UNIT 4.2 SOIL AND SOIL FORMATION

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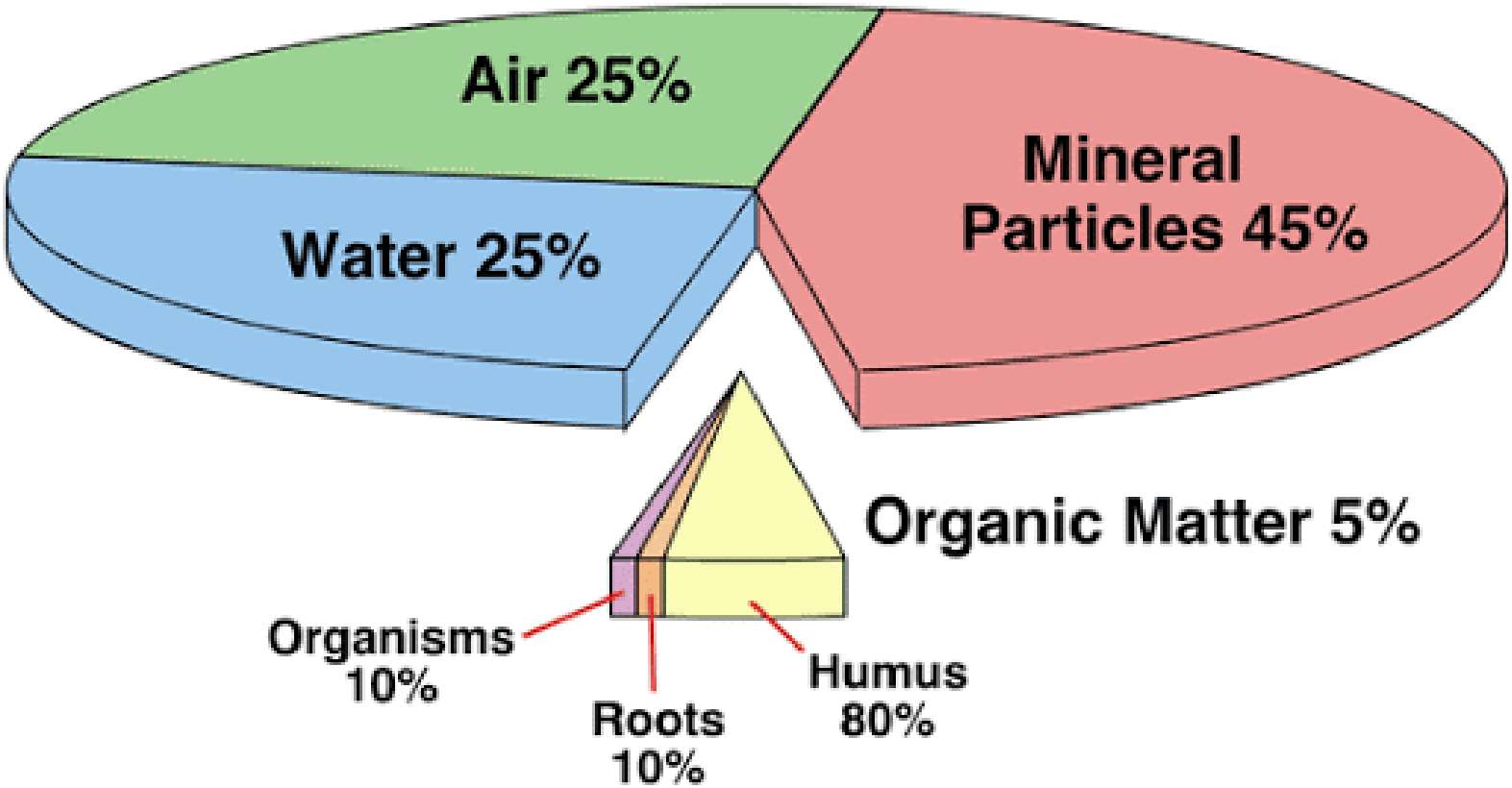
INTRODUCTION TO SOIL

- Soil is a slowly renewed resource that provides most of the nutrients needed for plant growth and also helps purify water.
- Soil is a thin covering over most land that is a mixture of rock, minerals, decaying organic matter, water, air and billions of living organisms most of them microscopic decomposers.

