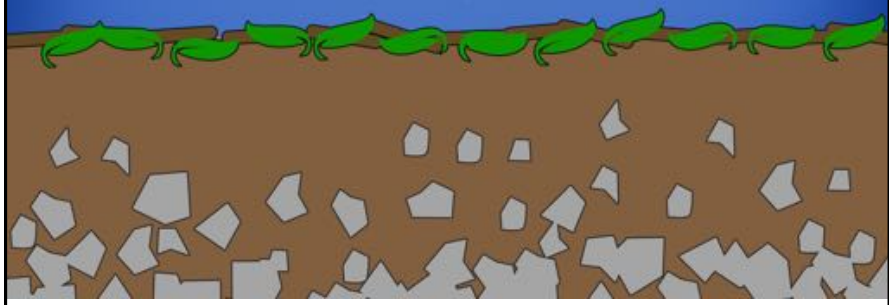
The Soil Resource

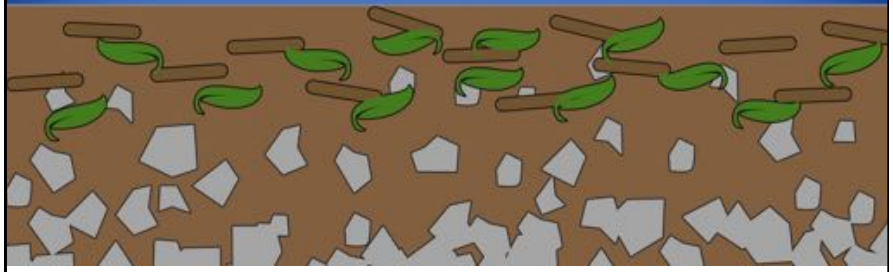
Intro to Environmental Science

DartmouthX

Mineral material in soil comes from weathered rocks below the soil



Organic material comes from decomposing plant matter above the soil



Soil forming factors:

- parent material
- climate
- topography
- organisms
- time

Parent material:
rock from which inorganic components of a soil are derived

Climate:
long-term accumulation of weather events in a given environment

Topography:
surface slope and arrangement of a landscape

Organisms:
the plants, animals and microrganisms in a soil

Time:

soils develop and mature as they age

Horizon:

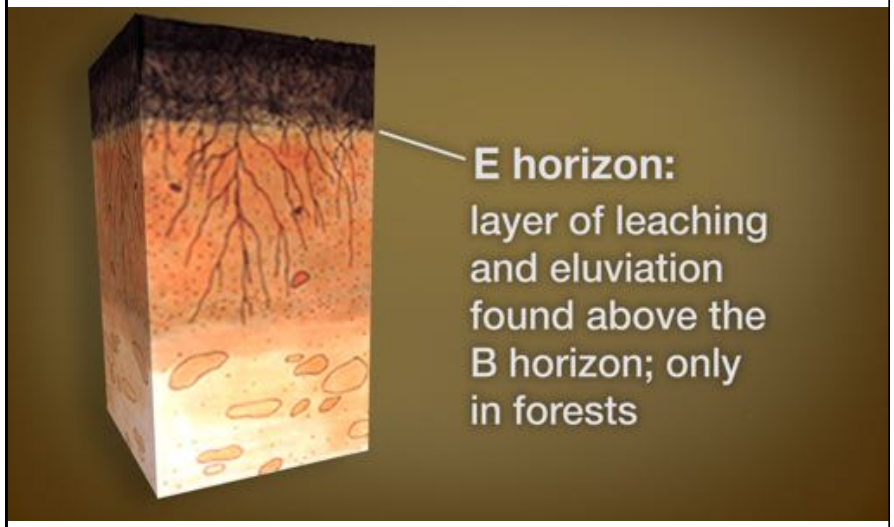
a layer of soil material with different characteristics than layers above and below

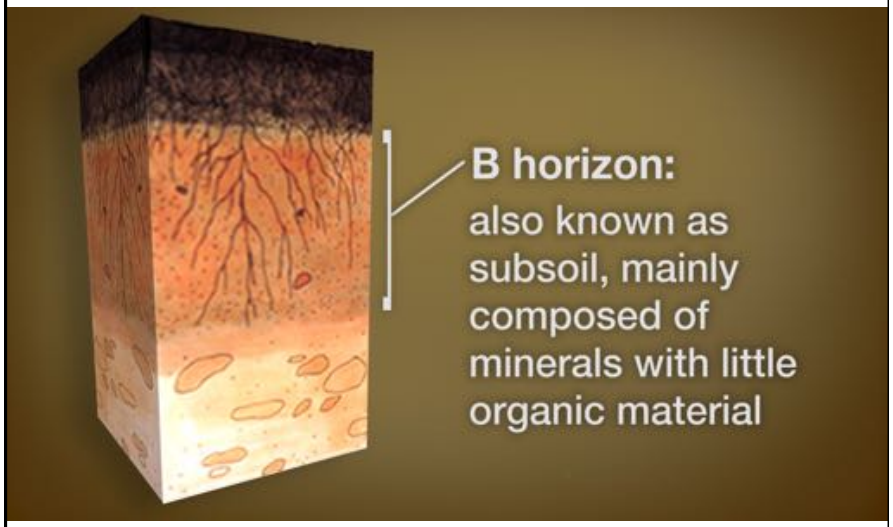
O horizon:

