Soils of India

By

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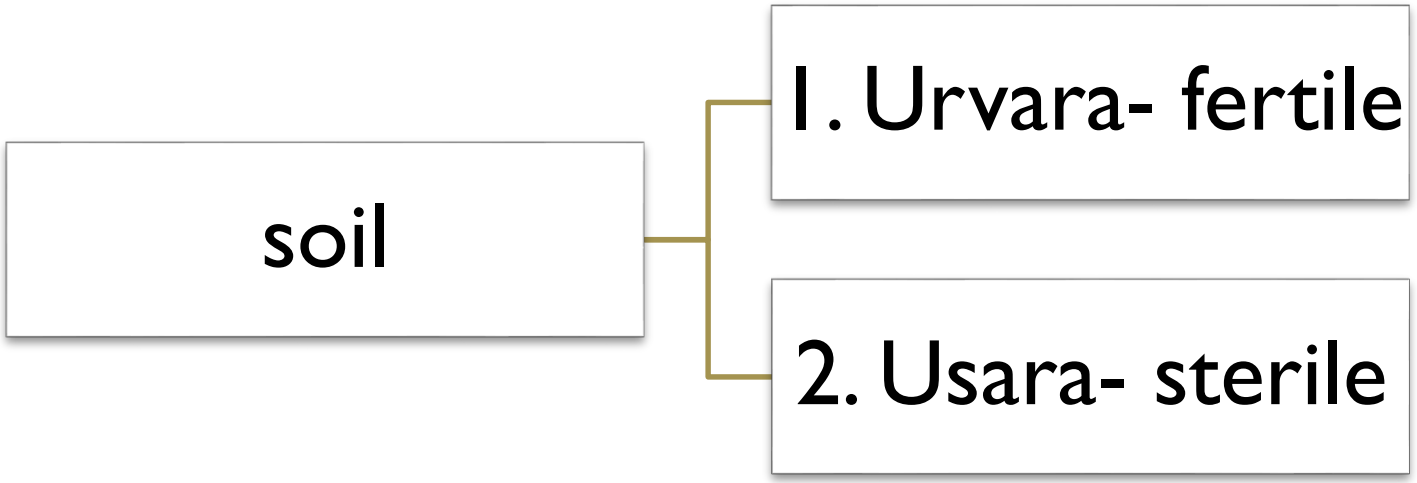
SOILS OF INDIA

- Soil is the thin surface-layer on the earth, comprising of mineral particles formed by the break-down of rocks, decayed organic materials, living organisms, water and air.

- The process of formation of soil is called pedogenesis.

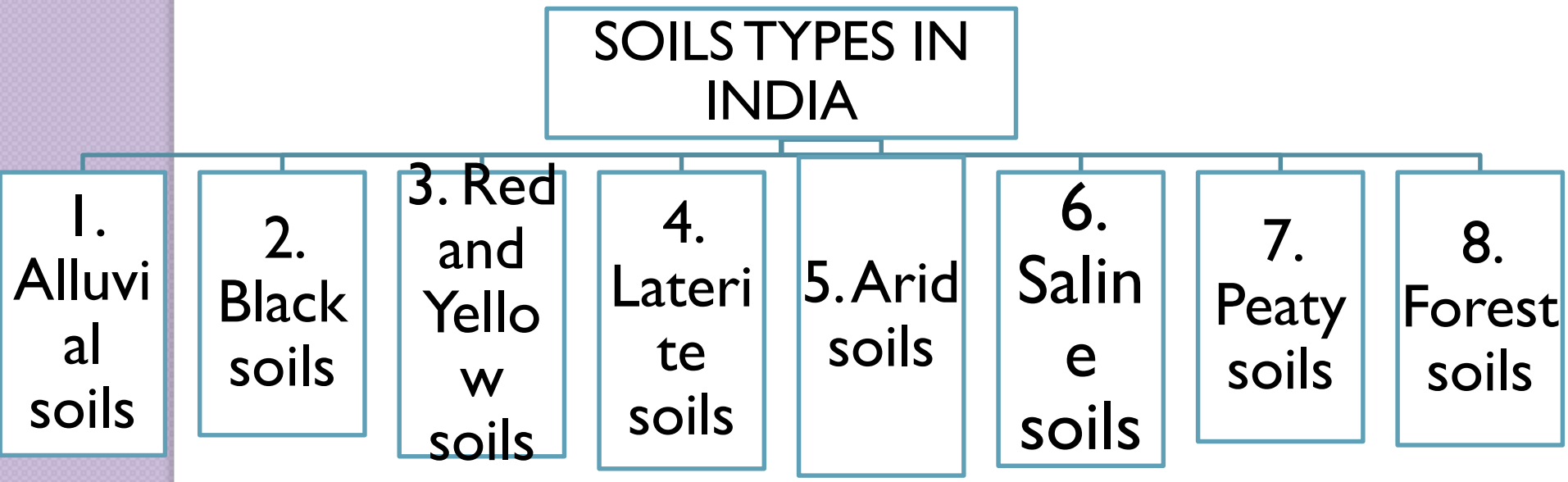
Types of soil in india

- India has varied relief features, landforms, climatic regions and vegetation types. These variations lead to formation of varied types of soils in India.
- ANCIENT CLASSIFICATION OF SOILS IN INDIA:-



- The Indian Council of Agricultural Research (ICAR) in All India Soil Survey Committee (1953) divided the Indian soils into 8 major types.