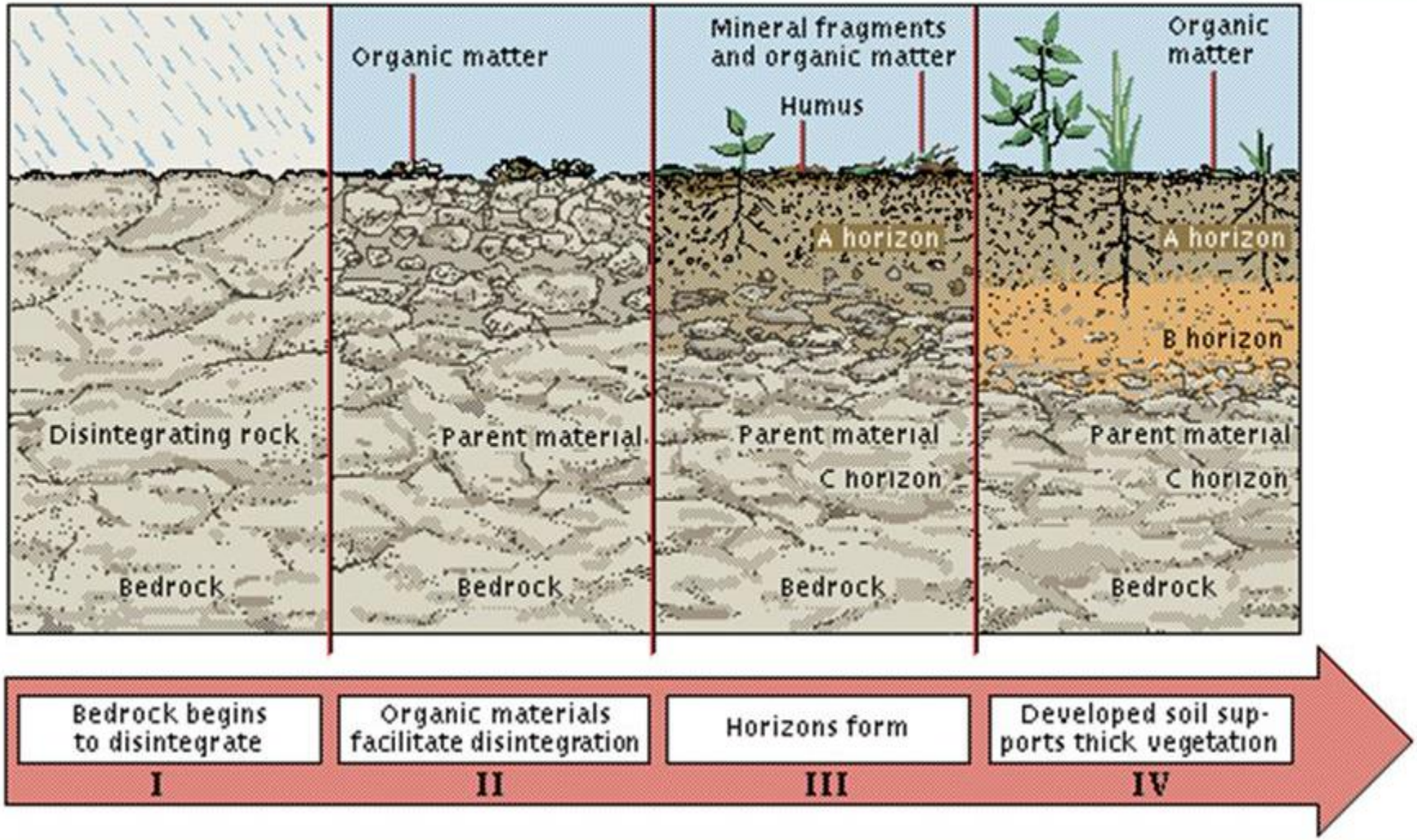
COMPONENTS OF SOIL



HOW SOILS ARE FORMED?

- The parent rock is weathered forming a loose layer of broken material known as the regolith (parent rock).
- True soil results from the addition of water, air, decaying and living organic matter.
- Horizons start to develop and finally a mature soil is formed with A, B and C horizons.

HOW SOILS ARE FORMED?



SOIL FORMING FACTORS?

- Time.
  - Fully mature soils can take thousands of years to produce sufficient depth for farming.
- Parent material.
  - When a soil develops from an underlying rock its supply of minerals is dependent on that parent rock.
- Climate.
  - ***Moisture***, temperature and wind are important climatic factors that influence soil formation. Climate affects the rate of weathering of the parent material with the most rapid breakdown in hot climates with a high rainfall.
  - ***Precipitation*** influences the type of vegetation which provides the organic material and humus for the formation of soil.
  - ***Temperature*** affects the length of the growing season and the supply of humus.

SOIL FORMING FACTORS?

- **Organisms.**
  - The greater the amount of vegetation on the soil the greater the amount of organic matter in that soil.
  - The most fertile soils are those rich in humus produced by soil organisms.
  - When plants die the bacteria return the nutrients back into the soil.
  - Earthworms play a major role in converting organic matter into rich humus, improving soil fertility.
- **Relief.**
  - The direction the slope faces (its aspect) affects the amount of sun received.
  - North-facing slopes in South Africa are warmer than south-facing ones and are therefore drier with more evaporation.
  - The slope gradient also affects runoff – less water will infiltrate soil on steep slopes.