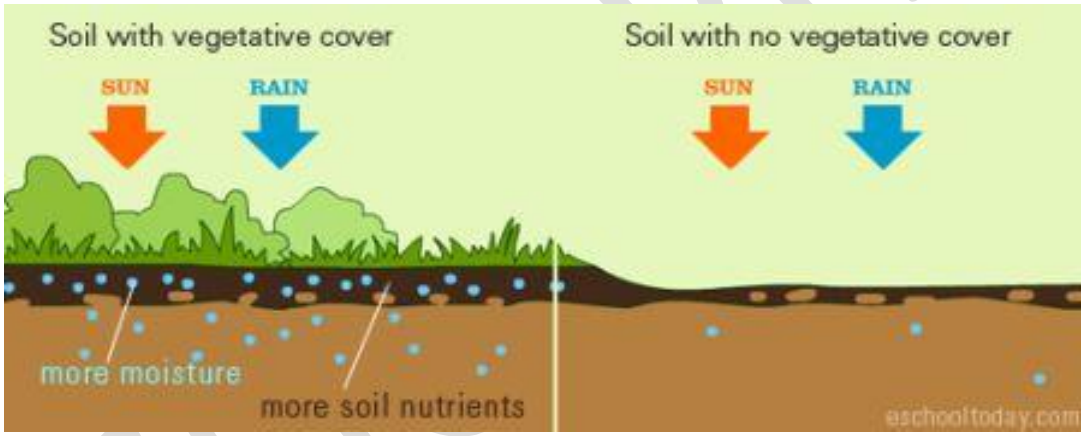
Class- B.A. Part- II **Date:- 15/04/2020 – 18/04/2020**
Paper – II (Hons.) **Wednesday to Saturday**

Topic- Soils of India (Unit-Ist)

Soil is the mixture of rock debris and organic materials which develop on the earth's surface. Components of the soil are mineral particles, humus, water and air. The actual amount of each of these depends upon the type of soil.

SOIL AS A RESOURCE-
Soil is the most important renewable natural resource. It is the medium of plant growth and supports different types of living organisms on the earth. The soil is a living system. It takes millions of years to from soil up to a few centimetres in depth

Factors of soil formation- Relief, parent rock, climate, vegetation and other forms of life and time are important factors in the formation of soil. On the basis of these above factors responsible for soil formation colour, thickness, texture, age, chemical and physical properties, the soil of India can be classified in different types.



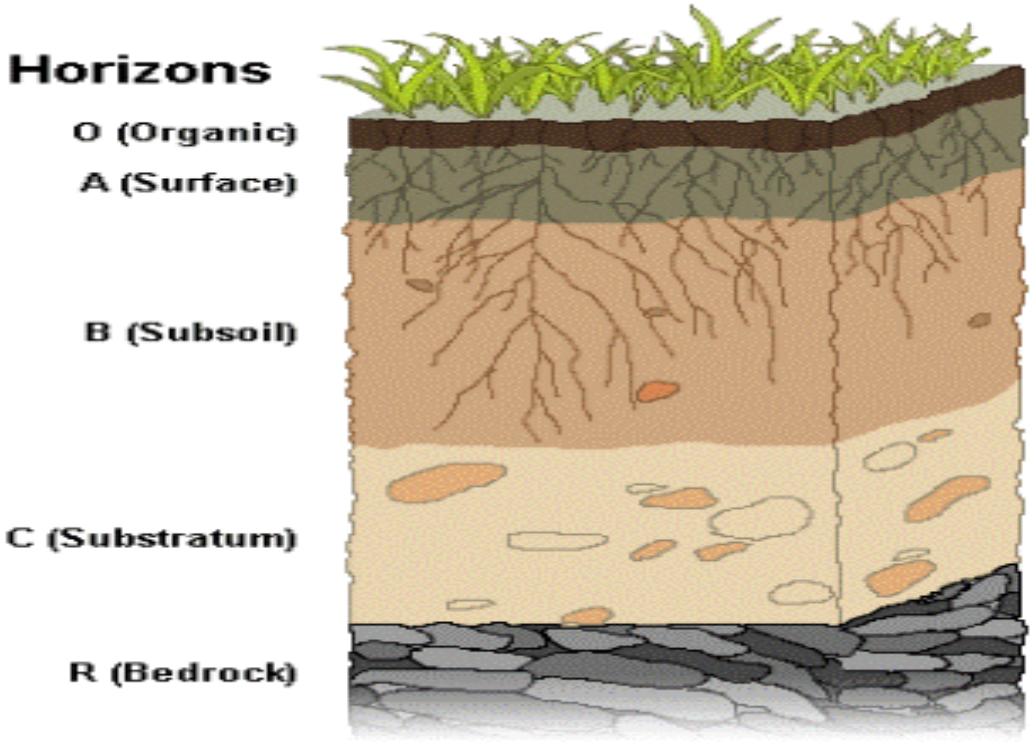
Soil Profile of India- The soil profile is consists of three layers which are called horizons.

