



## **FACULTY OF MEDICAL SCIENCES**

## SOIL COLOUR

Soil color is one of the obvious characteristics of soil and is frequently used to describe soil, than any other. Soil color, as such, does not have any influence on plant growth, but through its influence on soil temperature and soil moisture, it indirectly influences the plant growth.

Soil colour can be an indicator of the climatic condition (acquired or pedochromic) color under which a soil was developed or of its parent material ( litho chromic color). Soil color is also taken as criteria for assessing soil productivity.

Practically all colours occur in soils, except pure blue and pure green. Predominantly, soil colors are not pure but mixtures, such as grey, brown and rust. Frequently, two or three colours occur in patches, which is called as “mottling”.

The colour of the soil is a composite of the colours of its components. The effect of these components on the color of the composite soil is roughly proportional to their total surface, which is equal to their specific surface times their volume percentage in the soil. So-the colloidal material will have greatest impact on soil color i.e., iron oxides and humus.

Humus – brown or dark brown.

Iron oxides – red, rust – brown, or yellow depending upon degree of hydration. Reduced iron – blue green

Quartz - white

Lime stones – white, gray or sometimes olive green.

The colour of an object depends upon the kind of light which it is capable of reflecting to the eye. Soils reflect light of a great variety of wavelengths. It may be possible to distinguish the great many colours, but, describing them accurately is a bit difficult,

because of confused colour vocabulary.

**Colour components:** As the soil color is the important parameter, used to classify the soils, a standard system for accurate colour description has been developed using **Munsell color charts**. In this system, a small piece of soil is compared to standard colour chips in a soil colour book. Each colour chip is described by the **three components of colour i.e., hue, value and chroma**.

**Hue** refers to the **dominant spectral colour** or quality which distinguishes red from yellow etc.

**Value or brilliance** expresses **apparent lightness** as compared to absolute white. It refers to relative brightness or darkness of colour within a scale of (0 – 10) as compared to absolute white. It refers to gradations white to black (lightness or darkness).

**Chroma** defines the gradations of **purity of colour**, or the apparent degree of departure from neutral grays to white (intensity or brightness) (strength of colour), within a scale ranging from (0 – 20).

The numerical notation 2.5 YR 5/6 suggests a hue of 2.5 YR, value of 5 and chroma of 6.

### **Significance of soil colour**

- Colour is taken as a diagnostic criterion for classifying soils e.g. the comprehensive system uses color as formative element in its nomenclature as alb (white), ochr (light coloured), umbr (dark), sambr (dark).
- Soil color can be guide to the climatic soil group, to the parent material, or to the physiographic location.
  - Humid temperate regions – Grayish;
  - Tropics and sub tropics – red and yellow
- The productivity of the soils is assessed based on soil color e.g. dark color is an indication of high productivity.

Black > brown > rust brown > gray brown > red > gray > yellow > white.

- Colour indicates the presence / domination of the constituent minerals in the soil e.g. light colour results from preponderance of quartz mineral, red colour results from domination of iron rich compounds.

- Colour is used to describe soil profile.
- Colour indicates the process involved in soil formation extent of leaching and erosion etc.
- Soil color is indicative of presence of excessive salts.
- Soils in depression are darker than adjacent uplands.
- Soils derived from basic rocks are darker than soils derived from acidic rocks.