

## Chapter 6 – Soils

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### EXERCISES

1. Choose the right answer from the four alternatives given below:

**Question 1(i).**

Which one of the following is the most widespread and most productive category of soil?

- (a) Alluvial Soil
- (b) Laterite Soil
- (c) Black Soil
- (d) Forest Soil.

**Answer:**

- (a) Alluvial soil

**Question 1(ii).**

'Regur Soil' is another name for the.

- (a) Saline Soil
- (b) Arid Soil
- (c) Black Soil
- (d) Laterite Soil.

**Answer:**

- (c) Black Soil

**Question 1(iii).**

Which one of the following is the main reason for the loss of the top soil in India?

- (a) Wind erosion
- (b) Water erosion
- (c) Excessive leaching
- (d) None of these.

**Answer:**

- (a) Wind Erosion

**Question 1(iv).**

Arable land in the irrigated zones of India is turning saline due to which of the following reasons?

- (a) Addition of gypsum
- (b) Over grazing
- (c) Over irrigation
- (d) Use of fertilisers.

**Answer:**

(c) Over Irrigation.

**2. Answer the following questions in about 30 words.**

**Question 2(i).**

What is soil?

**Answer:**

Soil is the mixture of rock debris and organic materials which develop on the earth's surface. The various agents of weathering and gradation have acted upon the parent rock material to produce a thin layer of soil. Important components of the soil are mineral particles, humus, water and air. The actual amount of each of these depend upon the type of soil.

**Question 2(ii).**

What are the main factors responsible for the formation of soil?

**Answer:**

Relief, parent material, climate, vegetation and other life-forms and time are the important factors that affect formation of soil. Besides these, human activities also influence it to a large extent. For example, the laterite soils develop in areas with high temperature and high rainfall. Black soils are made from volcanoes. Forest soils are formed in the forest areas where sufficient rainfall is available. Peaty soils are found in the areas of heavy rainfall and high humidity, where there is a good growth of vegetation.

**Question 2(iii).**

Mention the three horizons of a soil profile.

**Answer:**

Three horizons of soil profile are:

1. **Horizon A:** It 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.
2. **Horizon B:** It 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.
3. **Horizon C:** It 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.

**Question 2(iv).**

What is soil degradation?

**Answer:**

Soil degradation can be defined as the decline in soil fertility, when the nutritional status declines and depth of the soil goes down due to erosion and misuse. Soil degradation is the main factor leading to the depleting soil resource base in India.

The degree of soil degradation varies from place to place according to the topography, wind velocity and amount of the rainfall.

**Question 2(v).**

What is the difference between Khadar and Bhangar?

**Answer:**

<b>Basis</b>	<b>Bhangar</b>	<b>Khadar</b>
Composition	It is a highland composed of old alluvium.	It's a lowland composed of new alluvium.
Flood	It is always above the level of flood plains.	It is flooded almost every year.
Fertility	It comprises of canvanious nodules.	It comprises of clay soil which is normally fertile.
Suitability	It is not much suited for agriculture.	It is suited for agriculture. Intensive agriculture is practiced here.
Other name	It is known as dhaya in Punjab.	It is known as bate in Punjab.

**3. Answer the following questions in about 125 words**

**Question 3(i).**

What are black soils? Describe their formation and characteristics.

**Answer:**

Black soils are formed by volcanoes. These soils are also known as the 'Regur Soil' or the 'Black Cotton Soil'. Features: 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 soils develop wide cracks.

Thus, there occurs a kind of 'self ploughing'. Because of this character of slow absorption and loss of moisture, the black soil retains the moisture for a very long time, which helps the crops, especially; the rain fed ones, to sustain even during the dry season.

**Chemical Composition:** 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.

**Areas:** Black soil covers most of the Deccan Plateau which includes parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu. In the upper reaches of the Godavari and the Krishna, and the north western part of the Deccan Plateau, the black soil is very deep.

**Question 3(ii).**

What is soil conservation? Suggest some measures to conserve soil.

**Answer:**

Soil conservation is a methodology to maintain soil fertility, prevent soil erosion and exhaustion, and improve the degraded condition of the soil.

We can use following measures to conserve soil:

- Check open cultivable lands on slopes from farming.
- Lands with a slope gradient of 15 – 25 per cent should not be used.
- If at all the land is to be used for agriculture, terraces should carefully be made.
- Contour bunding, Contour terracing, regulated forestry, controlled grazing, cover cropping, mixed farming and crop rotation to conserve soil.

- Integrated land use planning, therefore, seems to be the best technique for proper soil conservation.
- Lands should be classified according to their capability; land use maps should be prepared and lands should be put to right uses.

**Question 3 (iii).**

How do you know that a particular type of soil is fertile or not? Differentiate between naturally determined fertility and culturally induced fertility.

**Answer:**

The fine-grained red and yellow soils are normally fertile, whereas coarse-grained soils found in dry upland areas are poor in fertility. They are generally poor in nitrogen, phosphorous and humus.

Some soils have phosphorus, potassium, humus, nitrogen and calcium naturally. It increases the fertility of these soils. Such fertility is called naturally determined fertility. On the other hand, if soil is deficient in these substances, such substances are added in the form of fertilizers and manures. If fertility of soil is increased through human efforts, such fertility is called culturally induced fertility.

Naturally determined fertility makes human dependent on nature. Culturally induced fertility indicates that man has become master of the nature. It is an indicator of development of human race. Soils are living systems. Like any other organism, they too develop and decay, get degraded, respond to proper treatment if administered in time. A human being may be intelligent by birth or may be made intelligent by efforts. Similarly, soil may be fertile naturally and may be made fertile by human efforts. Former is called naturally determined fertility and the latter is called culturally induced fertility.

**Project/ Activity**

**Question 1.**

Collect various samples of soil and prepare a report on the type (s) of soils found in your region.

**Answer:**

Attempt yourself.

**Question 2.**

On an outline map of India, mark the areas covered by the following soil categories.

- (i) Red soil
- (ii) Laterite soil
- (iii) Alluvial soil.

**Answer:**

