

Class-6 (Agriculture)

Chapter-3

Agricultural Inputs

Lecture-1

Lesson: 1-2

❖ **Contents**

- Definition of soil
- Properties of soil
- Importance of soil
- Composition of soil
- Components of soil
- Classifications of soil

❖ **Soil**

Soil is the loose soft surface material of the earth consisting of organic matters, minerals, gases, liquids, and organisms that together support life.

❖ **Properties of soil**

- Soil is a natural substance, which is formed by integration of minerals and organic matters.
- It is the uppermost layer of the earth surface.
- Different layers of soil are formed into different thickness and every layer has different physical, chemical and biological characteristics.
- Soil is formed by stone, stone chips, dust particles, sands, mud, etc. mixed with the remains of plants and animals.
- Generally the soft soils are formed from the hard rocks.

❖ **Importance of soil:**

- Soil provides a substrate for plants (roots anchor in soil).
- A source of food for plants.
- A home for many animals (insects, spiders, centipedes, worms, burrowing animals, bacteria, and many others).
- Purify the water and preserve it as underground water.

❖ **Describe the components of soil.**

Soil consists of four main components:

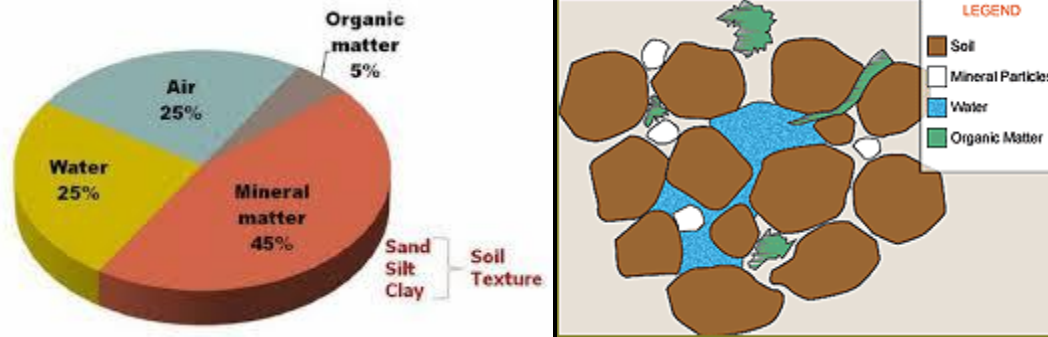


Figure- Compositions of soil components

1) Inorganic or mineral materials:

- The sand, silt and clay particles are mineral material of soil.
- The natural forces like temperature, pressure, rainfall, wind, air and snowfall, etc. have crushed parent rocks and created inorganic or mineral materials in the passage of time.
- The minerals are mixed at various proportions and formed different soil texture.
- About 45% of mineral materials are present in the soil by volume.

2) Organic material:

- Organic materials in the soil are created as a result of decomposition of plant and animal dead body, homestead plants, vegetable wastage, leaves, straws, stool of animals, etc.
- Organic materials are called the life of soil. Because of the activities of soil and micro-organism increase in the presence of organic materials.
- 5% of organic materials are present in the soil by volume.

Functions of organic matters:

- Improve physical, chemical and biological characteristics of the soil.
- Prevent soil erosion
- Make the air and water movement of the soil easier
- Increase number of earthworms and their activities of the soil
- Controls soil moisture and temperature

3) Water:

- Water retains between the pore spaces of the soil particles.
- Water contained in the soil makes the plants, nutrient elements soluble and keeps the soil moistened.
- The main sources of water in the soil are the rainfall, atmospheric moisture or clouds, underground water and irrigation.
- The ideal soil contains about 25% water by volume.

4) Air:

- Air exists between inter particle spaces of the soil.

- The nodular bacteria of plants, fungus and other micro-organism activities that require oxygen are provided by the soil air.
- The quantity of air in the soil is about 25% by volume.

❖ **Soil particles:**

Mineral particles whose diameter is 2 mm or less than that are called soil particles.

❖ **Soil texture:**

The comparative quantity or percentage of ratio of sand, silt and clay particles in the soil is called soil texture.

❖ **Classification of soil:**

For agricultural purpose, the soil has been divided into 3 main categories depending on the textural variation. These are—

- 1) Sandy soil
- 2) Loamy soil
- 3) Clayey soil



Fig-Sandy soil

Fig- Loamy soil

Fig- Clayey soil

1) **Sandy soil:**

- The soil that contains 70% or more sand particles is called sandy soil.
- The soil particles are coarse in sandy soil and that's why crops cannot grow suitably in sandy soil.
- By applying huge compost, cow-dung and green manure crops can be grown in sandy soil.
- Indian millet, Italian millet, melon, potato, water melon, etc. can grow well in this soil.

2) Loamy soil:

- The soil that contains less than 70% sand particles, but more than 20%, is called loamy soil.
- The typical loamy soil should contain 50% sand particles and the rest half is composed of silt and clay.
- Loamy soil is again divided into 3 categories such as –1) Sandy loam soil 2) Silty loam soil and 3) Clay loam soil.
- This soil is suitable for cultivation. All kinds of crops can grow well in this type of soil.
- Soil of majority areas of Bangladesh is of loamy type.

3) Clayey soil:

- The soil that contains minimum 40% of clay particles is called clayey soil.
- Silt particles are also present more in this soil.
- This soil is very difficult to be ploughed.
- This soil may be suitable for cultivation by applying organic fertilizers.
- Rice, jute, sugarcane and vegetables grow well in this soil.
- This soil is found in northern part of Dhaka district, eastern part of Tangail district and south-western part of Mymensingh district.

Related questions:

1. What is called the life of soil?
2. What are the functions of organic materials of the soil?
3. What are the main sources of water in the soil?
4. What is the main function of soil air?
5. What is the main function of soil water?
6. How is inorganic or mineral materials formed in the soil?
7. How is organic materials formed in the soil?
8. How is soil formed?
9. What is soil texture?
10. What are called soil particles?
11. How many types of soil are there depending on texture and what are they?
12. Which soil is suitable for cultivation?
13. Which crops are grown in sandy soil?
14. Which crops are grown in clayey soil?
15. Describe the components of soil.
16. Describe the different types of soil.