- **Horizon A'** - is the topmost zone, where organic materials have got incorporated with the mineral matter, nutrients and water, which are necessary for the growth of plants.

- **Horizon B**' - is a transition zone between the 'horizon A' and 'horizon C', and contains matter derived from below as well as from above. It has some organic matter in it, although the mineral matter is noticeably weathered.

- **Horizon C'-** is composed of the loose parent material. This layer is the first stage in the soil formation process and eventually forms the above two layers.

Figure below showing the HORIZONS of soil.

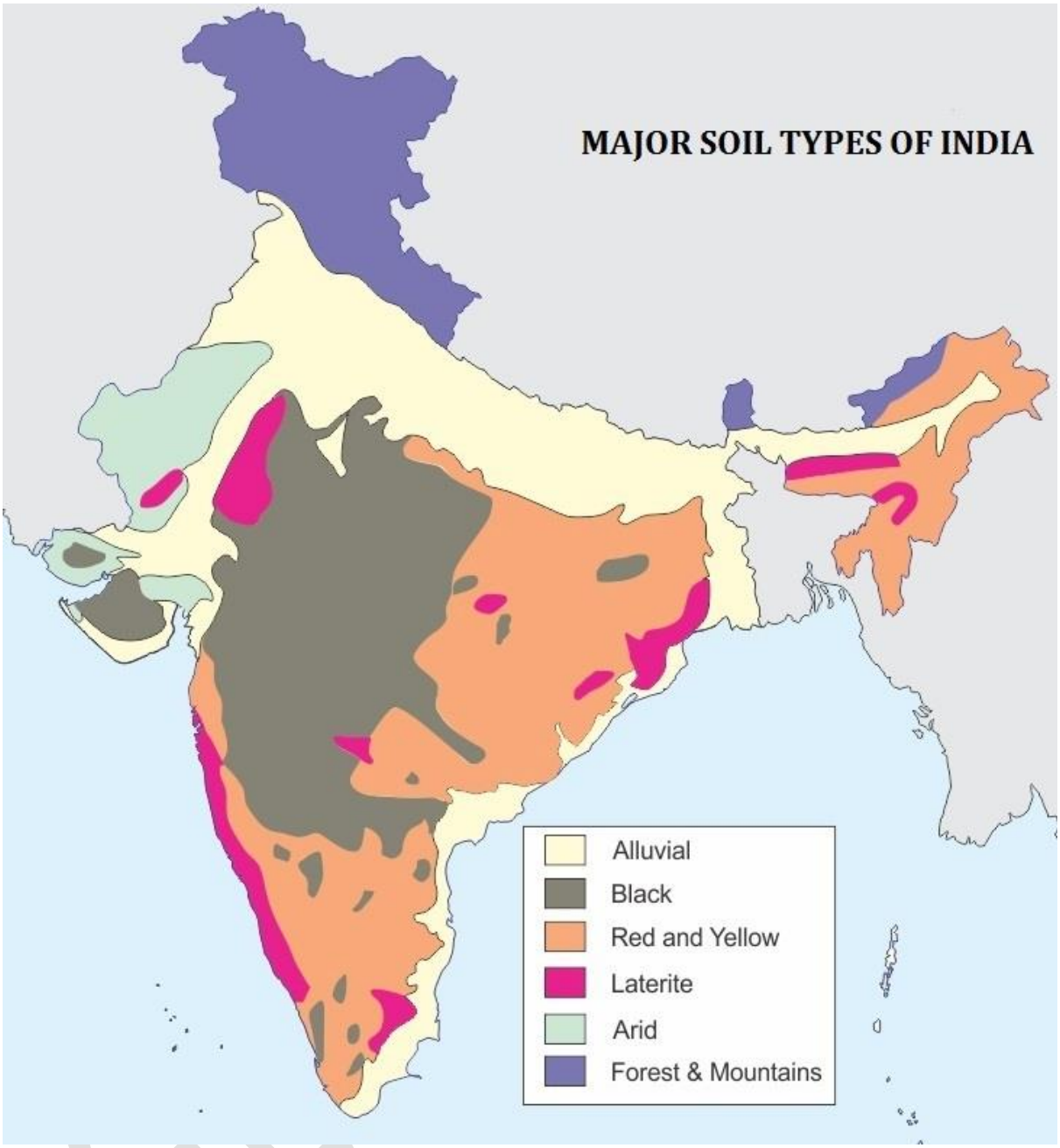


This arrangement of layers is known as the soil profile.

Classification of Soils of India – India has varied relief features, landforms, climatic realms and vegetation types. These have contributed in the development of various types of soils. On the basis of genesis, colour, composition and location, the soils of India have been classified into:

(i) Alluvial soils
(ii) Black soils
(iii) Red and Yellow soils
(iv) Laterite soils
(v) Arid soils
(vi) Saline soils
(vii) Peaty soils
(viii) Forest soils.

Map below illustrate the different soil types found in India



1. Alluvial Soils –

a. **Area-** The entire northern plains are made of alluvial soil. These soils also extend in Rajasthan and Gujarat through a narrow corridor. Alluvial soil is also found in the eastern coastal plains particularly in the deltas of the Mahanadi, the Godavari, the Krishna and the Kaveri rivers.

b. **Components-** The alluvial soil consists of various proportions of sand, silt and clay, rich in potash but poor in phosphorous.

c. Features -

- In the Upper and Middle Ganga plain, two different types of alluvial soils have developed, viz. *Khadar* and *Bhangar*.
