Land Degradation: Mechanisms and Causes!

It is the decline in land quality or reduction in its productivity or production potential caused by human activities.

Worldwide 5 -7 m ha farm land is being degraded annually.

Mechanisms that Initiate Land Degradation:

1. Physical processes:

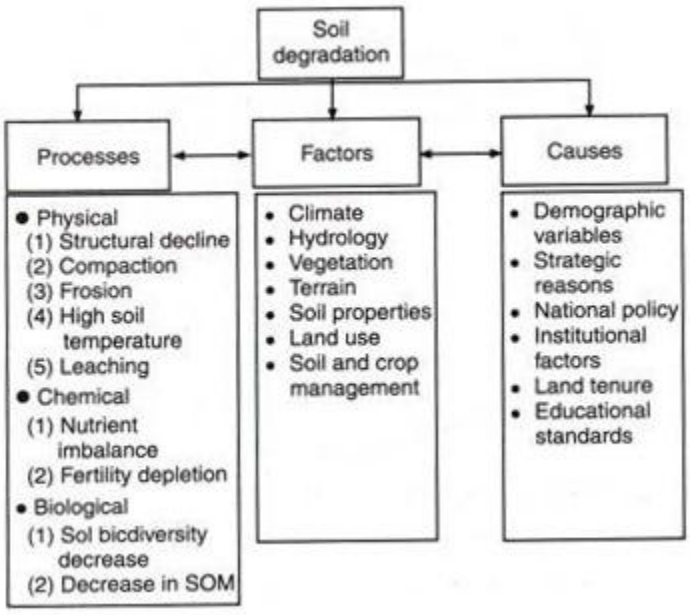
Decline in soil structure leading to crusting, compaction, erosion, desertification, environmental pollution and unsustainable use of natural resources.

2. Chemical processes:

Acidification, leaching, decrease in captions retention capacity and loss of nutrients.

3. Biological processes:

Reduction in total and biomass carbon and decline in land biodiversity.



Causes for Land Degradation:

(i) Intensive irrigation leads to water logging and salinisation, on which crops cannot grow.

(ii) The use of more and more chemical fertilizers poisons the soil so that eventually the land becomes unproductive.

(iii) The roots of trees and grasses bind the soil. If forests are depleted, or grasslands overgrazed, the land becomes unproductive and wasteland is formed.

(iv) Land is also converted into a non-renewable resource when highly toxic industrial and nuclear wastes are dumped on it.

(v) As urban centres grow and industrial expansion occurs, the agricultural land and forests shrink. This is a serious loss and has long term ill effects on human civilization.

(vi) Land degradation/soil erosion due to deforestation is more evident on steep hill slopes in the Himalayas. These areas are called ‘ecologically sensitive areas’ or ESAs. To prevent the loss of millions of tons of valuable soil every year, it is essential to preserve what remains of our natural forest cover.It is equally important to reforest denuded areas. The linkage between the existence of forests and the presence of soil is greater than the forest’s physical soil binding function alone. The soil is enriched by the leaf litter of the forest.It is broken down by soil micro-organisms, fungi, worms and insects, which help to recycle nutrients in the system. Further losses of our soil wealth will impoverish our country and reduce its capacity to grow enough food in future.

(vii) The rate of mangrove loss is significantly higher than the loss of any other types of forests. If deforestation of mangroves continues, it can lead to severe losses of biodiversity and livelihoods, in addition to salt intrusion in coastal areas and siltation of coral reefs, ports and shipping lanes.
Land degradation is the major consequences of direct interference of human activities in the natural phenomenon.

Prevention and Control Measures for Land Degradation:

Following are some practices for controlling land degradation:

1. Strip farming:

It is & practice in which cultivated crops are sown in alternative strips to prevent water movement.

2. Crop Rotation:

It is one of the agricultural practice in which different crops are grown in same area following a rotation system which helps in replenishment of the soil.

3. Ridge and Furrow Formation:

Soil erosion is one of the factors responsible for lad degradation. It can be prevented by formation of ridge and furrow during irrigation which lessens run off.

4. Construction of Dams:

This usually checks or reduces the velocity of run off so that soil support vegetation.

5. Contour Farming:

This type of farming is usually practiced across the hill side and is useful in collecting and diverting the run off to avoid erosion.