SOIL FORMATION AND COMPOSITION

Soil Formation

- **Soil** forms as rock is broken down by **weathering** and mixes with other material on the surface.

- **Bedrock** is the solid layer of rock beneath the soil.

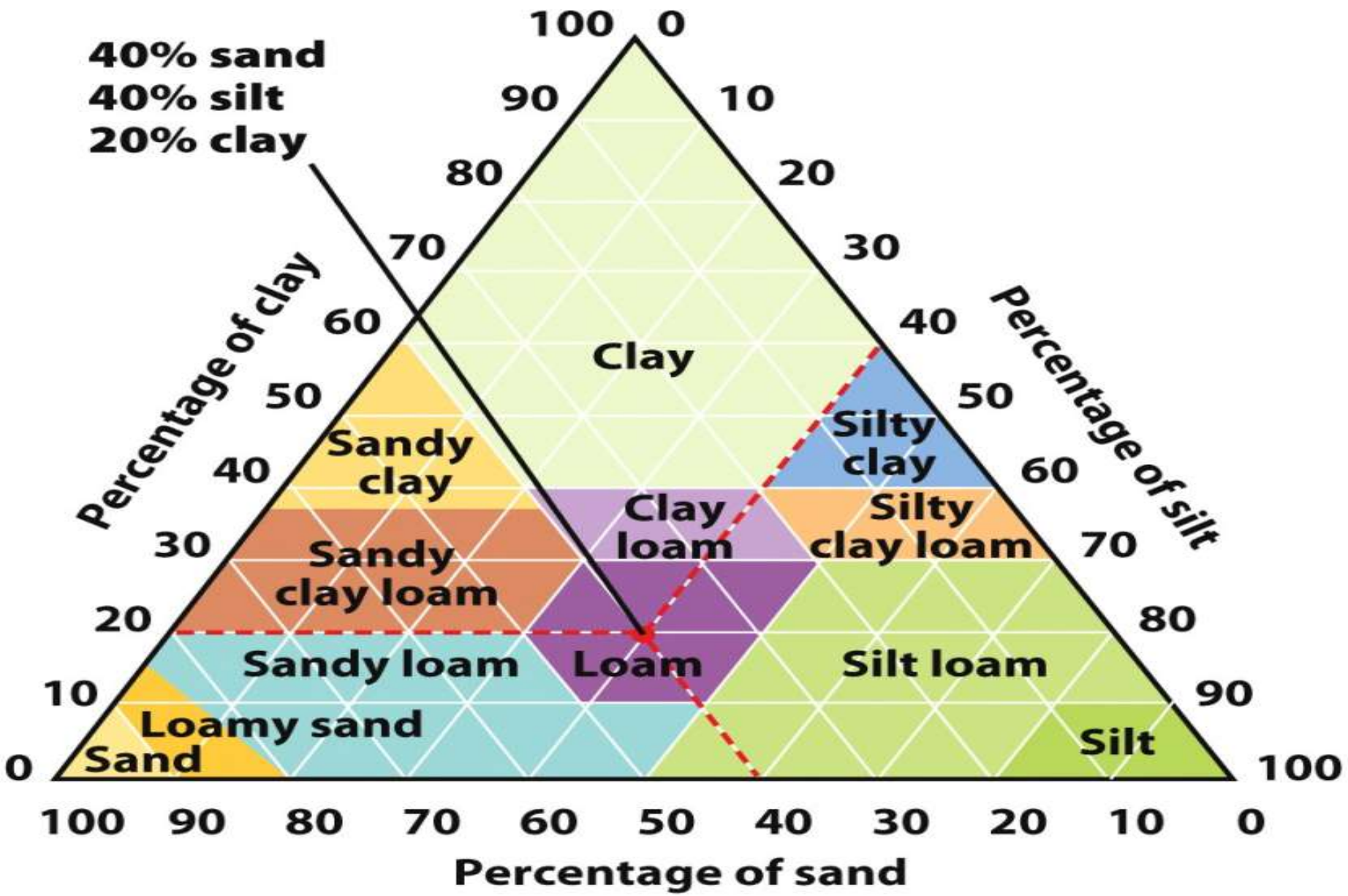
Soil Composition

- Soil is **more** then just particles of weathered bedrock.

- Soil is a **mixture** of rock particles, minerals, decayed organic material, air and water.

