

# The Nature of Soil

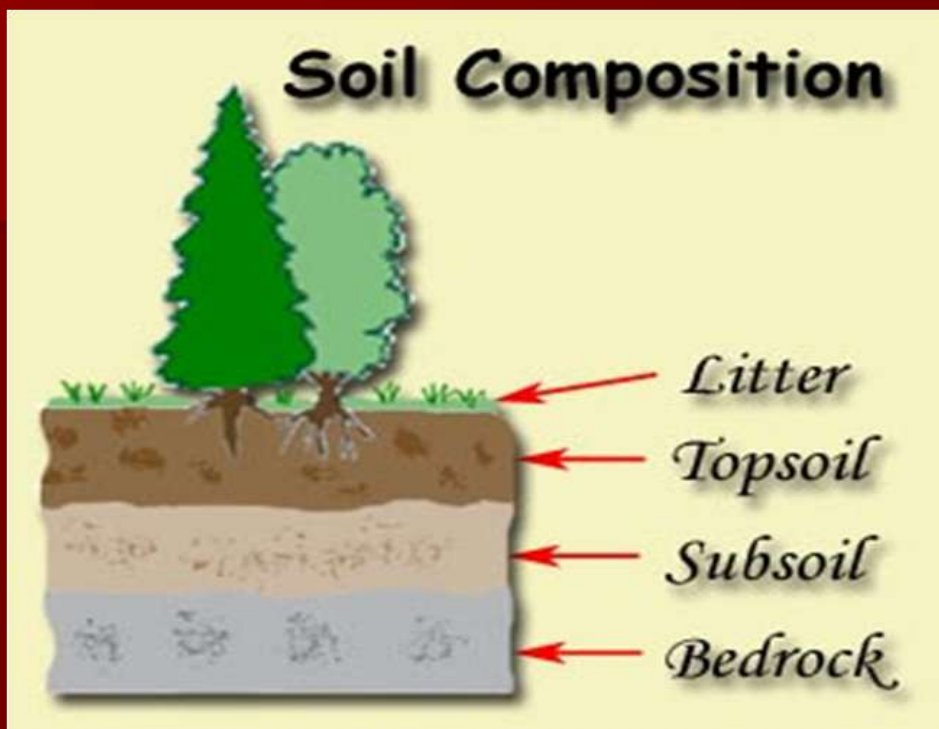
**Found in grassland and forests regions of  
Canada (pages 97-99)**

## Formation of Soil

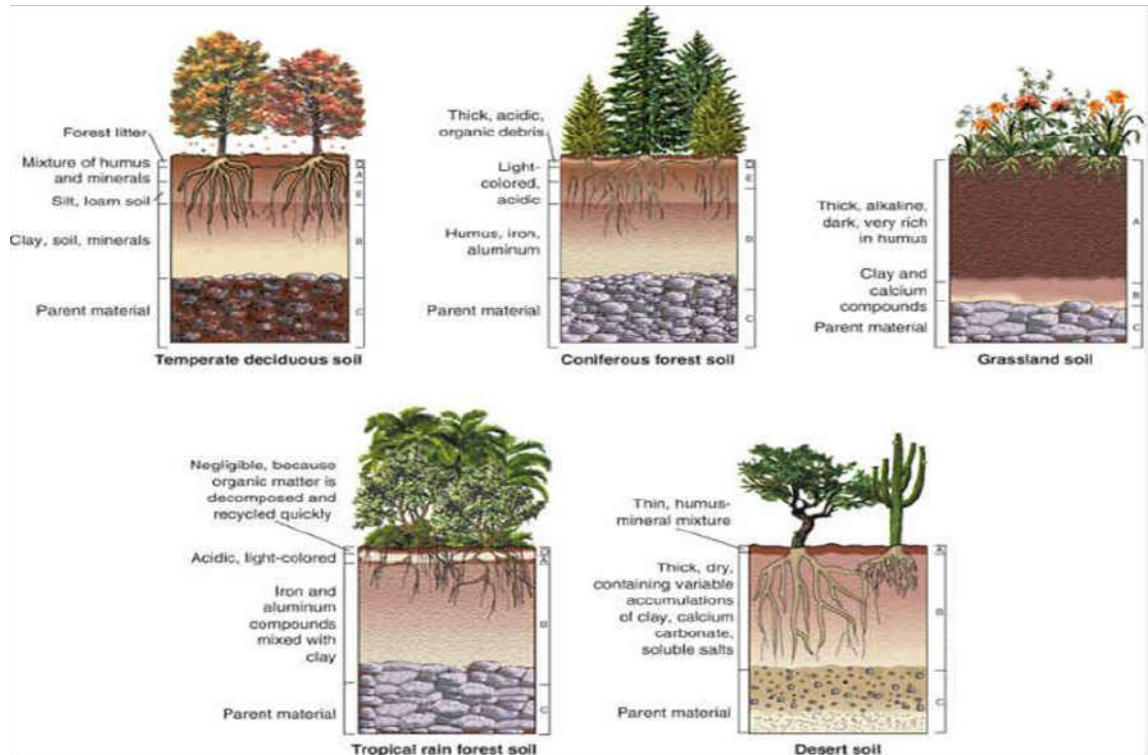
- Bedrock is broken down by the process of weathering.
- Also, lichens colonize on bare rock and secrete an acid which helps to dissolve the rock .
- Dead lichen adds organic content to soil.
- Mosses and small plants anchor in the primitive soil, die and add organic content.
- Small animals live in the soil. Humus content of soil increases and more plants grow. (p. 98)

