SOIL MORPHOLOGICAL CHARACTERISTICS AND PROFILE DESCRIPTIONS

SOIL MORPHOLOGY is the field observable attributes of the soil within the various soil horizons and the description of the kind and arrangement of the horizons.

Soil morphology is the science of soil forms or shapes, and concerned with the nature of substances , and also their form and arrangement

- Observable attributes include:
- composition,
- form,
- soil structure and organization of the soil,
- colour, and other
- parameters as mottling,
- distribution of roots and pores,
- evidence of translocated materials such as carbonates, iron, manganese, carbon, clay and
- the consistence of the soil.

- The observations are typically performed on a soil profile.
- A profile is a vertical cut, two dimensional in the soil and bounds one side of a pedon.
- The pedon is the smallest 3 dimensional unit, but not less than 1 metre square on top, that captures the lateral range of variability.

- SOIL MORPHOLOGY is divided into two:

1. Profile morphology, concerned with the use of macroscopic methods for the morphological characterization of the horizons and the investigation of horizon forming processes, and

2. Micromorphology, which applies microscopic and submicroscopic methods. This involves soil thin-section examinations using polarising microscope, scanning electron microscope, and micro-chemical cum micro-physical analyses.

SOIL PROFILE

- A soil profile is a vertical cross-section through the soil which shows the various horizontal layers called horizons.
- Different kinds of soil profiles are determined by the type, number, arrangement, and the major characteristics of recognisable horizons.
- These horizons are described in terms of colour, texture, structure, consistence and the occurrence of observable inclusions.

- The horizons are horizontal layers exhibited by the profile pits and are usually differentiated by their genetic characteristics.
- The horizons are formed as a result of weathering, physical, biological and chemical transformations in the soil.
- The kind of horizon formation is remarkably varied and is always characteristic of a particular kind of soil.

- Subordinate Features within Horizons:
- Lower case letters are used to designate specific kinds of master horizon layers as follows:
- a – highly decomposed organic material
- b – buried genetic horizon
- c – concretions or nodules
- d – dense unconsolidated materials

e – organic material of intermediate decomposition

f – frozen soil

g – gleying (strong)

h – illuvial accumulation of OM or humus

i – slightly decomposed organic material

k – accumulation of carbonate

m – cementation or induration

n – accumulation of sodium

o – residual accumulation of sequioxides

- p – tillage (ploughed) or other disturbance
- q –accumulation of silica
- r – weathered or soft rock
- s – illuvial accumulation of sesquioxides and organic matter
- ss – presence of slickenside
- t – accumulation of silicate clay

- v – plinthite (hard, iron-enriched subsoil material)
- w – development of colour or structure
- x – fragipan (highly dense, brittle)
- y – accumulation of gypsum
- z – accumulation of salts more soluble than gypsum