- *Khadar* is the new alluvium and is deposited by floods annually, which enriches the soil by depositing fine silts. It has more fine particles and is more fertile than the Bangar.
- *Bhangar* represents a system of older alluvium, deposited away from the flood plains. *Khadar and Bhangar soils contain calcareous concretions (Kankars).*
- The colour of the alluvial soils varies from the light grey to ash grey. Its shades depend on the depth of the deposition, the texture of the materials and the time taken for attaining maturity.
- Mostly these soils contain adequate proportion of potash, phosphoric and acid and lime which are ideal for the growth of sugarcane, paddy, wheat and other cereal and pulse crops.
- Due to its high fertility, regions of alluvial soils are intensively cultivated and densely populated.

2. Black Soils –

a. Area- They cover the plateaus of Maharashtra, Saurashtra,Malwa, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu.and Chhattisgarh and extend in the south east direction along the Godavari and the Krishna valleys.

b. Components- The black soils are made up of extremely fine i.e. claye material. In addition, they are rich in soil nutrients, such as calcium carbonate, magnesium, potash and lime.

c. Features -

- These soils are black in colour and are also known as regur soils black soil is ideal for growing cotton and is also known as **black cotton soil**.
- This type of soil is typical of the deccan trap (Basalt) region spread over northwest deccan plateau and is made up of lava flows.
- The black soils are generally clayey, deep and impermeable. They swell and become sticky when wet and shrink when dried. So, during the dry season, these soil develop wide cracks.Thus, there occurs a kind of 'self ploughing'.
- Chemically, the black soils are rich in lime, iron, magnesia and alumina. They also contain potash. But they lack in phosphorous, nitrogen and organic matter.
- The colour of the soil ranges from deep black to grey.

