

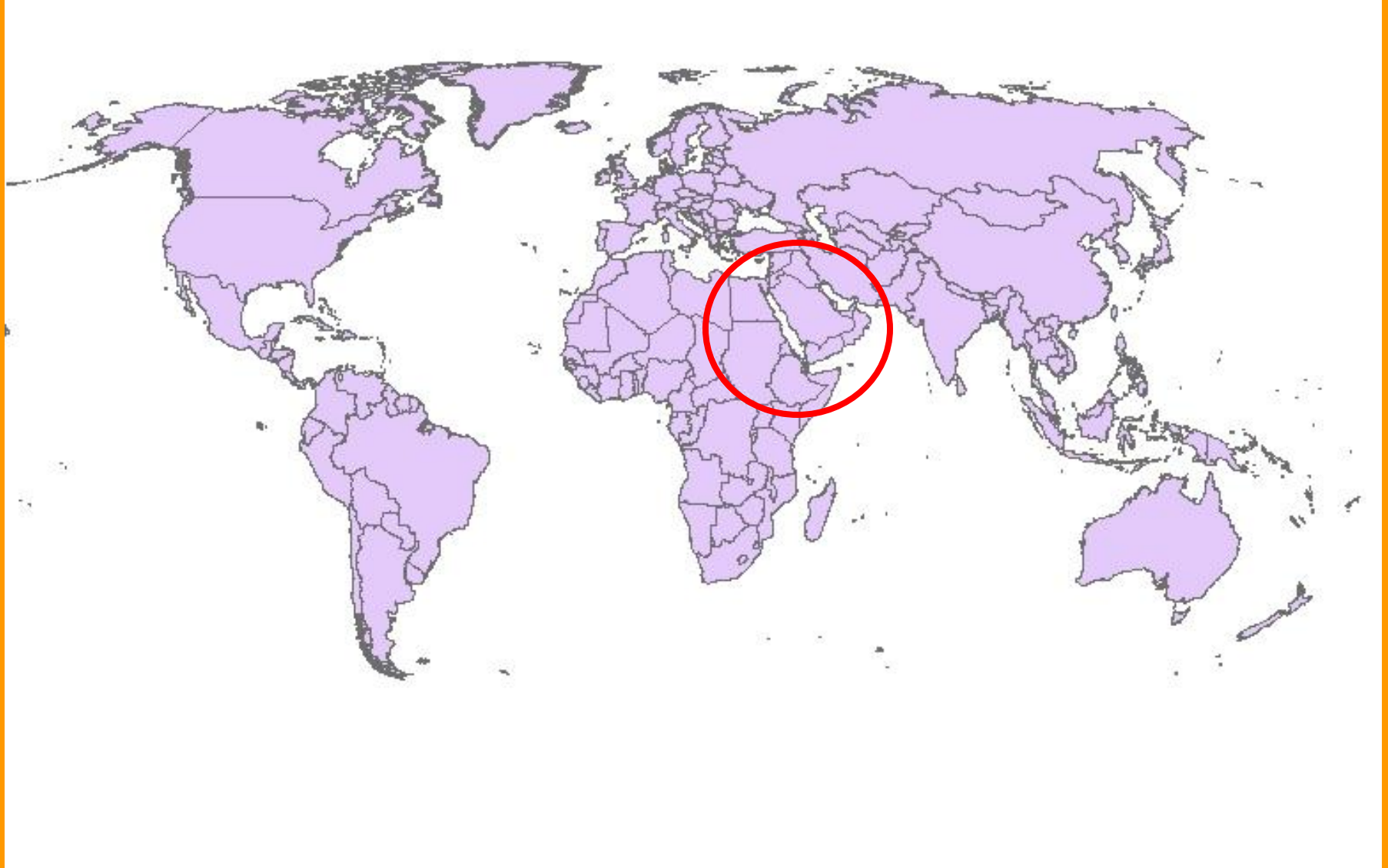


Soils



Courtesy of Greenwood College School

- Great civilizations begin because of agriculture ... good soils and access to fresh water
- Ancient Egyptian and Mesopotamian societies are great examples





Nile River

Tigris River

Mediterranean Sea

Syria

Iraq

Iran

Egypt

Red Sea

Saudi Arabia

Persian Gulf





Egyptian civilization grew up around the fertile Nile and its Delta

The Sahara, with its poor sandy soil, is largely uninhabited.

90% of Egypt's population lives with 20 km of the Nile River or its delta.

