

Soil

3

Focus On

- Soil
- Its Layers and Composition
- Types of Soil
- Its Uses

Teacher's Aid

- One magnifying glass
- Samples of various kinds of soils

▼ Here We Go...

Observe the following pictures and fill in the blanks.



_____ is the home of different animals.

Plants grow in _____.

Many crops and vegetables also grow in _____.

Soil

When you visit your garden, what do you see? There is soil all around. Plants are grown in soil and many insects also make their home in the soil.

Dig some **soil** and watch it. You will see small pieces of pebbles, some roots of plants, some dead plants, some leaves and some tiny insects. These small pebbles are very small pieces of rocks. The uppermost layer of our earth's surface is soil.



Plants need soil to grow

Formation of Soil

Soil is formed over a very long period of time. The process of soil formation is continuously going on. The soil is formed due to weathering of rocks and minerals.

Weathering is the process of breaking down of huge rocks due to the action of heat of the sun, cold, water and wind force. Rocks split into small pieces then by colliding against each other, these particles split into tiny particles. Slowly these tiny particles get mixed with dry leaves, dead plants and animals and form soil.



Weathering of rocks by wind and water

Fact Byte

- ❖ Sandy soil holds less water while clayey soil holds more water.
- ❖ The plants that need less water to grow are grown in sandy soil.

Composition of Soil

As you know, soil is a formation of rock particles, pebbles, clay and sand. **Humus** is also present in soil.

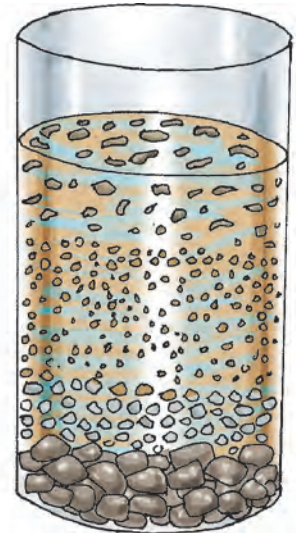
The decaying plant and animal matter is called humus. It makes the soil rich in minerals.

Let's do an activity to show that soil contains pieces of stones, sand, clay and humus.

ACTION TIME 1

Take an empty glass and put some soil from the garden in it. Fill the glass with water and stir the contents with a spoon. Now let it sit for about 20 minutes. Now observe the glass carefully. You will see that different layers are formed in the glass. Starting from the bottom, the first layer formed is of gravels and stones. Above this is the layer of sand. The clay settles down above the sand. The topmost layer consists of water and humus.

Soil contains pieces of broken rocks, minerals, decaying plants and animals (humus), air and water.



Let's do an activity to show that soil contains water.

ACTION TIME 2

Take some soil in a pan and cover it with a lid. Request an elder to heat the pan over a low flame and then open the lid. You will see drops of water on underside of the lid. It proves that soil contains water in the form of moisture.



Let's do an activity to show that soil contains air.

ACTION TIME 3

Take a glass jar and put some soil in it. Pour water in it. Bubbles will float up as you pour water. This shows that air, that is trapped inside the soil, escapes as bubbles when water is poured on it.



Layers of Soil

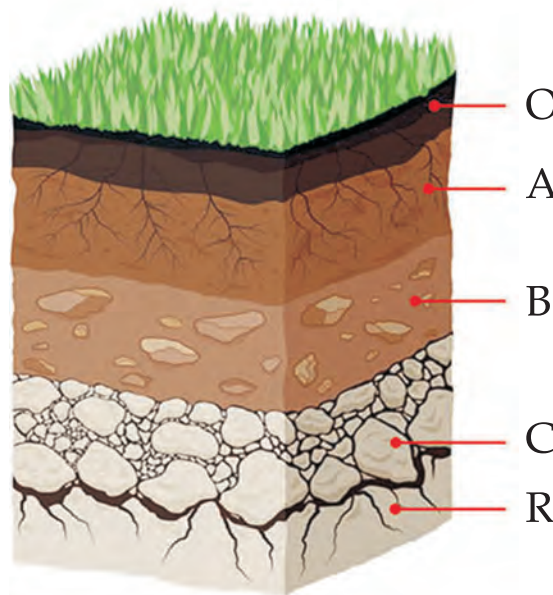
Soil has 5 different layers. These layers are called horizons.

