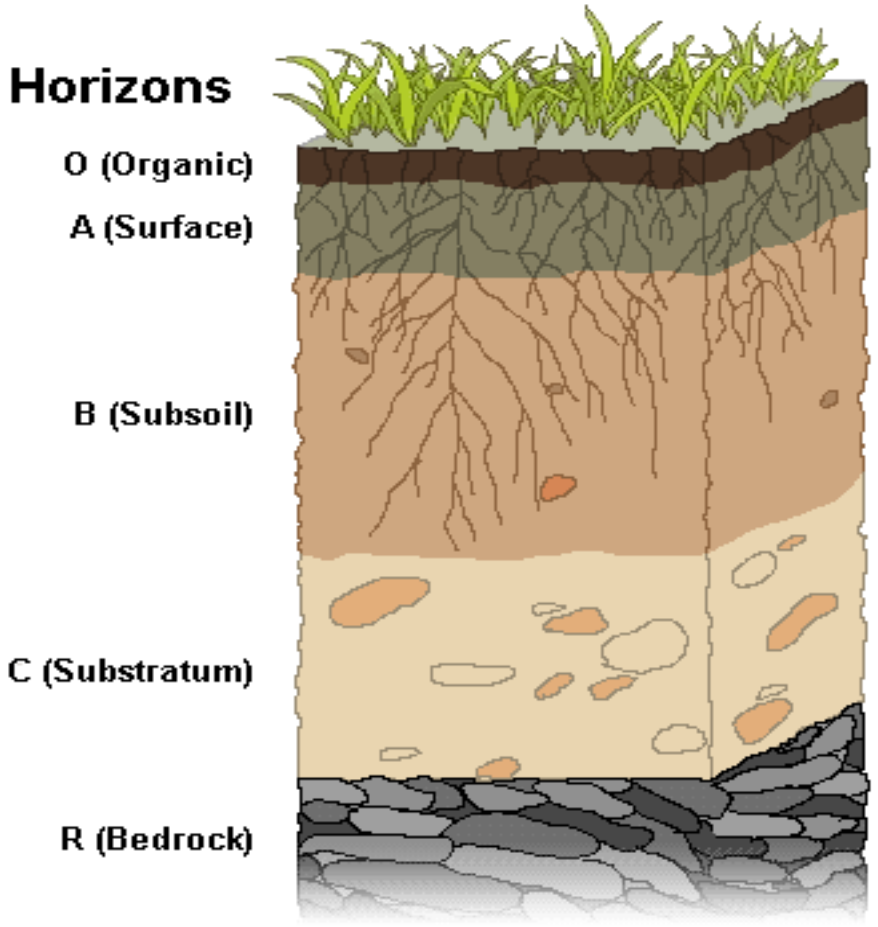
# CHAPTER- 10

# SOIL

## CLASS – 7

04.8.20 TO 14.08.20



# SOIL

Naturally occurring, loose covering of broken rock particles and decaying organic matter (humus) on the surface of the earth.

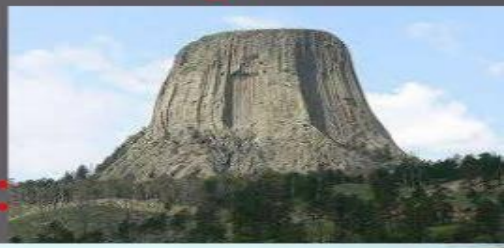
It is capable of supporting life.

# SOIL FORMATION

Soil formation is the combined effect of physical, chemical and biological processes on its parents material , the rocks.

# What Is weathering?

- The breaking down of rocks is known as Weathering
- Wind , water , frost helps in transporting of soil to places.



- There are two types of weathering :
  - Physical weathering
  - Chemical weathering

# Agents of Physical weathering

1. Temperature
2. Water
3. Wind
4. Plants and animals

# Chemical weathering

- Chemical weathering is the process which exists of mineral are broken down into mineral components.

