

MODULE 1/3

CHAPTER 13 ORGANISMS AND POPULATIONS

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ECOLOGICAL HIERARCHY

The hierarchy in the levels of organisms connected with ecological grouping of organisms is called **ecological hierarchy**.

An **organism** is the **smallest unit** of ecological hierarchy and **basic unit of ecological study**.

A group of individuals (members) of the same species living at one place (specific geographical area) constitute a **population**.

Biotic community is a group of organisms of different species that live in common area.

Biotic community = Animal community + Plant community + Microbial community

ECOSYSTEM

Ecosystem is defined as the segment of nature consisting of biological community and its physical environment both interacting and exchanging material.

Landscape

Biomes

Biosphere

Environment

ORGANISMS AND ITS ENVIRONMENT

Climate

- is the characteristic pattern of weather elements in an area

Habitat ----

- is the physical area covered by any organism.

Microclimate and Microhabitat :

- Sub-division of habitat

Ecological niche

- It is a specific part of habitat occupied by individuals

- The environmental factors are divided into two categories on the basis of their nature – abiotic & biotic factors.

TEMPERATURE

On the basis of temperature vegetation is divided into four groups:

Megatherms

Mesotherms :

Microtherms

Hekistotherms

WATER (euryhaline & stenohaline).

littoral zone

limnetic zone

photic zone

aphotic zone

benthic zone

LIGHT

SOIL

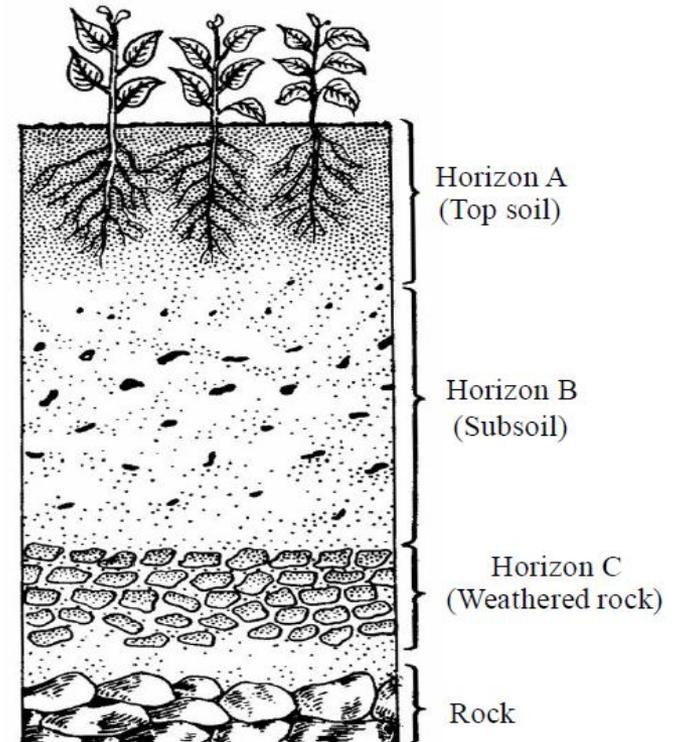


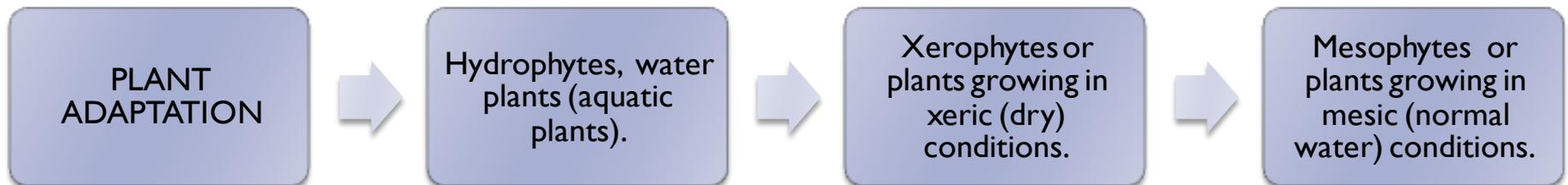
Fig. : Soil profile

RESPONSES TO ABIOTIC FACTORS



ADAPTATION

Plants and animals undergo special characteristic changes in order to live and adjust under prevailing environmental conditions which is called **adaptation**.



Xerophytes is divided into different types :

Name	Character	Example
Psammophyte	It grows in dry sandy soil near the river bank mesophytes.	<i>Prosopis, Acacia</i>
Lithophytes	They grow on rock soil, slope of Aravali hills.	<i>Aloe, Agave, Opuntia</i>
Chasmophyte	Grow in rock slit.	<i>Aloe, Agave, Poa, Aristida</i>
Halophyte	Grow in salty soil.	<i>Rhizophora, Avicennia, Sonneratia</i>
Epiphytes	They grow on other plant.	<i>Orchids</i>
Psychrophyte	They grow in cold soil.	<i>Rhododendron</i>

ANIMAL ADAPTATION

Animals adapt themselves for protection from predators, feeding habits, camouflage, mating, adjust to environmental stress conditions.

Desert lizard keep their body temperature fairly constant by behavioural means. They bask in the sun and absorb heat when their body temperature drops below the comfort zone, but move into shade when the ambient temperature starts increasing. Kangaroo rat excretes solid urine & can live from birth to death without drinking water thereby, conserving water.