

Soil

Soil forms the upper layer of the earth's crust capable of supporting life. It is made up of loose rock materials and humus. The soil forming processes are mainly influenced by the parent rock, climate, vegetation and animal life. A vertical section through different layers of the soil is called the **soil profile**. The soil is classified on the basis of the proportion of particles of various sizes. If soil contains greater proportion of big particles it is called **sandy soil**. If the proportion of fine particles is relatively higher, then it is called **clayey soil**. If the amount of large and fine particles is about the same, then the soil is called **loamy soil**.

Importance of Soil Resources

- Soil is an extremely important resource, especially in agricultural countries like India, Pakistan and Bangladesh.
- Most food items, like rice, wheat, pulses, fruits and vegetables and much of our clothing are derived from the soil directly or indirectly.
- Soil also gives us firewood, timber, rubber, fibres, etc. Food like milk, meat and eggs are obtained indirectly from the soil. Flowers, grass, plants and trees are also grown out of soil.

Soil Erosion and its types

- Removal of top layer of soil when it is exposed to wind, and rain, is easily blown or washed away. This condition is known as **soil erosion**.
- Basically, soil cover is removed by two powerful agents:
 1. Running water and
 2. Wind.

Types of Soil found in India

Indian Council of Agricultural Research (ICAR) divides Indian soils into eight groups:

- (a) Alluvial soil
- (b) Black soil
- (c) Red soil
- (d) Laterites and Lateritic soil
- (e) Arid and Desert soil
- (f) Saline and Alkaline soil
- (g) Forest soil
- (h) Peaty and other organic soil.



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Indian soils are generally divided into four broad types:

1. Alluvial soils
2. Regur soils
3. Red soils and
4. Laterite soils.

Alluvial Soils

- This is the most important and widespread category. It covers 40% of the land area. The entire Northern Plains are made up of these soils.
- They have been brought down and deposited by three great Himalayan rivers-Sutlej, Ganga and Brahmaputra and their tributaries.
- Through a narrow corridor in Rajasthan they extend to the plains of Gujarat.
- They are common in Eastern coastal plains and in the deltas of Mahanadi, Godavari, Krishna and Cauvery (Kaveri).
- The alluvial soils vary in nature from sandy loam to clay. They are generally rich in potash but poor in phosphorous.
- In the Upper and Middle Ganga plain, two different types of alluvial soils have developed: **Khadar and Bhangar**. Khadar is the new alluvium and is deposited by floods annually, which enriches the soil by depositing fine silts. Bhangar represents a system of older alluvium, deposited away from the flood plains. Both the Khadar and Bhangar soils contain calcareous concretions (Kankars).
- **Crops Grown:** Suitable for Kharif & Rabi Crops like cereals, Cottons, Oilseeds and Sugarcane. The lower Ganga-Brahmaputra Valley is useful for jute cultivation.

Regur or Black Soils

- These soils are of volcanic origin, black in colour and are also known as **black soils**.
- Since, they are ideal for growing cotton, they are also called **black cotton soils**, in addition to their normal nomenclature of Regur soils.
- These soils are spread over north-west Deccan plateau and are made up of lava flows.
- These soils cover the plateaus of Maharashtra, Saurashtra, Malwa and southern Madhya Pradesh and extend eastward in the south along the Godavari and Krishna Valleys.
- 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.
- **Crops Grown:** Cotton, Jowar, Wheat, Sugarcane, Linseed, Gram, Fruit & Vegetable.

Red Soils

- Formed by weathering of crystalline and metamorphic mixture of clay and sand.
- These soils are developed on old crystalline Igneous rocks under moderate to heavy rainfall conditions.
- They are red in colour because of their high Iron-oxide (FeO) content.

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- They are deficient in phosphoric acid, organic matter and nitrogenous material.
- Red soils cover the eastern part of the peninsular region comprising Chhotanagpur plateau, Odisha (Orissa) eastern Chhattisgarh, Telangana, the Nilgiris and Tamil Nadu plateau.
- They extend northwards in the west along the Konkan coast of Maharashtra.
- **Crops Grown** : Wheat, Rice, Millets, Pulses.

Laterite Soils

- The Laterite soils are formed due to leaching / weathering of lateritic rocks in high temperatures and heavy rainfall with alternate dry and wet period.
- They are found along the edge of plateau in the east covering small parts of Tamil Nadu, Odisha and a small part of Chhotanagpur in the north and Meghalaya in the north-east.
- Laterite soils are red in colour with a high content of iron-oxides; poor in Nitrogen and Lime.
- **Crops Grown:** Though unsuitable for agriculture due to high content of acidity and inability to retain moisture tea, coffee, rubber, cinchona, cashew, coconut, arecanut are grown on laterite soil.

Arid and Desert Soil

- **Region:** North West India. Covers entire area of the west Aravalis in Rajasthan and parts of Haryana, Punjab and Gujarat.
- **Characteristics:** Rich in Phosphates and Calcium but deficient in Nitrogen and humus. They are generally sandy in structure and saline in nature.
- **Corps Grown:** Fertile if irrigated e.g. Ganganagar area of Rajasthan (Wheat basket of Rajasthan).

Saline Soils

- They are also known as Usara soils. Saline soils contain a larger proportion of sodium, potassium and magnesium.
- They occur in arid and semi-arid regions, and in waterlogged and swampy areas.
- Saline soils are more widespread in western Gujarat, deltas of the eastern coast and in Sunderban areas of West Bengal. In the Rann of Kuchchh, the Southwest Monsoon brings salt particles and deposits there as a crust.

Peaty Soils

- They are found in the areas of heavy rainfall and high humidity.
- It occurs widely in the northern part of Bihar, southern part of Uttaranchal and the coastal areas of West Bengal, Orissa and Tamil Nadu.

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