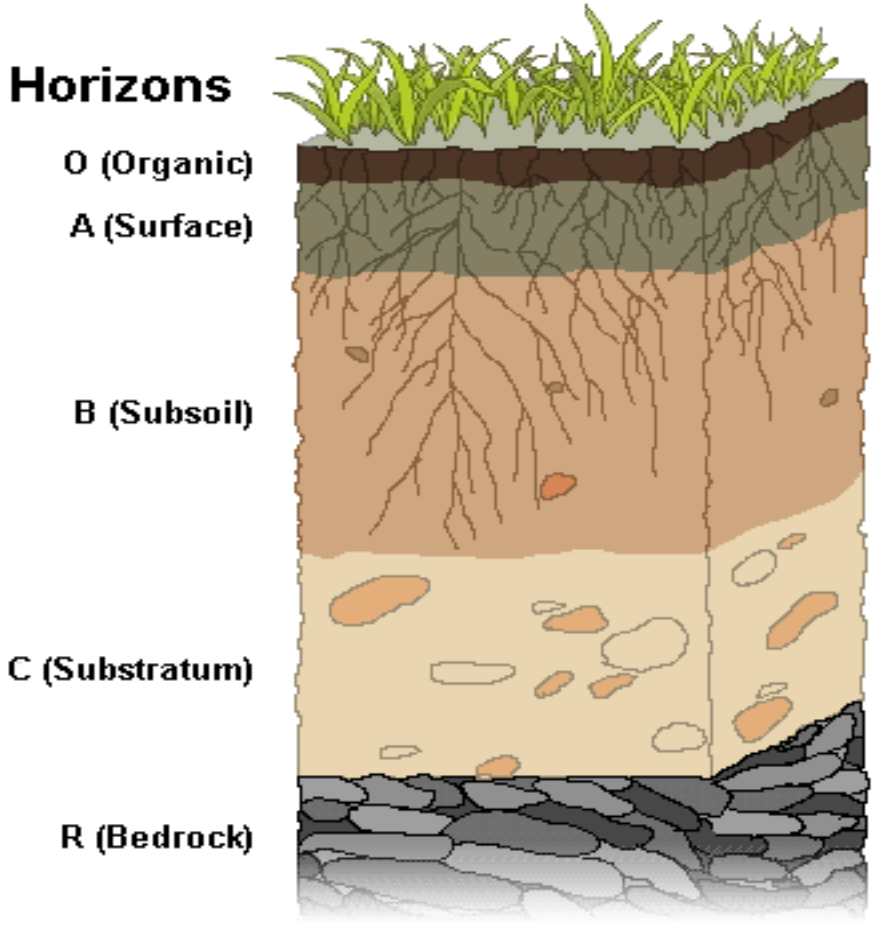
# Chemical weathering

1. Organic acids, released during the decomposition of organic matter.
2. The solvent action of water, that dissolves the soluble salts and forms solutions, further hastens the process of weathering.

# Soil profile

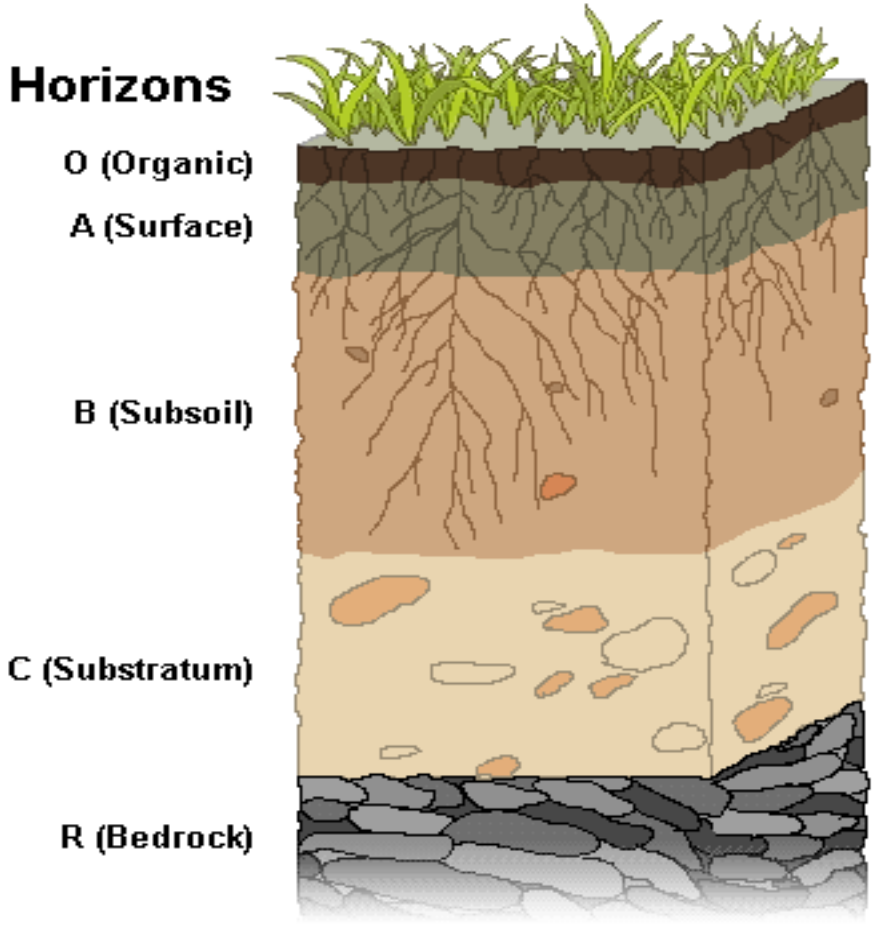
The arrangement of soil horizons in a soil is known soil profile.