- Toronto is Canada's economic, political and cultural powerhouse, it started as an farming centre
- 51% of Canada's class 1 farmland can be seen from the top of the CN tower; most of it is paved or built on



Soil is made up of **four** main parts:

1. Minerals:

- come from broken up rock, which is called **parent material**
- provides **nutrients**

2. Bacteria and organic material

- partly decomposed plants and animal material
- forms **humus**, which provides **nutrients**



3. Air

- need air around roots
- created by worms, insects, small animals

4. Moisture

- water dissolves nutrients so can be taken up by plants
- helps to break down rock and decay organic material

Soil Profile:

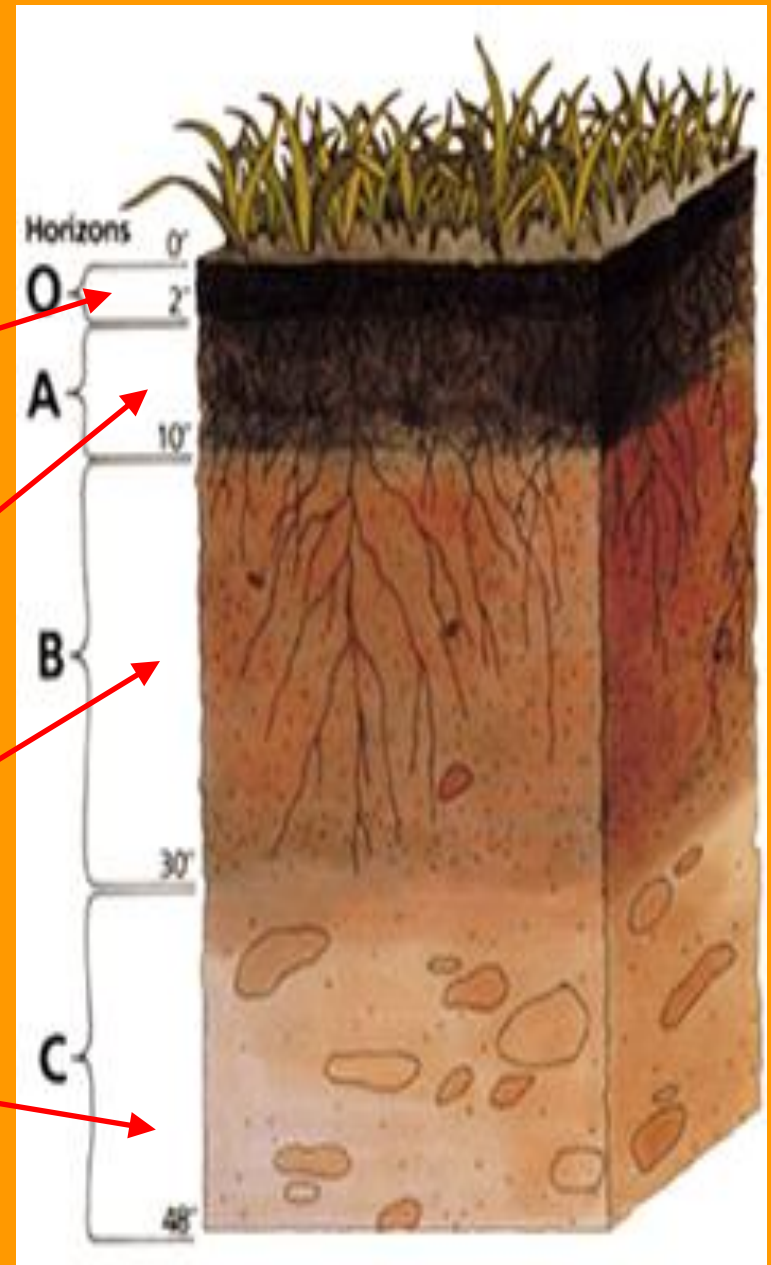
A cross section of soil from the surface to the bedrock.

