Course - UG - H - BOT - CC - T - 09

Unit - 2

1) Describe the soil profile with diagram.

Ans. The soil profile is the vertical section of nature soil generally up to the depth of 2m or upto the parent material to show the sequences of horizons from the surface downwards in its undisturbed state. In general, soils have 4 main horizons —

A) an organic or O - horizon

and 3 mineral horizons —

B) A - horizon

c) B - horizon

D) C - horizon

Below these there is R - horizon. These horizons are further sub-divided.

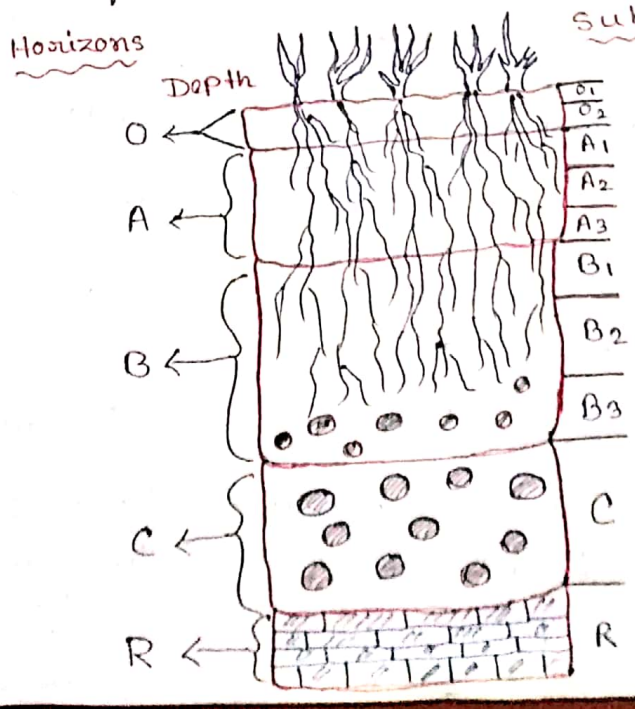

Fig → Soil profile showing different horizons.

A) O-horizon → This is the top layer of soil profile. This zone is well developed in forests but virtually is absent in grassland or deserts. This horizon is divided into sub-zones →

i) O_1-horizon (L-Horizon) → It is top most layer comprising of freshly fallen litter like dead leaves, twig, flowers, bark, fruits, seeds, animal remains, animal excreta etc. Hence this zone is also called L or Litter horizon.

ii) O_2-horizon (H-horizon) → It underlies the O_1-horizon, in which litter decomposition has started. There are numerous decomposers like bacteria, fungi present in this zone, thus the upperpart of this zone contains partially decomposed detoritus, hence it is also called Duff (detoritus) Horizon. The lower part of this layer contains completely decomposed amorphous organic matter i.e. humus, Hence this layer is often called H (Humus) horizon.

B) A-horizon → It is the top soil, situated beneath the O-horizon. This layer is comparatively darker in colour due to the

accumulation of humus. It is the zone of eluviation (leaching) from which the nutrients released as a result of decomposition are leached downward to B-horizon. The It is further divided into three sub-zones →

i) A_1 - horizon → It is the zone of humus incorporation with minerals of soil containing huge number of decomposers, thus the soil is enriched with organic matters and becomes dark in colour.

ii) A_2 - horizon → It is the zone of maximum eluviation (leaching). ~~eluvia~~ This zone contains less humus with low quantities of materials like oxides of Fe and AL etc. due to their fastest removal by eluviation.

iii) A_3 - horizon → This sub-layer is transitional between A and B-horizons and is not distinct.

c) B - horizon → It is also known as the zone of illuviation (collection of materials) where nutrients leached from the A-horizon are accumulated in this zone. This zone is further divided into 3 to subzones →

i) B_1 - horizon → This is a transitional zone to the A-horizon which appears

as a dark band containing organic matter leached out from the A-horizon.

ii) B_2 - horizon → This is the deeper coloured horizon of maximum precipitation of transported materials like clay minerals, Fe, AL, and organic matters.

iii) B_3 - horizon → This is a transitional zone to C-horizon, containing rock fragments stained by the leaches from the upper layers.

D) C-horizon → This is composed of gleyed layers with weathered material. It is rich in moisture with negligible biological activity.

E) R - horizon → This zone is comprised of unweathered parent rock or bed rock. It has no biological activity and even long roots cannot reach this zone.