**Soil horizons-** Various layers in the soil are known as soil horizons. These are O, A, B, C & R horizons.



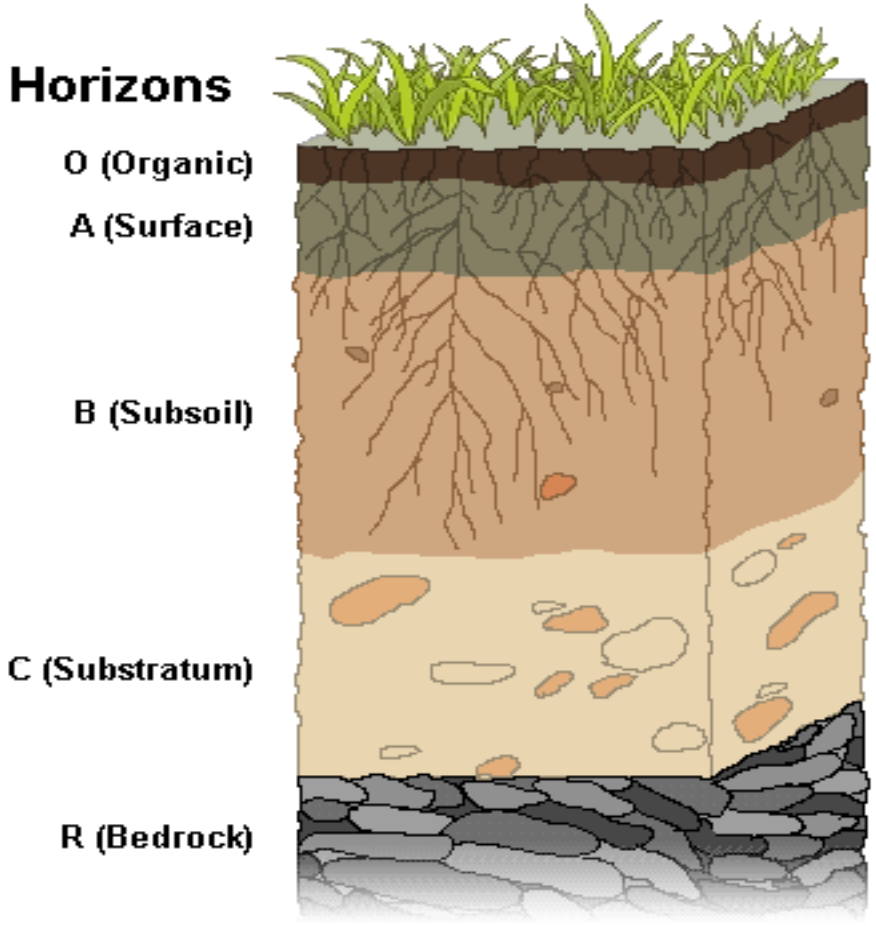
# O Horizon

Top, organic layer of soil, made up mostly of leaf litter and humus (decomposed organic matter).