On the basis of Colour,composition,location and Genesis-

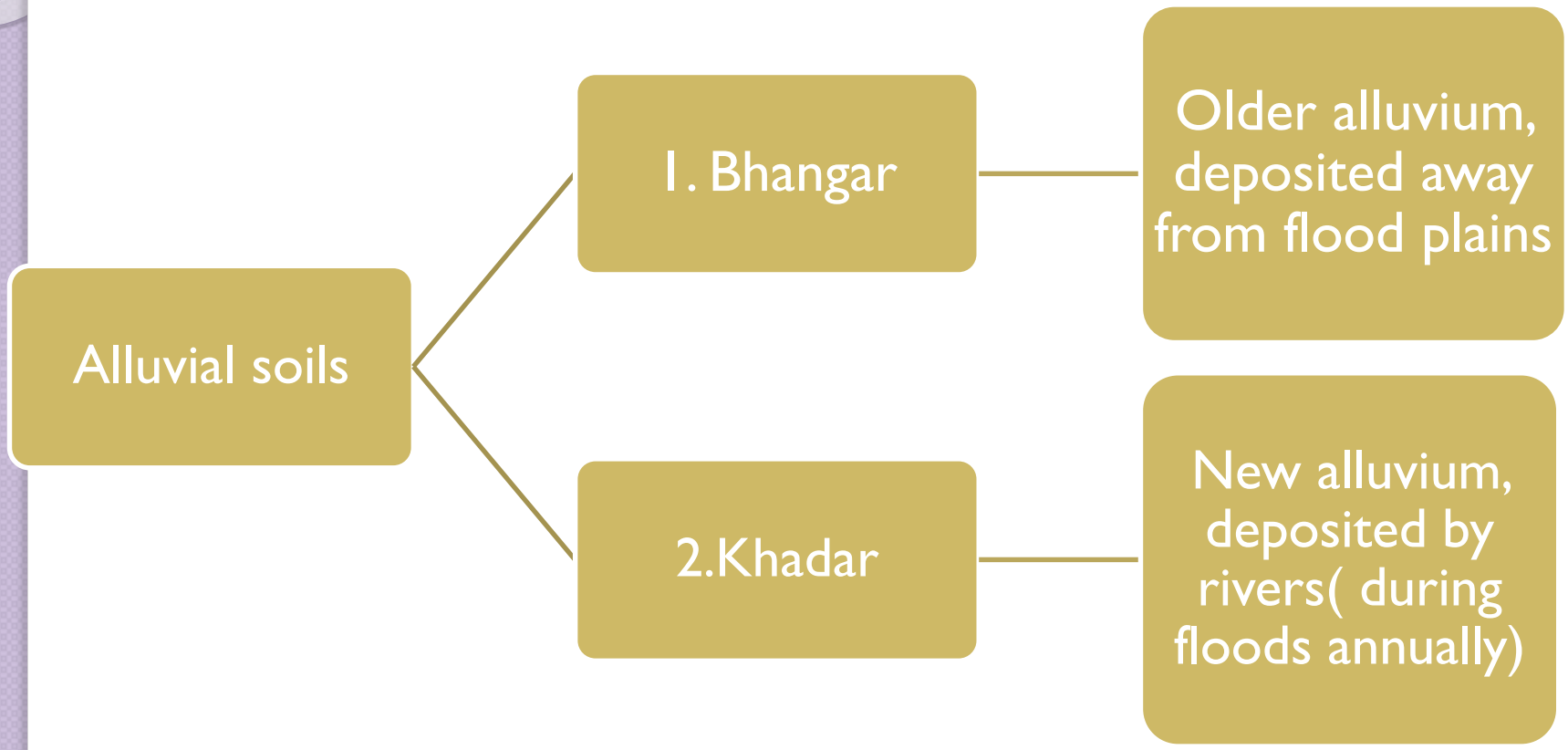


1. Alluvial soils:

- These soils cover about 45.6 % of the total area of the country.
- Found in the northern plains and river valleys of India.
- These are depositional soils which get transported and deposited by rivers and water streams.
- In Peninsular region, they are found in deltas of the east coast and in the river valleys.

- The Alluvial soils vary in nature from sandy loam to clay.
- They have low nitrogen and phosphorous but are rich in potash.
- Their chemical composition makes it one of the most fertile soil in the world, it supports growth of agriculture and human settlements.

The colour of alluvial soils vary from light grey to ash grey, depending upon the depth of deposition.



