

22.7.24

Subject: Geography Class: X Teacher: Ms. Mini

Topic: Ch-5 Soil Resources in India.

Soil is the thin surface layer on the Earth, comprising of mineral particles formed by break-down of rocks, decayed organic materials, living organisms, water and wind. Pedogenesis is the process of soil formation.

Soil Formation In India:- (Factors affecting)

- 1. Parent Material:- The parent material determines the colour of the soil, its mineral composition and texture. The surface rock are exposed to weathering to convert it into fine grains called soil. Parent rock material in India are:-
 - i> Ancient crystalline and Metamorphic rocks as gneiss and schist rich in ferromagnesian forms the **Red Soil**.
 - ii> Deccan tracts are composed of basalt → **Black soil**.
 - iii> Tertiary and Mesozoic sedimentary rock → **Alluvial**.
2. Relief:- Steep slopes encourage swift flow of water and helps soil formation for eg. Soil erosion occurs in Chambal ravines region. Where as areas of gentle slope experience deposition and have deep soil for eg. alluvial deposits in Northern Plains.
3. Climate:- Climate controls the type and effectiveness of weathering of parent material, quantity of water seeping through the soil and type of

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micro-organisms present there. As in areas of heavy rainfall and high temperature, the soils are Red or Laterite as the rainwater washes the upper soil and leaches the material into deeper horizons.

4. Natural Vegetation:- The decayed leaf material adds much needed humus to the soil thereby increasing its fertility.

Major Soil Groups in INDIA.

The Indian Council of Agricultural Research (ICAR) set up an All India Soil Survey Committee in 1953 which divided Indian soils into eight major groups. As per our syllabus we are going to study four groups.

1. Alluvial Soil:-

- It is the largest and most important group of soil in India almost covering 45% of total land.
- Most of the alluvial soils are derived from sediments deposited by rivers as in Indo-Gangetic plains, although some alluvial soils in the coastal areas have been formed by sea waves.
- The chemical composition of this soil makes it one of the most fertile soils in the world. The proportion of nitrogen is generally low, but potash, phosphoric acid and alkalies are adequate while iron oxide and lime vary.
- The porosity and texture provide favourable conditions for crop cultivation.

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- Alluvial soil get easily replenished by river floods and support uninterrupted crop growth.

Areas:- Soil is found in Indo-Gangetic plains; Deltas of Mahanadi, Godavari, Krishna and Cauvery; Narmada and Tapi valleys and Northern Gujarat.

Crops grown:- This is the most fertile soil suitable for growth of Rice, wheat, Sugarcane, tobacco, cotton, jute, maize, oilseeds, vegetables etc.

Alluvial soil can be classified into:

Khadar

i> Also termed as New alluvium soil.

ii> It is found in low areas of valley bottom which flooded almost every year.

iii> It is more fertile soil.

iv> It has lower concentration of Kankar nodules.

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i> Also termed as Old alluvium soil.

ii> Found about 30m above the flood level.

iii> It is less fertile.

iv> It has higher concentration of Kankar nodules.

2. BLACK SOIL:- (Regur soil)

- Black soil is formed due to weathering of solidified lava spreads over large area during volcanic activity in Deccan plateau, thousand of years ago.

Characteristics:-

It has high quantities of lime, iron, magnesium and generally poor percentage of phosphorous, nitrogen and organic matter.

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- It is the residual soil i.e. it is formed at the place of its origin over underlying rocks (in-situ).
- * - It is a highly moisture retentive soil, during rainy season it swells and become sticky. So, it is impossible to work on such soil as the plough gets stuck in the mud. During dry season the moisture evaporates, soil shrinks and forms broad deep cracks. This permits oxygenation of the soil to sufficient depth and has extraordinary fertility. So, the soil has self-ploughing ability.

Areas found:- Deccan lava tract including Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh, Karnataka, and parts of Tamil Nadu.