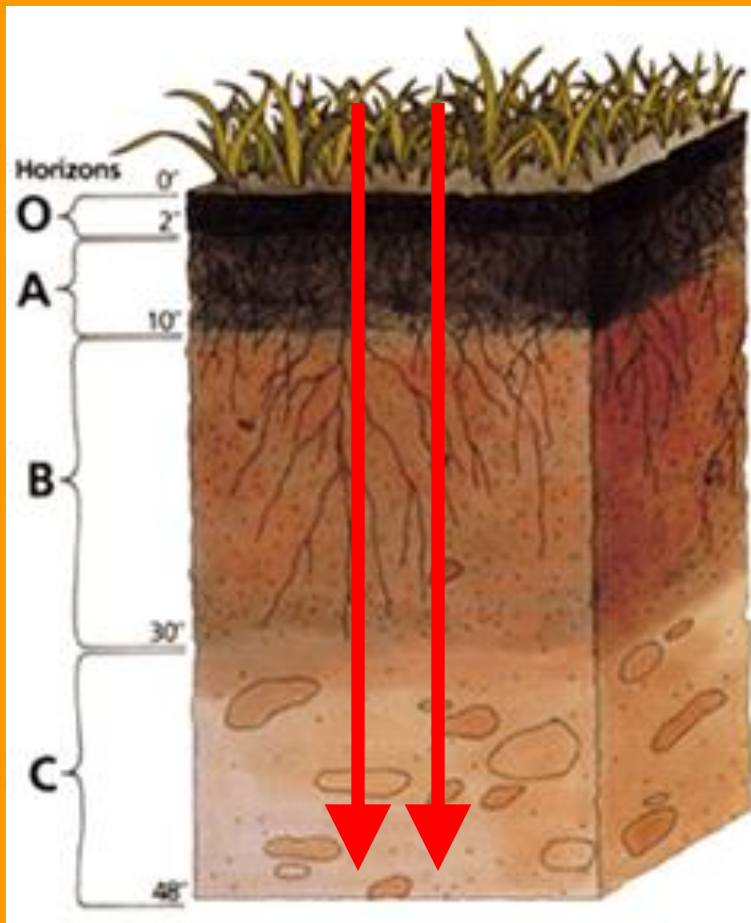
O – organic material – former living material (many plants) in the process of breaking down

A horizon – topsoil – rich in organic materials; takes hundreds of years to produce; actually quite thin; made of *humus* (the living part of soil)

B horizon – sub-soil; mainly inorganic material (broken up rock) with some organic material

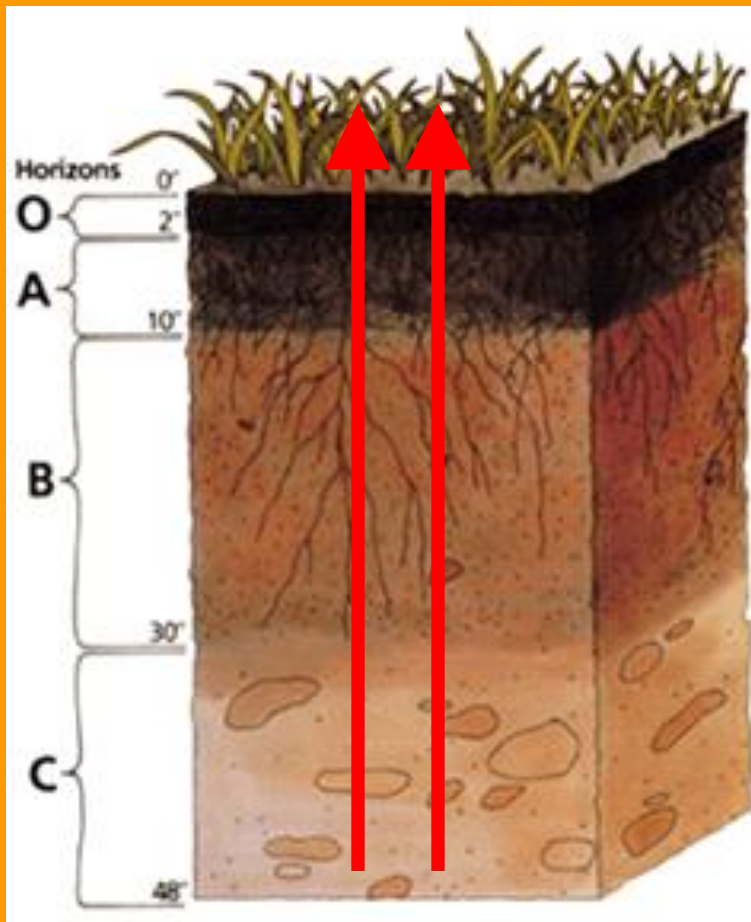
C horizon – parent material – broken up bedrock or solid bedrock





Leaching

- where there is a lot of precipitation
- downward movement of water through soil
- dissolves nutrients and carries downward,
- in very wet climates, nutrients carried so deep that plant roots can't reach them



Calcification

- in drier climates
- water drawn to surface by **capillary action** (similar to water being drawn up in a paper towel)
- water evaporates
- minerals/nutrients that are dissolved in the soil water are carried to the surface and deposited there as the water evaporates
- can lead to rich topsoil – full of nutrients
- In extreme cases so much is deposited that the soil becomes poisonous to plants