

Soil Connections

The Soil Base

- ⇒ Climate creates wet and dry climate soils
- ⇒ True soil consists of four main parts
- ⇒ If one of these parts is missing the material cannot be considered soil

(1) Minerals

- ⇒ The minerals in soil come from rock known as **parent material**
- ⇒ Erosion breaks down this rock into smaller particles of sand, silt and clay
- ⇒ Many of these minerals (**calcium, phosphorous and potassium**) are nutrients needed by plants to grow

(2) Bacteria and Organic Matter

- ⇒ When plants and animals die, they are decomposed by **bacteria, fungi and worms**
- ⇒ As the organic matter decomposes, nutrients are released into the soil
- ⇒ Decaying organic matter forms **humus**
- ⇒ Humus provides nutrients and moisture for plants and gives the soil its dark colour

(3) Air

- ⇒ Plants need air surrounding their roots
- ⇒ A high humus level helps produce air pockets in the soil
- ⇒ Air pockets are also created by worms, insects and small animals that tunnel through the soil

(4) Moisture

- ⇒ Water dissolves nutrients in the soil and is then taken up by plants through their roots
- ⇒ Water is also essential in the chemical and physical processes that weather rock and decay organic matter

Soil Profiles

- ⇒ A basic soil profile contains **topsoil**, **subsoil** and **parent material**
- ⇒ New materials are added at the bottom of the soil by the weathering of the parent material
- ⇒ At the same time, organic matter is added at the top forming **top soil**
- ⇒ A well balanced mixture of sand, silt, clay and humus is called **loam**
- ⇒ Topsoil formation is a very slow process
 - ↳ It may take 6000 to 10,000 years to form between 15 to 100 cm of topsoil

leaching ⇒ removal of minerals from soil by water as it moves downward through the soil

- ⇒ occurs in wet climates
- ⇒ makes the soil infertile

calcification ⇒ process by which water carrying dissolved minerals moves upwards through the soil

- ⇒ as the water evaporates at the surface, the minerals are left behind
- ⇒ calcification occurs in dry climates