From Bedrock to Soil
Objectives

- **Describe** the source of soil.
- **Explain** how the different properties of soil affect plant growth.
- **Describe** how various climates affect soil.

I. The Source of Soil

A. What Is Soil? Soil is a loose mixture of small mineral fragments, organic material, water, and air that can support the growth of vegetation.

B. Parent Rock Because soils are made from weathered rock fragments, the type of soil that forms depends on the type of rock that weathers. The rock formation that is the source of mineral fragments in the soil is called parent rock.

C. Bedrock The layer of rock beneath soil

II. Soil Properties

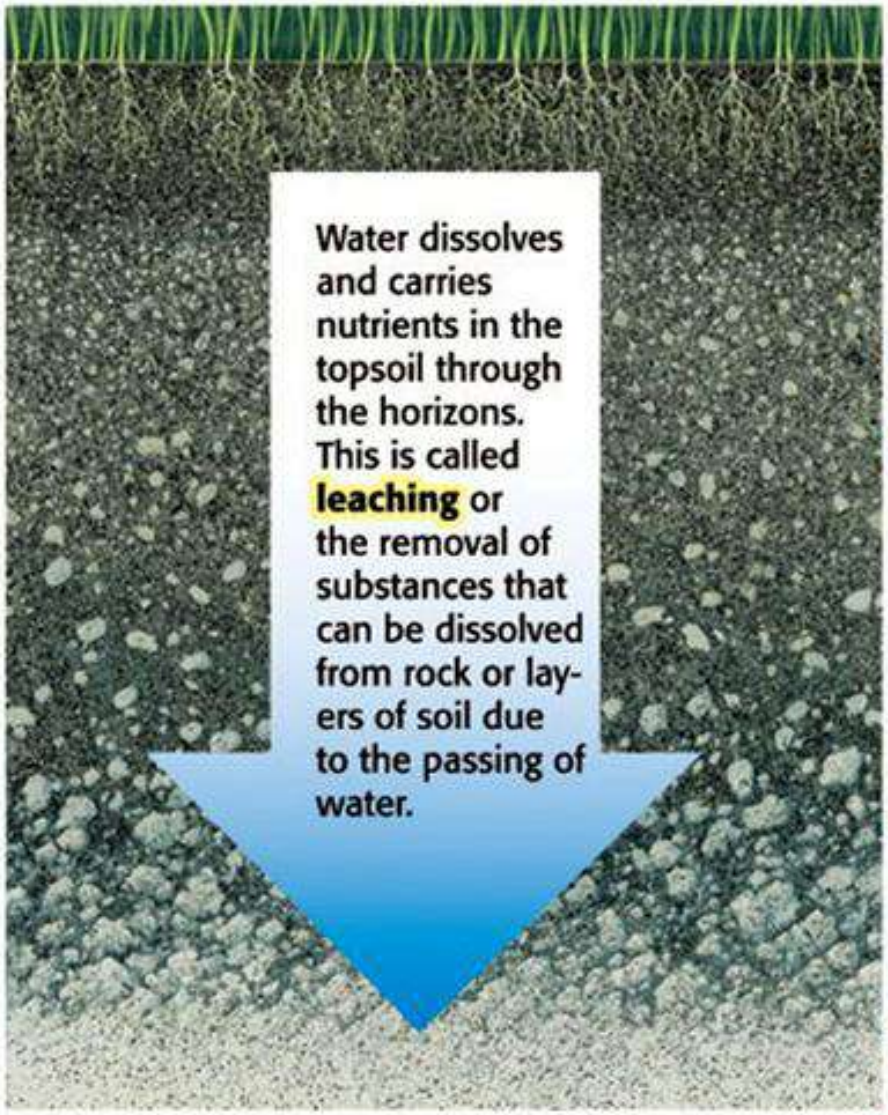
A. Soil Texture and Soil Structure Soil texture is the soil quality that is based on the proportions of soil particles. Soil structure is the arrangement of soil particles.

B. Soil Fertility A soil's ability to hold nutrients and to supply nutrients to a plant is described as soil fertility.

C. Soil Horizons Soil layers are called horizons. Soil horizons are illustrated on the next slide.

D. Soil pH Soils can be acidic or basic. The pH scale is used to measure how acidic or basic a soil is.

Soil Horizons



A — This horizon consists of the topsoil. Topsoil contains more humus than any other soil horizon. Soil in forests often has a O horizon. This layer is made up of litter from dead plants and animals.

E — This horizon experiences intense leaching of nutrients.

B — This horizon collects the dissolved substances and nutrients deposited from the upper horizons.

C — This horizon is made of partially weathered bedrock.

R — This horizon is made of bedrock that has little or no weathering.

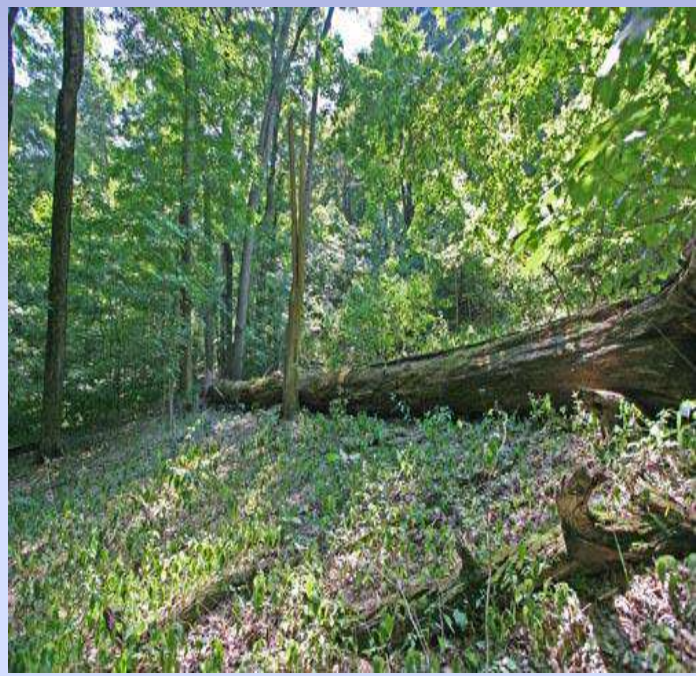
III. Soil and Climate

A. Tropical Rain Forest Climates Tropical rain forest soils are nutrient poor. The heavy rains in this climate leach nutrients from the topsoil into deeper layers of soil.

B. Desert Climates In desert climates there is a low rate of chemical weathering. A low rate of weathering means soil is created at a slower rate.

C. Temperate Forest and Grassland Climates Temperate soils are some of the most-productive soils in the world.

D. Arctic Climates In arctic climates, chemical weathering occurs very slowly. So, soil formation also occurs slowly.



Critical Thinking Time

1. Which type of climate would leaching be more common- tropical rain forest or desert?
2. Although artic climates are extremely different from desert climates, their soils may be somewhat similar. Explain why.

What on Earth Made This?

http://www.pbs.org/teachers/connect/resources/4321/preview

Living Soil Lab

- Bacteria and fungi are major decomposers of organic material in soil.
- Put 25 drops of distilled water on each side of a bread slice.
- Sprinkle one spoonful of soil on the bread.
- Place in a plastic bag and label.
- Put the bread in a dark place for 5-7 days.
- Repeat for all soil samples.
- One slice of bread will only have water on it and will serve as the control.
- After 5-7 days, observe, describe, and analyze the patterns of mold grown in each sample using a hand lens.