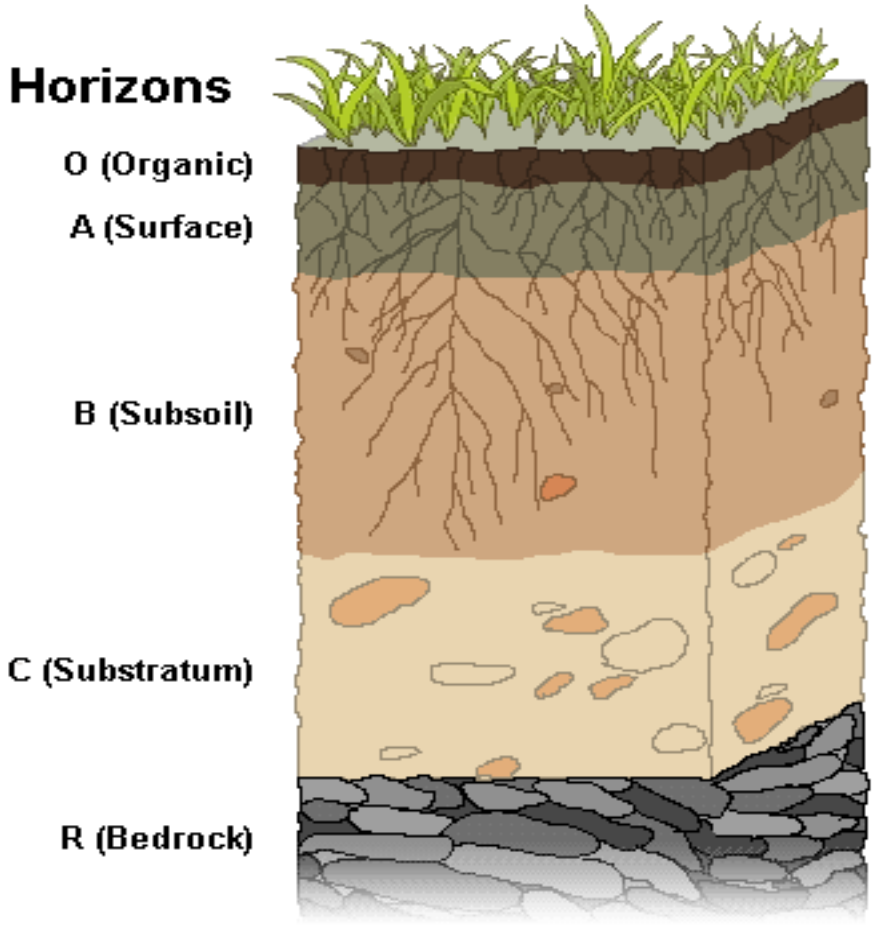
# A Horizon

This layer is found below the O horizon. Seeds germinate and plant grow in this dark coloured layer. It is made up of humus mixed with mineral particles.



