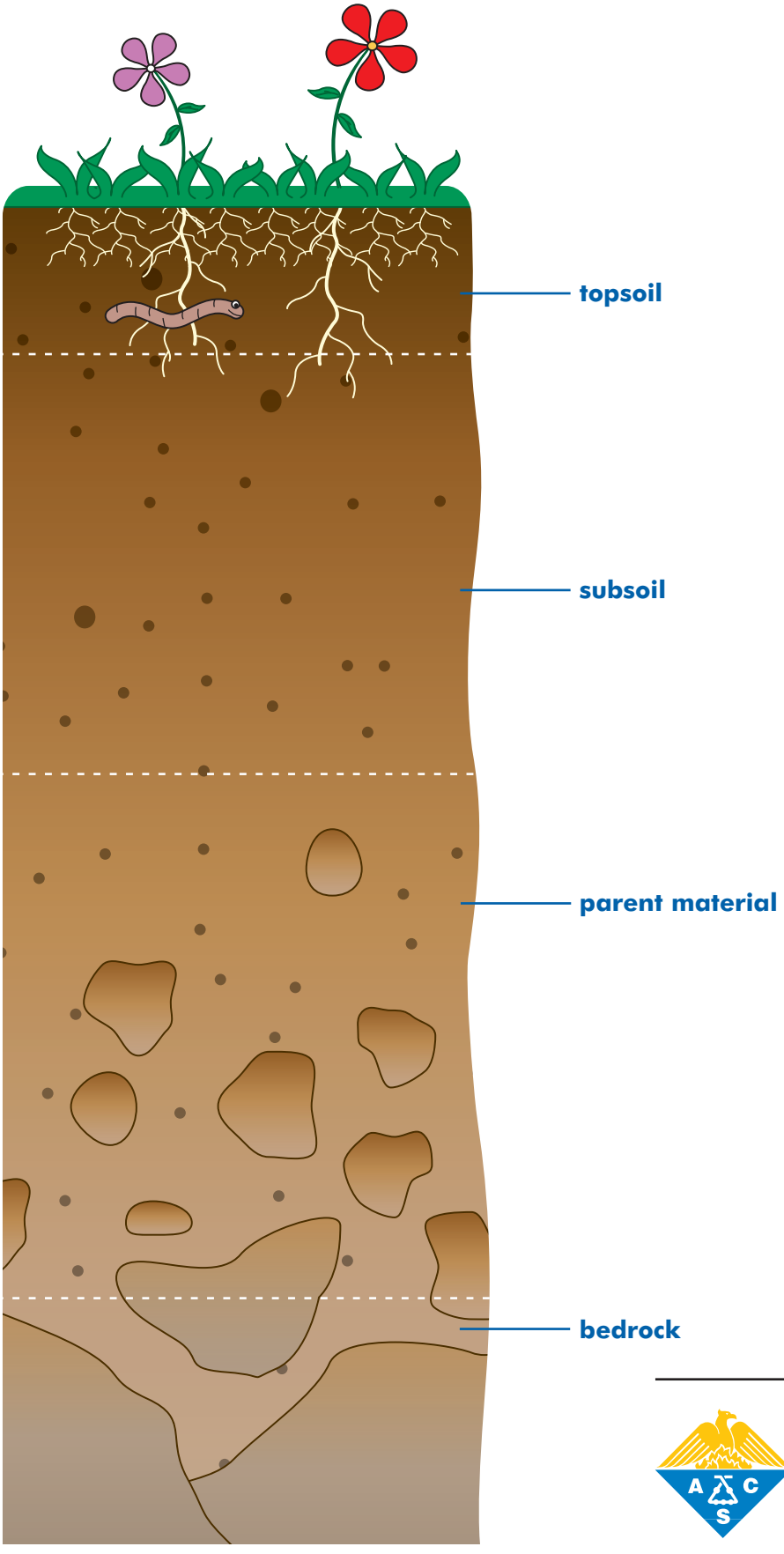
Dynamic Soil



Have you thought about the soil under your feet? It is much more than broken up rock mixed with plant and animal material. What you find in the soil, or its composition, depends on factors such as temperature and climate, types of rocks that made it, location and landscape of the area, plants and organisms that live on it and in it, and age of the soil.

Topsoil

The layers of the soil are called horizons. The uppermost horizon is called the topsoil layer. The topsoil layer is a mixture of sand, silt, clay, and broken down organic matter, called humus. Humus is rich, highly decomposed organic matter mostly made from dead plants, crunched-up leaves, dead insects, and twigs.

Topsoil is the home of living things and the materials that they make or they change. Some examples of organisms that live in the soil are small animals like moles and earthworms, bacteria, and fungi that mix and break down materials into nutrients for plants, animals, and insects. Earthworms are especially important because they dig through the soil and give the roots of plants places to grow, and make spaces for water and air to get into the soil.

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Subsoil

The topsoil is relatively thin but it has most of the soil's nutrients. Just below the topsoil layer is the subsoil layer. The subsoil may contain some broken down organic matter but it is mostly made of weathered rocks and clay minerals. Plants send their roots into both of these layers to find water stored in the soil and to find nutrients that they need to grow and to use for photosynthesis.

At least 16 elements are needed for plants to grow well. Plants get three of them mostly from water and air. They are carbon, hydrogen, and oxygen. Plants get the rest from the soil. Six of these elements are known as macronutrients. *Macro-* means large, and these are elements plants need in larger quantities for proper growth. The six macronutrients are: nitrogen, phosphorus, potassium, calcium, magnesium, and sulfur. There are micronutrients that plants also need but *micro-* means small and these are needed in very small amounts. Some examples are iron, zinc, and copper. Sometimes we put fertilizers into the soil to be sure the plants have all they need to grow. Fertilizers are like vitamins for plants.

Parent Material

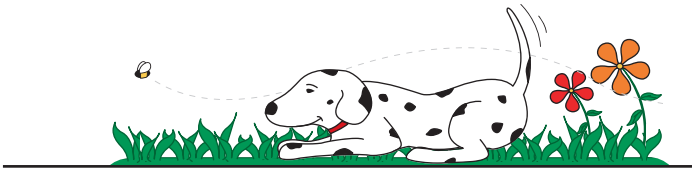
Just below the subsoil horizon is a horizon that can be very thin or very thick depending on where you are. This horizon has no organic material; it is just rock and minerals. This layer is parent material, which when exposed to wind and rain and broken into smaller pieces forms the soil above.

Bedrock

And the final soil layer is hard bedrock. Bedrock is not thin, but can run kilometers deep into the Earth. An event like an earthquake can push a piece of bedrock to the surface where it is exposed to wind and rain, and becomes parent material starting the soil-making process again.

We need soil to do many important things like grow plants, keep the ground cool, and collect rain. Soil helps recycle water, rocks, and minerals.

Soil is dynamic and full of life! Soil is one of our most important natural resources. It provides us plants and trees for food, and gives us a place to grow our crops.



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