

25.3 SOIL

Soil is the uppermost layer of earth's crust, which supports growth of plants. It is a complex mixture of (i) mineral particles (formed from rocks), (ii) humus (organic material formed from decaying plant remains), (iii) mineral salts, (iv) water, (v) air, and (vi) living organisms (larger ones like earthworms and insects and microscopic ones like the bacteria and fungi).

Humus

A brown or black organic substance consisting of partially or wholly decayed vegetable or animal matter that provides nutrients for plants and increases the ability of soil to retain water.

Soil is a renewable as well as non-renewable resource.

- Soil is renewable because its productivity can be maintained with fertilizers and manures rich in humus.
- If the soil has been removed from a certain place by erosion, it is practically non-renewable because formation of new soil may take hundreds and thousands of years.

25.3.1. Soil Erosion

Erosion literally means "to wear away". You might have noticed during the summer, when wind blows it carries away sand and soil particles from one place to another. Similarly flowing water removes some amount of soil along with it. **This removal of top layers of soil by wind and water is called soil erosion.** You know that top layers of soil contain humus and mineral salts, which are vital for the growth of plants. Thus, erosion causes a significant loss of humus and nutrients, and decreases the fertility of soil.

25.4.2. Causes of soil Erosion

Now we shall discuss the causes of soil erosion. There are several causes of soil erosion, these include:

- (a) Natural causes; and
- (b) Anthropogenic causes (human generated causes)

(a) Natural Causes of Soil Erosion

Erosion of soil takes places due to the effect of natural agents like wind and water. High velocity winds over lands, which have no vegetation, carry away the loose top soil. Similarly in areas with no or very little vegetation, the pouring raindrops carry away the soil.

(b) Anthropogenic Causes of Soil Erosion

Besides the natural agents, there are some human activities, which cause soil erosion. Let us know about them.

1. **Deforestation:** If the forests are cut down for timber, or for farming purposes, then the soil is no longer protected from the effect of falling rains. Consequently, the top soil is washed away into the rivers and oceans.

Stubble : The short, stiff stalks of grain or hay remaining on a field after harvesting

- Poor farming methods:** Improper tillage and failure to replace humus after successive crops and burning the stubble of weeds reduce the water-holding capacity of the soil. So the soil becomes dry and can be blown away as dust.
- Overgrazing:** Overgrazing by flocks of cattle, buffaloes, goats and sheep leave very little plant-cover on the soil. Their hooves make the soil dry and soil can be blown away easily.

25.4.3 Conservation of Soil

In the previous section we learnt about the various causes of soil erosion. Soil loses its fertility due to erosion. So we need to conserve the soil. Soil conservation means checking soil erosion and improving soil fertility by adopting various methods. Let us know some of these methods.

- Maintenance of soil fertility:** The fertility can be maintained by adding manure and fertilizers regularly as well as by rotation of crop.
- Control on grazing:** Grazing should be allowed only on the areas meant for it and not on agricultural land.
- Reforestation:** Planting of trees and vegetation reduces soil erosion by both water and wind.
- Terracing:** Dividing a slope into several flat fields to control rapid run of water. It is practised mostly in hilly areas.
- Contour ploughing:** Ploughing at right angles to the slope allows the furrows to trap water and check soil erosion by rain water.



INTEXT QUESTIONS 25.3

- How do the following cause soil erosion?

Wind : _____

Overgrazing : _____

Water : _____

- Match the items of column A with those of Column B.

Column-A

Column-B

- | | |
|---------------------|--|
| (i) Terracing | (a) Decayed vegetable or animal matter |
| (ii) Erosion | (b) Cutting down forests |
| (iii) Deforestation | (c) Practised in hilly areas |
| (iv) Humus | (d) To wear away |