Soil Texture

- Soil that is made up of equal parts of clay, sand, and silt is called **Loam.**



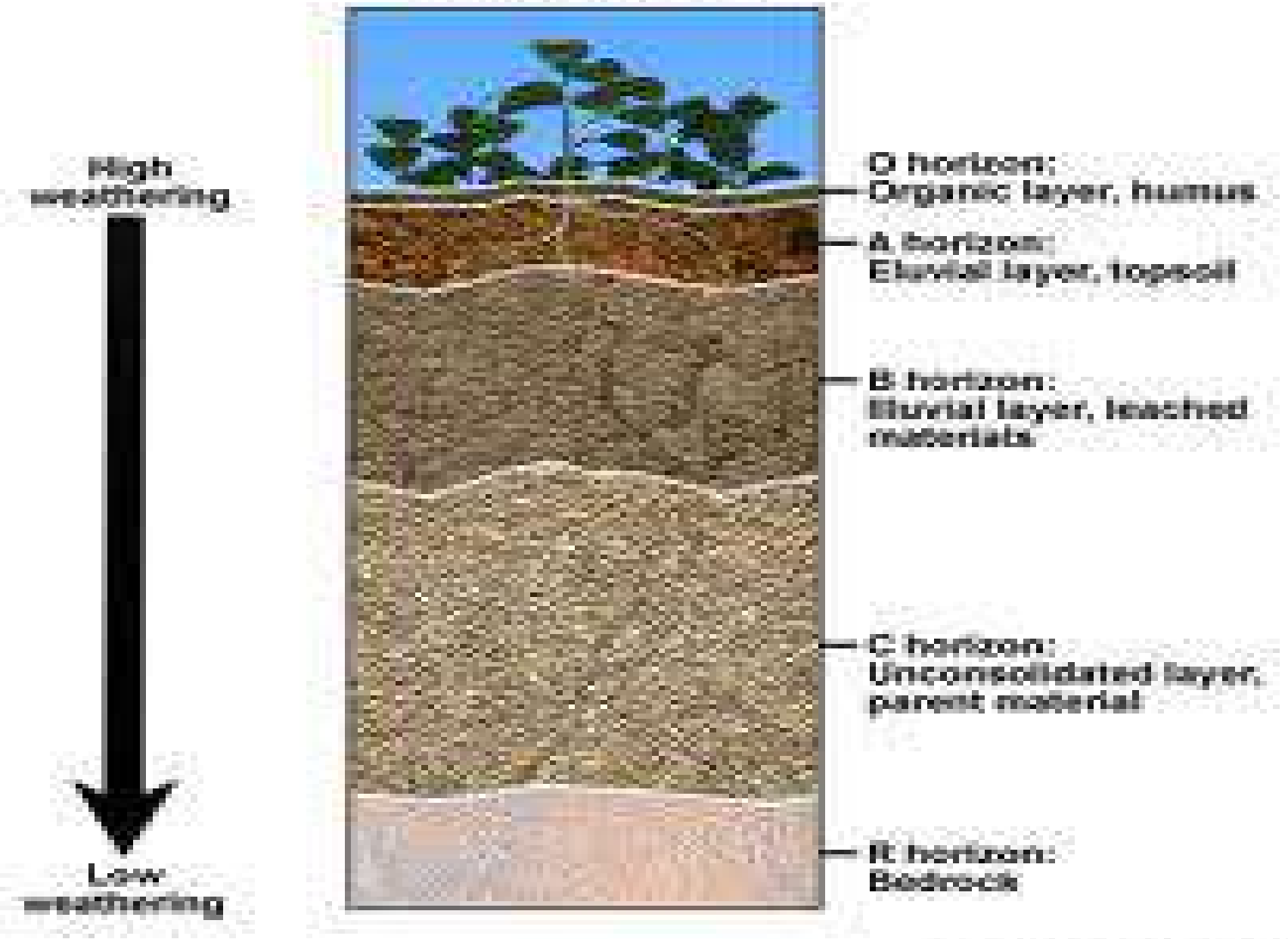
Soil texture chart

Figure 8.22a
Environmental Science

Soil Horizon

- A **Soil Horizon** is a layer of soil that differs in color and texture from the layers above or below it.
- **A horizon** is made op of topsoil.
- **B horizon** is called subsoil, consisting of clay and other minerals.
- **C horizon** contains only partly weathered rock.

Soil Horizons



SOIL

The Rate of Soil Formation

- The rate at which soil forms depends on the **climate** and type of **rock.**

- **Weathering** occurs most rapidly in areas with a warm rainy climate, as a result, soil develops more quickly in these areas.