3. Red and Yellow Soils –

a. Area- Red soil develops on crystalline igneous rocks in areas of low rainfall in the eastern and southern parts of the Deccan Plateau. Yellow and red soils are also found in parts of Orissa, Chhattisgarh, southern parts of the middle Ganga plain and along the piedmont zone of the Western ghats

b. Components- They are generally poor in nitrogen, phosphorous and humus.

c. Features -

- The soil develops a reddish colour due to a wide diffusion of iron in crystalline and metamorphic rocks.
- It looks yellow when it occurs in a hydrated form.
- The fine-grained red and yellow soils are normally fertile, whereas coarse-grained soils found in dry upland areas are poor in fertility.

4. Laterite Soils –

a. Area- These soils are mainly found in Karnataka, kerala,Tamil Nadu, Madhya Pradesh, and the hilly areas of Orissa and Assam

b. Components- These soils are poor in organic matter, nitrogen, phosphate and calcium, while iron oxide and potash are in excess.

c. Features -

- Laterite has been derived from the Latin word *'Later'* which means brick. Laterite soils are widely cut as bricks for use in house construction
- The laterite soils develop in areas with high temperature and high rainfall.
- Humus content of the soil is low because most of the micro organisms, particularly the decomposers, like bacteria,get destroyed due to high temperature.
- Laterite soils are suitable for cultivation with adequate doses of manures and fertilizers.
- this soil is very useful for growing tea and coffee. Red laterite soils in Tamil Nadu, Andhra Pradesh and Kerala are more suitable for crops like cashew nut.

5. Arid Soils –

a. Area- Arid soils are characteristically developed in western Rajasthan, which exhibit characteristic arid topography.

b. Components- They are generally sandy in structure and saline in nature, they lack in moisture and humus content. Nitrogen is insufficient and the phosphate content is normal

c. **Features -**

- Arid soils range from red to brown in colour. In some areas, the salt content is so high that common salt is obtained by evaporating the saline water
- Lower horizons of the soil are occupied by *'kankar'* layers because of the increasing calcium content downwards.
- The kankar layer formation in the bottom horizons restricts the infiltration of water. After proper irrigation these soils become cultivable as has been in the case of western Rajasthan.

6. Saline Soils –

a. **Area-** Saline soils are more widespread in western Gujarat, deltas of the eastern coast and in Sunderban areas of West Bengal.

b. **Components-** Saline soil contain a larger proportion of sodium, potassium and magnesium. They lack in nitrogen and calcium.

c. **Features -**

- They are infertile, and do not support any vegetative growth.
- They have more salts, largely because of dry climate and poor drainage. They occur in arid and semi-arid regions, and in waterlogged and swampy areas.
- Seawater intrusions in the deltas promote the occurrence of saline soils.
- in Punjab and Haryana, farmers are advised to add gypsum to solve the problem of salinity in the soil.

7. Peaty Soils –

a. **Area-** It occurs widely in the northern part of Bihar, southern part of Uttaranchal and the coastal areas of West Bengal, Orissa and Tamil Nadu.

b. **Components-** Organic matter in these soils may go even up to 40-50 per cent..

c. **Features -**

- They are found in the areas of heavy rainfall and high humidity, where there is a good growth of vegetation..
- large quantity of dead organic matter accumulates in these areas, and this gives a rich humus and organic content to the soil.
- Soils are normally heavy and black in colour. At many places, they are alkaline also.

8. Forest Soils –

a. **Area-** These soils are found in the hilly and mountainous areas where sufficient rain forests are available

b. Components- They are loamy and silty on valley sides and coarse-grained in the upper slopes.

c. Features -

- In the snow-bound areas of the Himalayas, they experience denudation, and are acidic with low humus content.
- Soils are normally heavy and black in colour. At many places, they are alkaline also.
- The soils found in the lower valleys are fertile.
- The soils vary in structure and texture depending on the mountain environment where they are formed

Conclusion- It is evident from the foregoing discussions that soils, their texture, quality and nature are vital for the germination and growth of plant and vegetation including crops. Soils are living systems. Like any other organism, they too develop and decay, get degraded, respond to proper treatment if administered in time. These have serious repercussions on other components of the system of which they themselves are important parts.

Types of questions may be asked in your exams

1. **Define soil and write a brief note on soil types of India?**
2. **Give a broad classification of soil types found in India?**
3. **What are the major soil types of India? Illustrate with their characteristics.**

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