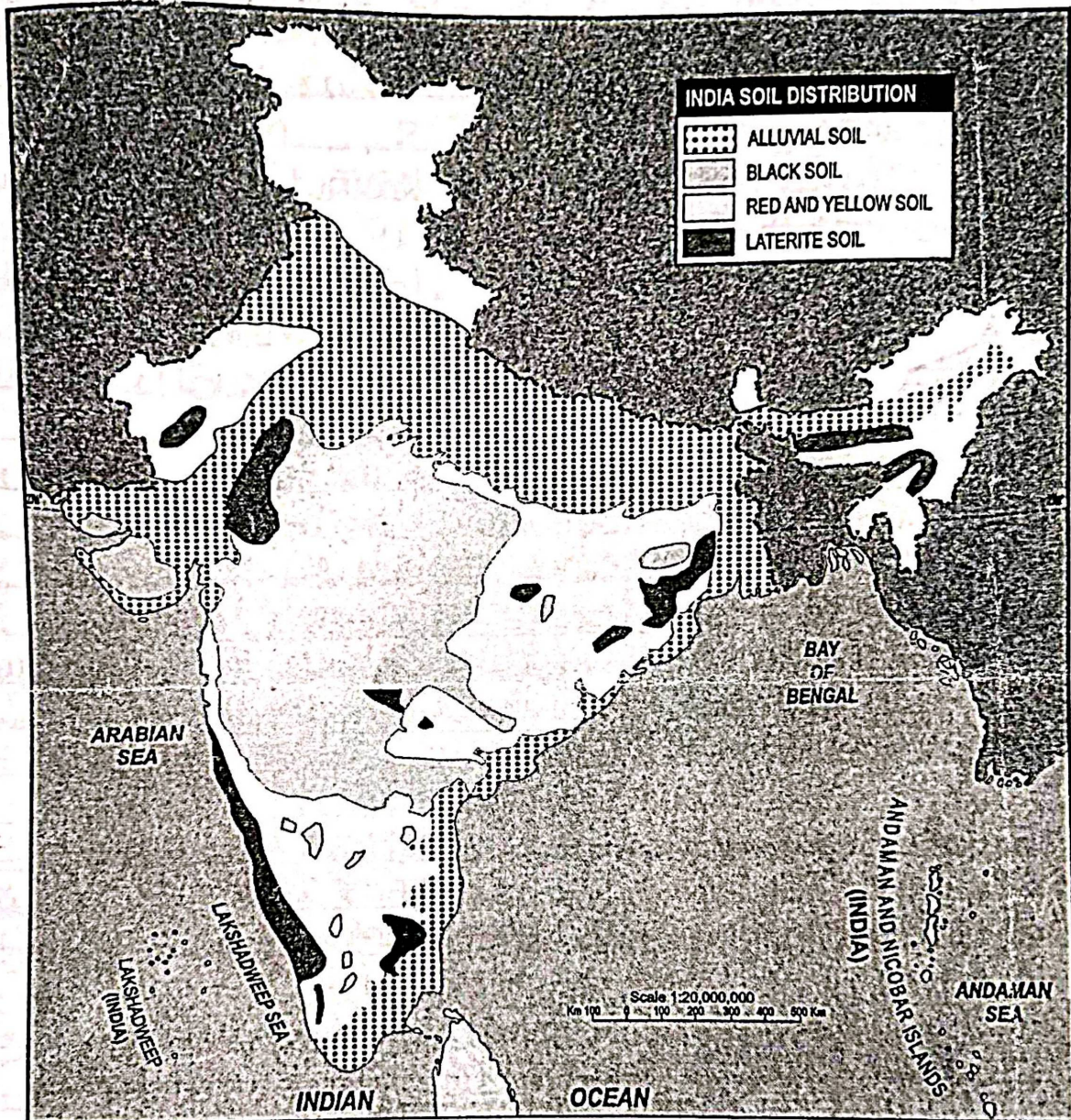
Crops grown:- Cotton, jowar, linseed, castor, sunflower etc.

3. Red Soil:- Red soil is formed due to weathering of ancient crystalline and metamorphic rocks as gneiss, quartzite, feldspar. The colour of this soil is red often grading into brown, chocolate brown, grey even black. It is red in colour as it contains large amount of iron oxides.

Characteristics:-

- It is poor in lime, magnesia, phosphates, Nitrogen and humus but rich in potash.
- Its texture varies from sand to clay.
- It responds well to proper use of fertilizers.

SOIL DISTRIBUTION



POINTS TO PONDER

- Laterite soil is formed due to leaching in areas of heavy rain.
- Red soil is formed by prolonged weathering of crystalline rocks.
- Black soil formed by weathering of lava rocks.
- Alluvial soil is formed by deposition of sediments by rivers.

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and irrigation for cultivation as it is not ~~very~~ fertile soil.

Areas:- Tamil Nadu, parts of Karnataka, South East Maharashtra, Andhra Pradesh, MP, Chhattisgarh, Odisha and Jharkhand. In North India, South Bihar, parts of Assam, Manipur, Mizoram, Tripura.

Crops:- rice, wheat, pulses, millets, oilseeds etc.

4. Laterite Soil:- Laterite soil is formed under high temperature and heavy rainfall with alternate wet and dry periods. Such climatic condition promote leaching (process in which nutrients get percolated down below the soil due to heavy rainfall, thus leaving top soil infertile).

Characteristics:-

- It is poor in lime, magnesia and nitrogen.
- The soil generally lack fertility and are of little use for crop production. But when manured and irrigated become suitable for growing plantation crops as tea, coffee, rubber, coconut etc.
- It has a unique distinction of providing valuable building material. These soils can be easily cut with spade but hardens like iron when exposed to air.

Areas:- Summits of Western ghats, Rajmahal hills, Vindhya, Satpura, Malwa plateau. In states of Andhra Pradesh, Karnataka, Odisha, West Bengal, Jharkhand, Assam and Meghalaya.

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Problems of Indian Soils are:-

1. Soil Erosion
2. Desertification
3. Low soil fertility
4. Over exploitation of soils due to increase in population and rise in living standards.
5. Encroachment of Agricultural land due to Urban and transport development.

Soil Erosion:-

The removal of the top soil cover is called

Soil Erosion. It is caused due to:-

1. Running water: (i) the surface layer of soil get removed known as Sheet erosion (ii) Gully erosion when numerous finger shaped grooves may develop all over the area due to running water
2. Wind action
3. Human Activities as mining.
4. Overgrazing
5. Faulty methods of Agriculture.

Soil Conservation:- measures to reduce soil erosion

1. Afforestation
2. Check Overgrazing.
3. Improved techniques of agriculture as:-

- i) Terraced farming on hilly slopes.
 - ii) Contour ploughing
 - iii) Crop rotation.
 - iv) Planting trees.
4. Construction of dams and barrages.

Home Work:- On the basis of the topic discussed, you are able to find the answers of Book's Back Exercise on your own.

Q → 1, 2, 5, 8, 9, 18, 19, 20, 22(a), 23(a) and (b).