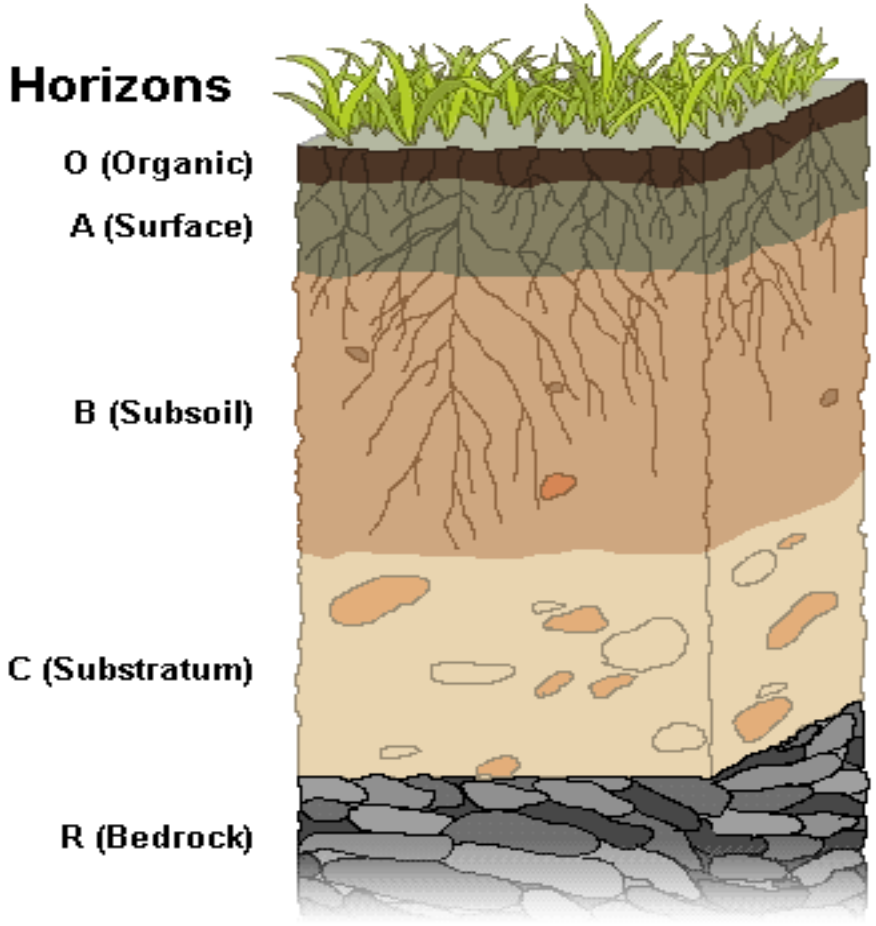
# B Horizon

It is also called the sub soil. It contains clay and mineral deposits, like iron, aluminium oxide and calcium carbonate. It receive them, from layers above it, when mineralized water drips from the top soil.



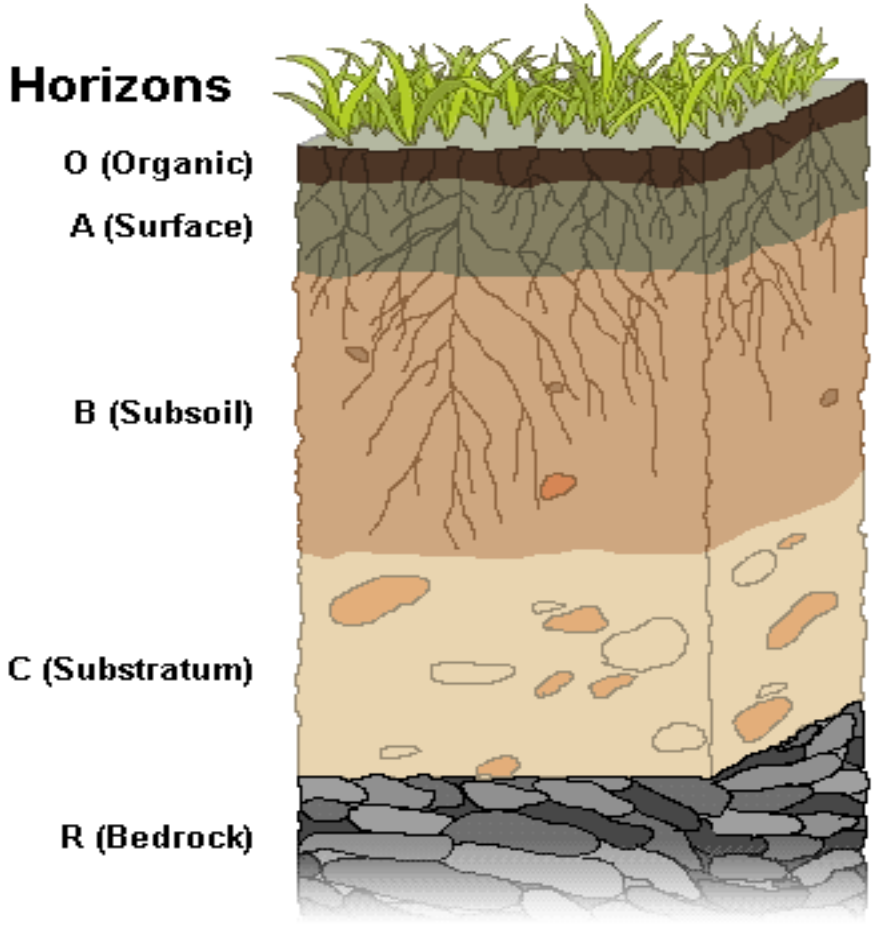
# C Horizon

It is below B horizon. It consists of slightly broken up bedrocks. Plants root do not penetrate this layer and very little organic material is found in this layer.