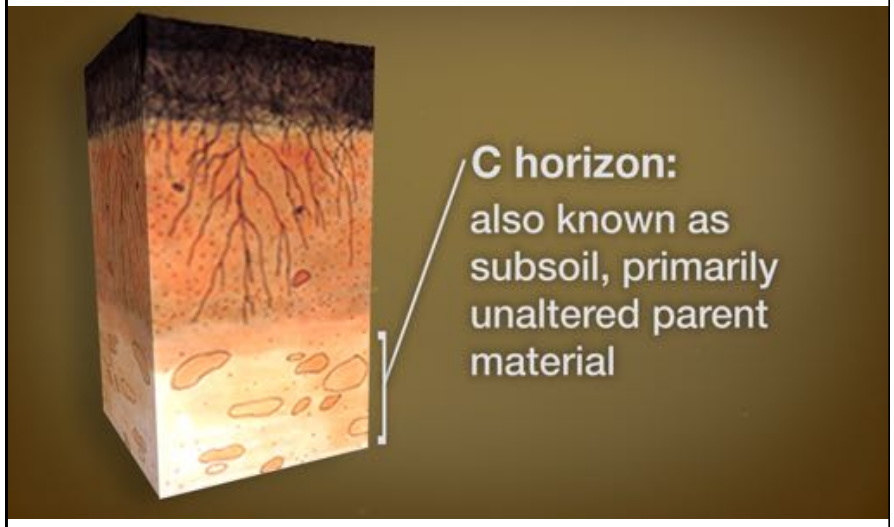
layer of organic material in various stages of decomposition

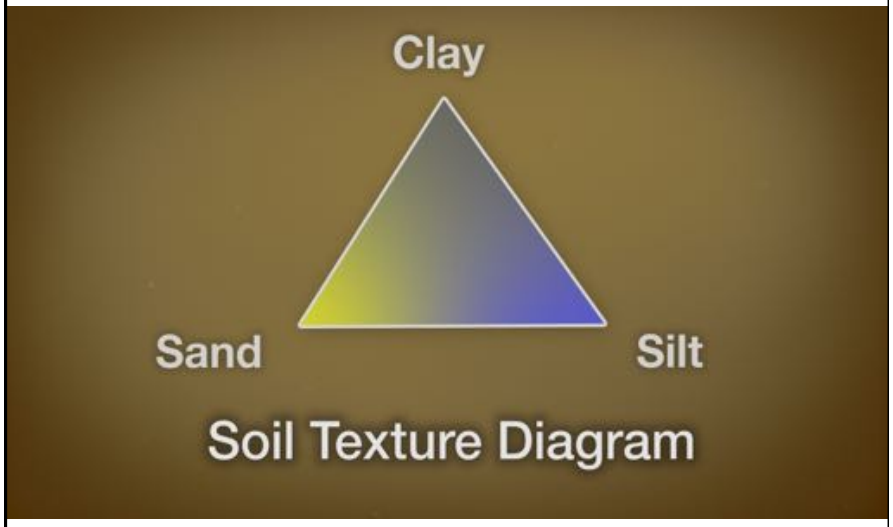
A horizon:

layer of mixed organic and mineral material


E horizon:
layer of leaching and eluviation found above the B horizon; only in forests


B horizon:
also known as subsoil, mainly composed of minerals with little organic material


C horizon:
also known as subsoil, primarily unaltered parent material


Clay
Sand
Silt
Soil Texture Diagram

Porosity:

how quickly a soil drains

Loam:

40% silt
40% sand
20% clay

Cation-exchange capacity (CEC):

ability of a soil to adsorb and release positively charged ions (cations)

Base saturation:

the proportion of soil bases to soil acids

Soil bases:

calcium
magnesium
potassium
sodium

Soil acids:

aluminium
hydrogen

Detrimental for plant growth

Base saturation =

$$\frac{\text{soil bases}}{\text{soil bases + soil acids}}$$

Soil degradation:

loss of ability to support plant growth

Soil erosion:

removal of top layers of soil by water or wind