

Soil ecosystem

This mural shows a supersized picture of all that goes on in our soil.

A soil horizon is a layer of soil. This soil profile has five horizons: O, A, B, C and R. Only well-developed or healthy soil has all of these layers. The measurements listed give the typical depth of each of these layers. Horizon O, for example, is only two inches deep.

O is the organic layer, present when forest litter is decomposing on the surface. Forest litter (fallen leaves, twigs, limbs and decomposing plants and animals on the forest floor) cushions the blow of falling raindrops, slows runoff and filters out pollutants. The humus (residue formed by these decomposing materials) is full of important nutrients.

O horizon (humus)

A is the topsoil layer. If plants and animals are in the soil, topsoil is formed. Minerals dissolve or leach here as water passes through. This layer is usually the most productive - plowed and planted for crops. Tree roots help hold the soil in place and filter pollutants from the water passing through. When the roots die, air and water can take over their spaces. Tree roots also break up rock, so it can weather into new soil. Other plants (grasses, mosses and shrubs) also hold soil in place and help filter out contaminants.

A horizon (topsoil)

B is the subsoil layer where most of the minerals collect from the topsoil. Creatures on the move (burrowing animals, rodents, insects and earthworms) create air and water spaces in the soil and help mix the soil. When these creatures die, they get "recycled" into organic material to enrich the soil. Microbes (blown up to thousands of their actual size) are examples of the many types of microscopic plants and animals (such as bacteria, algae, fungi and protozoa) that live in the soil. They break down organic matter into simpler nutrients so plants can grow.

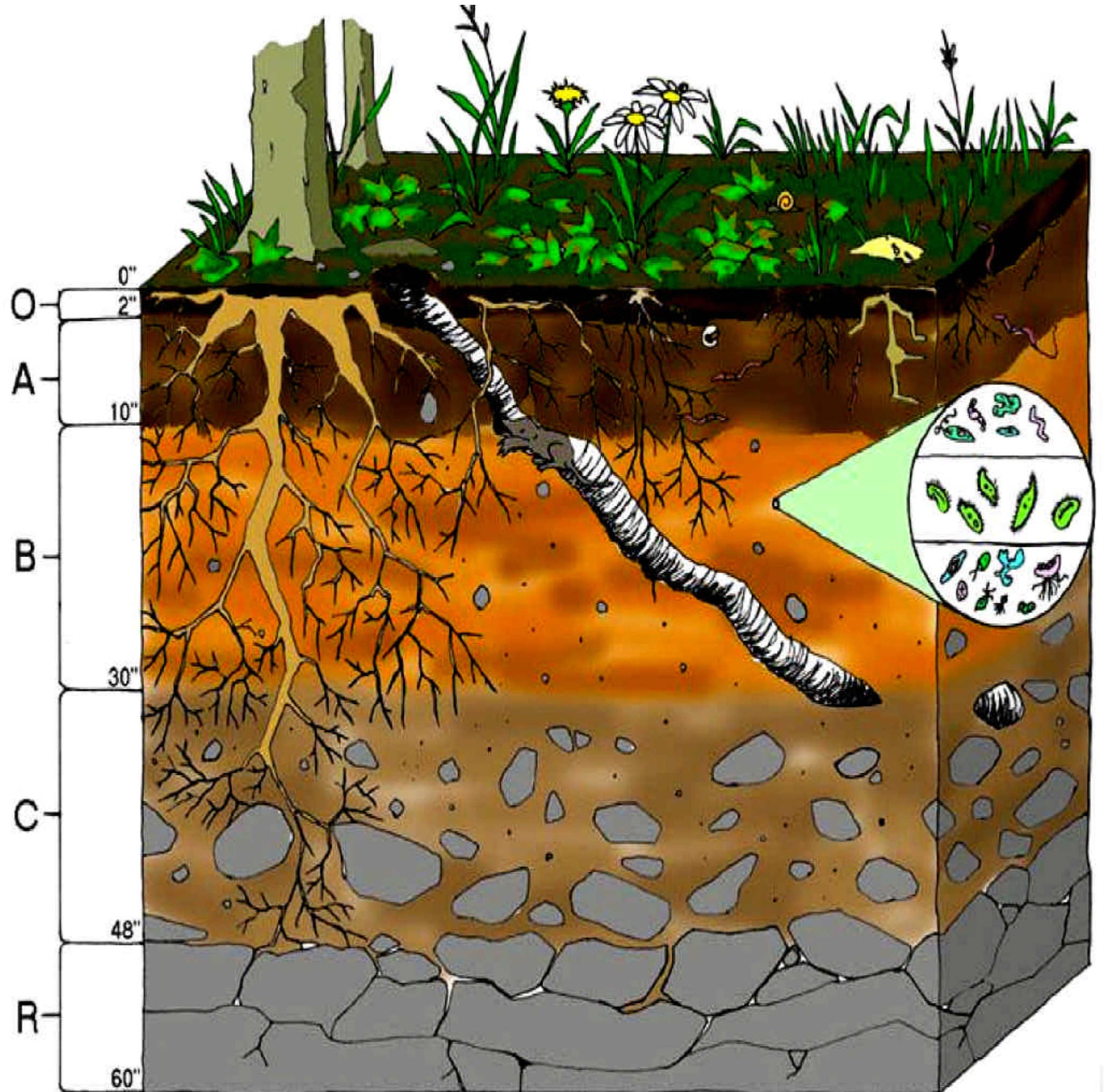
B horizon (subsoil)

C is a transition layer between soil and the minerals that will eventually become soil. Partially disintegrated mineral particles (parent material) are found here.

C horizon (regolith)

R is the bedrock layer (the solid layer of rock on top of or beneath the soil). Over a very long period of time, this rock fractures and weathers, making new soil.

R horizon (bedrock)



adapted from the "This Land Is Our Land" exhibit at the 2002 Kentucky State Fair, artwork by Danny FitzGerald