# R Horizon

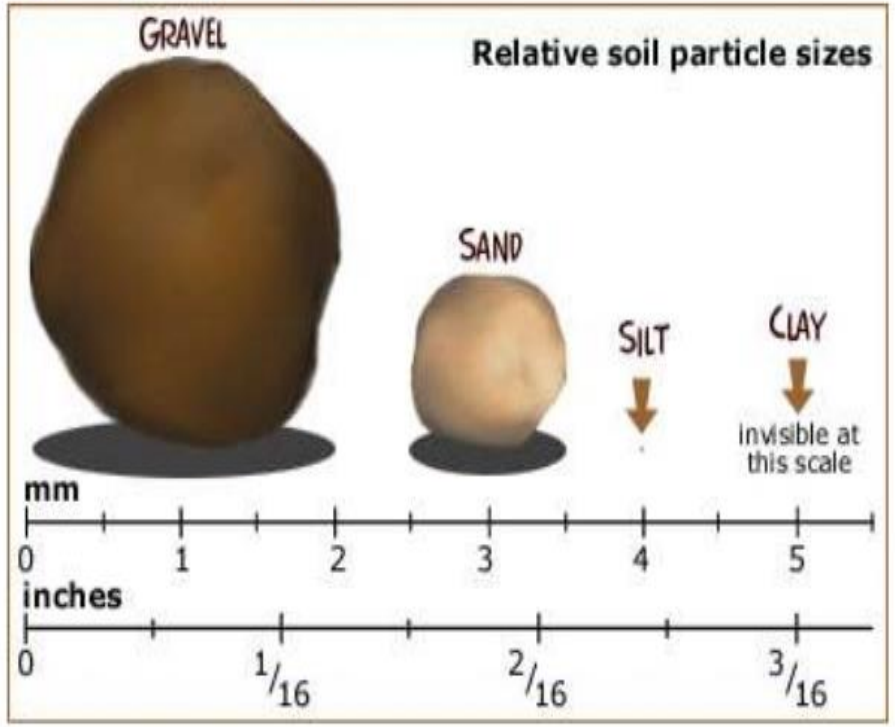
This consist of the unweathered rock layer, called the bed rock. It is the lower most layer.



# Properties of soil

1. Soil texture
2. Soil colour
3. Soil structure
4. Plasticity and cohesion
5. Soil density
6. Infiltration rate and percolation rate

## Relative Size of Soil Particles



# SOIL TEXTURE

Soil texture depends mainly on the relative size of the soil particles.

On the basis of soil texture, soil is classified into three categories-

1. Sandy soil
2. Clayed soil
3. Loamy soil

# 1. Sandy soil

- This soil have bigger soil particles, the large spaces between them are filled with air.
- Such soil cannot retain water as water can drain out quickly through the space between the sand particles.

# 2. Clayey soil

- This soil having fine, smooth particles, with very little space between them.
- This soil cannot retain air.
- This soil can retain water more than sandy soil.

# 3. Loamy soil

- This soil is a mixture of sand, silt and clay particles.
- It can hold both air and water.
- It has humus also.
- It is considered to be the best soil for growing most of the crops

# SOIL COLOUR

- It gives an indication of soil conditions and some of its important properties.
- Soil colours differ due to mineral content of their parent rock and amount of organic matter in them.

# SOIL STRUCTURE

- Sand soil may be structureless because they behave independently of each other.
- Clay soil particles have tendency to stick together.

# PLASTICITY AND COHESION

- **Plasticity** is the property that enable moist soil to change its shape on application of force and retain the shape even when the force is withdrawn.
- **Cohesion** is the tendency of similar particles to stick to one another.

# INFILTERATION RATE AND PERCOLATION RATE

- **Infiltration** is the rate at which water enters in the soil.
- **Percolation** is the rate at which water moves through a soil.

# Composition of soil

Following components are generally found in a soil.

1. Inorganic substance
2. Organic materials (humus)
3. Soil water
4. Soil layer
5. Living organism.

# Vermicompost

It is the end product of the breakdown of organic matter by some spices of earth worm.

It is nutrient rich and natural fertilizer.

# Soil Pollution

**The buildup of toxic components, chemicals, salts and disease causing agents in soil.**

# Soil and crops

**The type of crop depends on the type of soil.**

- **Cereal crops and paddy grow well in clay soil.**
- **Legumes like gram grow well in loamy soil.**
- **Coconut trees grow well in sandy soil.**
- **Cotton grows in sandy loam soil.**

# Soil Erosion

**The removal of top soil b agent such as wind and water.**

**Causes of soil erosion-**

- **Deforestation**
- **Construction of buildings and highways.**
- **Overgrazing**
- **Careless cultivation.**

## Prevention of soil erosion-

- Extensive afforestation
- Avoiding overgrazing and overuse of land
- Overgrazing
- Careless cultivation.
- Terrace farming in hilly region.

# THANKS