Life in Soil

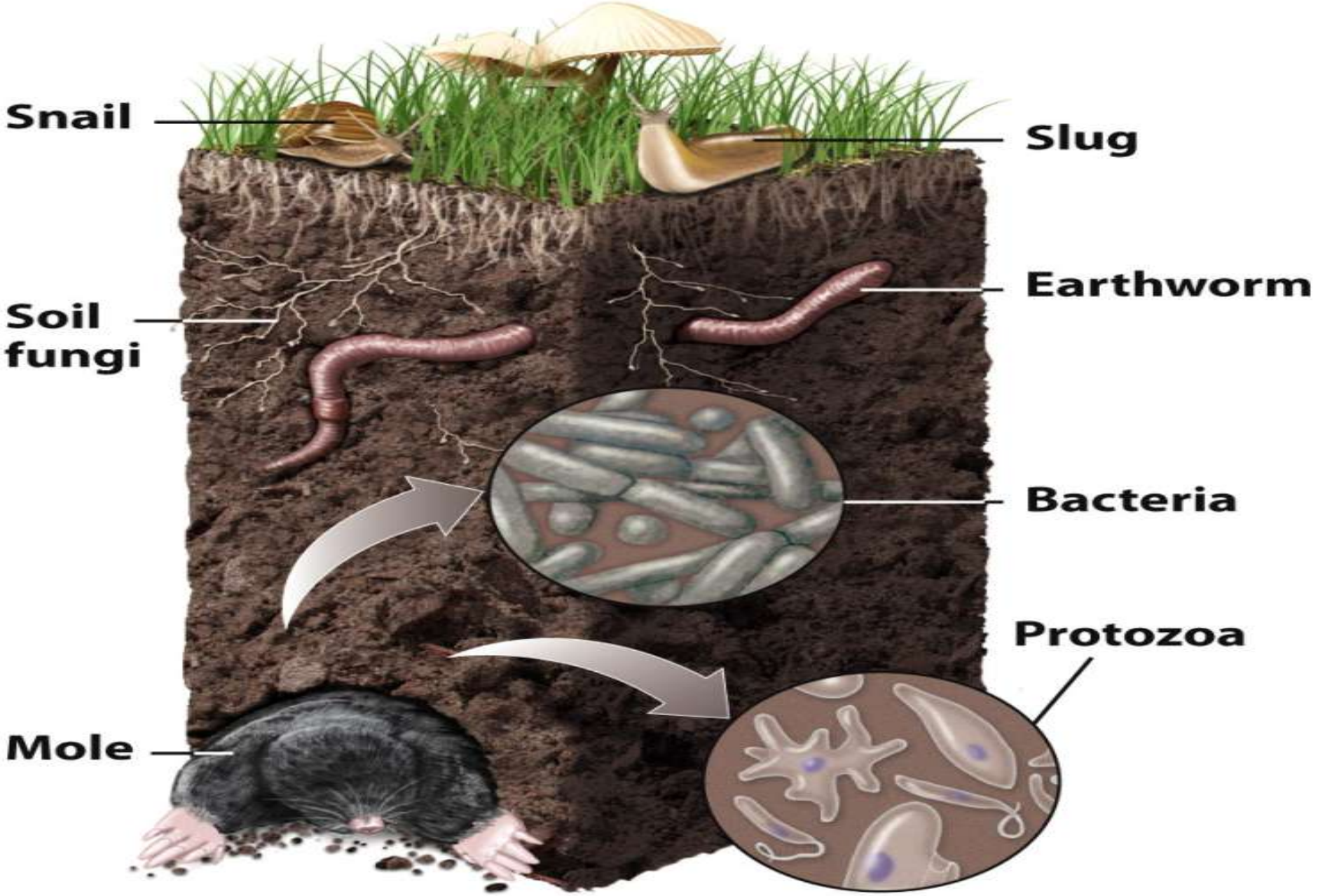


Figure 8.24
Environmental Science

Life in Soil

- Some soil organisms mix the soil and make space in it for **air** and **water.**
- Other soil organism make **humus** the material that makes soil fertile.
- Fertile soil is rich in **nutrients** that plants need, such as **nitrogen** and **phosphorus**.
- Humus forms in a process called **decomposition**.

Life in Soil

- Organisms that live in soil turn dead organic material into **humus**.

- **Decomposers** are the organisms that break the remains of dead organisms into smaller pieces and digest them with chemicals.
- Fungi, protist, bacteria and worms are the main soil decomposers.

Soil Types in the United States

- Tundra soils
- Northern Coniferous forest soils
- Prairie soils
- Mountain soils
- Southern Coniferous forest soils
- Desert soils
- Tropical soils


Tundra
Entisol - Inceptisol
Northern Coniferous Forest
Spodosol
Marine
West Coast
Forest
Mountain Vegetation
Short
Grass
Prairie
Tall Grass Prairie
Mixed Coniferous - Deciduous
Forest
Cool Shrub
Desert
Mollisol
Alfisol
Deciduous Forest
Aridisol
Sclerophyllus
Woodland
Warm Shrub
Desert
Southern Coniferous Forest
Ultisol

Environmental Problems Related to Soil

- - soil erosion
- - sediment deposits
- - pollution (overuse, pesticides, fertilizers, salt, toxic metals)
- - deforestation
- - desertification
- - depleting aquifers (water table)
- - loss of biodiversity
- - crop production / plowing / tilling
- - lack of nutrients (N, P, K)