Soil Profile (Soil Horizon)

A soil profile refers to the vertical section of soil exposed by digging a pit or making a cut into the ground. It reveals the various layers or horizons of soil, each with distinct characteristics in terms of colour, texture, structure, composition, and other properties. These layers, known as soil horizons, form due to the interaction of different processes over time, such as weathering, organic matter accumulation, and the movement of minerals and nutrients. Soil horizons are typically designated by letters (O, A, B, C, etc.) to denote their position within the soil profile and their specific properties. Each horizon represents a different stage or zone within the soil, ranging from the surface layer to deeper layers near the bedrock. Over time, the processes localised in the regolith — the layer of loose, solid material above the bedrock — gradually give rise to distinct layers within the soil, known as horizons. These horizons exhibit variations in their physical, chemical, and biological attributes, collectively defining a soil's unique profile, visible when the soil is vertically cut. Although the boundaries between these horizons are often indistinct, they form a continuous sequence within the soil profile. Let us now discuss various horizons of the soil in detail.

O horizon, characterised by significant amounts of organic matter in various stages of decomposition, marks the soil surface.

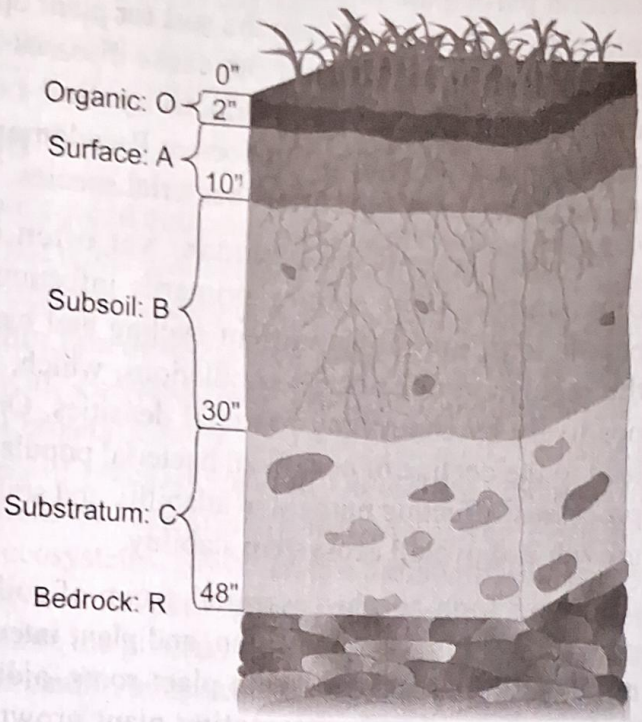
A horizon, referred to as the topsoil, constitutes the uppermost mineral layers, rich in humus and displaying a dark hue.

E horizon, situated between the A and B horizons, signifies a layer significantly depleted of minerals and/or organic content, resulting in a pale layer primarily composed of silicates (a region of extensive mineral leaching or eluviation).

B horizon, known as the subsoil, contains minimal organic material, reflecting a chemical composition akin to the underlying rock. It's also termed the illuviated horizon or the accumulation zone, as it tends to concentrate minerals from above. The B horizon may be further categorised into B1, B2, and B3 types.

C horizon, recognised as the parent rock, consists of weakly weathered parent material resting on unaltered bedrock (R).

The soil profile and the relative thickness of the horizons are generally characteristic for different climate, the type of vegetative cover and different topographical situations. For example, in grassland soil humification is rapid, but mineralisation is slow. In forest soil litter and root decay slowly. Hence humus layer is narrow, but mineralisation is rapid so B horizon is broad.



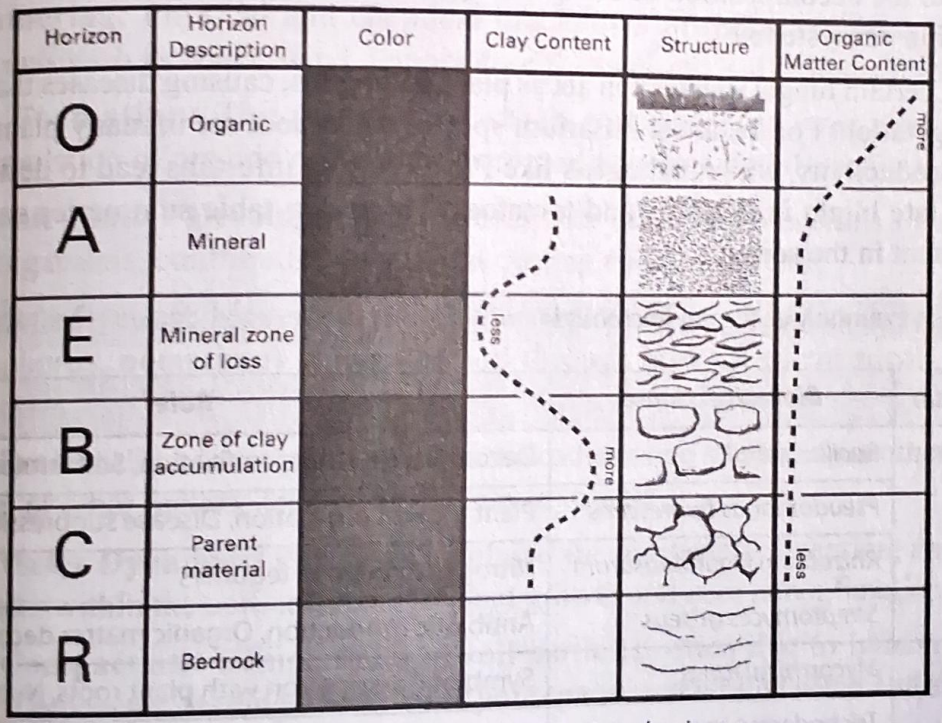


Fig. 18.5. *Soil profile and Various horizons*