2.Black soil:

- Black soils are found in almost 16.6 % of the total geographical area of the country mainly in regions of high temperature and low rainfall.
- Black soils cover most of the Deccan Plateau which includes parts of Madhya Pradesh, Maharashtra, Gujarat, Andhra Pradesh, Telangana and parts of Tamil Nadu.

- It is known as black cotton soils and regur soil. They are clayey, impermeable and thus they well and becomes sticky when wet while shrink when dried. (self ploughing- cracks during dry season and swollen during wet)

- They are rich in lime, iron, magnesia, and alumina. The colour of the soil ranges from grey to deep black.
- They generally contain more clay (62% or more than that), it means they are argillaceous in nature and contain less gravel and sand particles.

- High fertility and moisture retentivity character of black soil helps in growth of cotton, wheat, sugarcane, rice, jower,castor, Virginia tobacco, sunflower and millets.

3. Red and yellow soil

- These occupy about 10.6 % of total geographical area of India.
- Most of these soils have come into existence due to weathering of ancient crystalline rocks and metamorphic rocks. They are rich in iron too.
- The main parent rocks are acidic granites and Gneisses, quartzitic and felspathic rocks,
- thus, there is variation in colour of these rocks from Red, yellow, to brown, chocholate brown, grey and sometimes even black.

- They are found along Western Ghat, southern Deccan Plateau , some parts of southern middle Ganga Plain and parts of Odisha and Chattisgarh.
- Fine grained red and yellow soils are normally fertile while course grained are poor in fertility.
- They are generally poor in Nitrogen,phosphorous and humus.

4. Laterite soil:

- The laterite soils develop in areas of high temperature and high rainfall.
- The leaching of lime and silica with rain and leaves behind soils rich in iron oxides and aluminium compounds, leads to formation of laterite soils.
- The word laterite has been derived from Latin word 'Later' which means brick. They are widely cut as bricks for use in house construction in rural areas of south India.

- Humus content of the soil is removed by the bacteria that thrives in high temperature.
- These soils are poor in organic matter, Nitrogen,phosphate and calcium but rich in potash and iron oxides, thus, are unsuitable for cultivation of crops.
- However, cashewnuts are grown with the help of irrigation and fertilizers in Atmil Nadu, Andhra Pradesh and Kerala.

5. Arid and desert soils:

- Arid soils range from red to brown in colour.
- They are found in arid and semi-arid regions of India including Rajasthan,and adjoining areas of Punjab,Haryana that lies between the Indus river and Aravalli range.
- These soils cover around 4.32% of total geographical area of the country.

- They are generally sandy in structure and saline in nature.
- In some areas, the saline content is so high that common salt is obtained by evaporating the saline water.
- These soils lack moisture and humus mainly because they are found in dry climate having high temperature that increases the rate of evaporation.
- They contain less Nitrogen and some amount of phosphate.

- Lower horizons of these soils contain more calcium and are occupied by ‘Kankar’ layers which sustains moisture and thus enables growth of plants with the help of irrigation.

- Only drought resistant and salt tolerant crops such as Millets ,maize, barley,cotton,wheat and pulses are grown on these soils.

6. Saline soils

- They are known as 'usara' (sterile)soils. They occur in arid and semi-arid regions and in swampy and waterlogged areas. their structure vary from loamy to sandy.
- They cover less than 2% of the total area of the country.
- Saline soils contain a larger proportion of sodium,potassium and magnesium and have more salts because of dry climate and poor drainage, thus they are infertile,supports no growth of vegetation.

- These soils are found in Western Gujarat, Sundarban areas of West Bengal and deltas of eastern coast of India.
- At coastal areas the intrusion of sea water to deposited soils make them saline.

- Green revolution-led to increased salinity
- Gypsum will solve the problem in Punjab and Haryana .

7. Peaty and marshy soils

- They are found in areas of heavy rainfall and high humidity,where there is good growth of vegetation.
- the large quantity of dead organic matter makes the soil rich in humus and organic content to the soil.
- These soils contain some amount of soluble salt also and 40 %organic matter but in some areas they are alkaline in nature.

- These are normally heavy and black in colour.
- These are found in North Bihar, parts of Uttaranchal and coasts of Odisha, West Bengal , Tamil Nadu.
- Peaty soils are used mainly for paddy cultivation.

8. Forest and mountain soils:

- Forest soils are formed in the forest areas where there is sufficient rainfall and deposition of organic matter.
- These soils vary in structure and texture depending upon the variation in amount of deposition of organic matter ,nature of parent rocks and mountain environment.
  - Like they are loamy and silty on valley sides and course grained in upper slopes. They are more fertile in lower valleys.

- In snow –bound areas of the Himalayas they experience more denudation (weathering-erosion-transportation-deposition) ,have low humus content.
- They are found in Himalayas, western and eastern Ghats and at few areas in peninsular plateau.
- They support growth of tea, coffee, spices, and tropical fruits in western ghats while maize,wheat,barley, apple,grapes,etc. in J&K, Uttarakhand and Himachal Pradesh.