# Components of Soil

- **Litter**- partially decomposed organic matter
- **Topsoil layer**
  - > Small particles of rock mixed with decaying plant and animal matter (humus)
  - > Rich in minerals, air and water
  - > Dark soil
- **Subsoil**
  - More stones and rocks than topsoil
  - > Small amount of organic matter
  - > Large amounts of minerals
- **Bedrock** - solid rock, no soil



## Comparing Soil Profiles



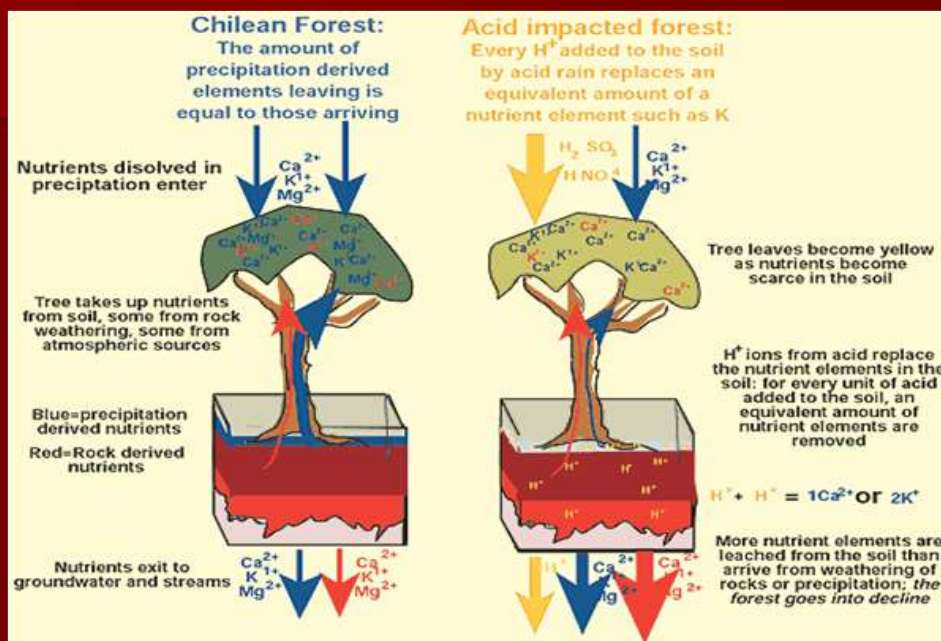
## Factors Affecting Soil?

- soil fertility (how fertile the soil is)
- water storing capacity
- soil pH (how acidic or basic)
- Salinity (how much salt is present)
- porosity to air (oxygen, nitrogen, and carbon dioxide – its ability to “dissolve”)

# How can soil be altered?

- 1. Leaching
  - > Process of ground water seeping downward, taking nutrients and organic material with it.
  - > It can cause problems such as erosion and poor plant growth
- Humans can cause leaching
  - > Deforestation – don't prevent runoff
  - > Construction - changes the "water table"
  - > Farming -causes different vegetation, and changes to the water table

## Leaching Examples



- 2. Pesticide Use
  - > Putting artificial chemicals into the soil
- 3. Acid Deposition
  - > Fossil fuels burned by humans release sulfur dioxide and nitrogen oxide which combined with water to forms acids
  - > Acid compounds dissolve in water or snow and fall to earth; therefore pH becomes lower
  - > Lowers pH in soil which increased leaching (nutrients dissolve better at lower pH)
  - > Fertility Decreases/Plants grow slowly (less leaching, less nutrients)
  - > Plants are more vulnerable to disease
  - > Plant populations change

- 4. Fertilizer Use
  - > Adding artificial compounds to the soil that are high in nitrates, phosphates, and potassium (essential for plant growth)
  - > Runoff may cause eutrophication

- 5. Pollutants

- > Toxins spilled into the ground to distort plant growth and soil composition
  - Cars, snow clearing/ salting, sewage, litter, oil spill, etc.
- > Increased toxins causes disease
- > May caused Leaching and acid deposition