The top layer, i.e., horizon 'O' is made up of organic litter like dead leaves and branches.

The second layer i.e. topsoil or horizon 'A' is made up of humus and small particles of minerals. Humus contains a lot of nutrients which allows plants and organisms grow.

The third layer is subsoil or horizon 'B'. It consists of clay, iron and some minerals.

The fourth layer, i.e. horizon 'C' is made up of minerals only. This is also known as **bedrock**. This is made up of large rocks. It is also called **parent material** because the upper layers develop from this layer. It is a large solid mass of rocks. The fifth layer, i.e. horizon R is completely made up of bedrock.

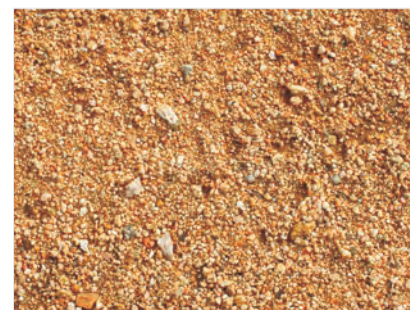


Types of Soil

Soil varies in colour and composition. Different places have different types of soil. There are three types of soil : sandy, clayey and loam.

Sandy Soil

It is composed of big sand particles that have a lot of air in the spaces between them. It does not hold much water. It is dry and light soil. It is found on seashores and in deserts.



Clayey Soil

It is composed of very fine particles with a few spaces between them. This soil can hold a lot of water. It is sticky. Plants like wheat and rice grow very well in clayey soil. It is used to make pots, utensils and toys.

Loam

It is a mixture of sand and clay. It can hold both air and water. It is the ideal soil for growth of plants as it contains humus.



Let's Recall

Fill in the blanks.

1. _____ (Loam/Clayey) soil is the ideal soil for growth of plants as it contains _____ (rocks/humus).
2. _____ can hold a lot of water. (Sandy soil/Clayey soil)
3. The third layer of soil is called (subsoil/topsoil) _____.

Uses of Soil

- ❖ Soil provides water and minerals to plants for their growth. So it is used for agriculture. It is the main source of nutrients for plants.
- ❖ Soil supports the root to hold the plants straight.
- ❖ Soil is the habitat of many tiny creatures like snails, earthworms and woodlice.
- ❖ Soil is the base of all construction projects, such as roads, buildings and dams.
- ❖ Soil prevents floods by absorbing rainwater.
- ❖ Soil provide us with useful minerals like diamond, graphite, etc.



Crops grow in soil



Bricks are made of soil



Construction projects

Flash On

- * Soil is made up of rock, minerals and humus.
- * Soil is formed by weathering of rocks.
- * Soil has different layers or horizons.
- * Three types of soil are sandy, clayey and loam.
- * Soil plays an important role in human life.

Words to Know

Humus : The decaying plant and animal matter

Soil : The uppermost layer of earth's surface

Bedrock : large solid rocks that are found in bottom layer of the earth

Horizons : The layers of soil.

Exercise

A. Tick (✓) the correct answer :

1. Soil has many :
(a) horizons (b) colours (c) None of these
2. Soil is made up of :
(a) sand (b) clay particles (c) Both of these
3. Soil contains :
(a) air (b) water (c) Both of these
4. O layer is called :
(a) organic layer (b) humus layer (c) Both of these
5. C layer is called :
(a) bed rock (b) parent material layer (c) None of these

B. Fill in the blanks by choosing words from the help box :

humus, bedrock, subsoil, moisture, soil

1. The uppermost layer of our earth is _____.
2. The decaying plants and animals are called _____.
3. The water contained in soil is called _____.
4. The _____ contains clay, iron and minerals.
5. The bottom layer of soil is called _____.

C. Write T for True and F for False statements :

1. Soil is made by weathering of rocks.
2. Humus is harmful for plants.
3. Sandy soil holds too much of water.
4. Clayey soil is used to make utensils.
5. The bedrock is made up of a large solid mass of rocks.

D. Match the following :

Column A

1. layers of soil
2. Clayey soil
3. Decaying plants and animals
4. Bedrock
5. Sandy soil

Column B

- (a) does not hold so much water
- (b) solid mass of rocks.
- (c) sticky
- (d) humus
- (e) horizons

E. Answer the following questions :

1. What is soil?
2. How does the formation of soil take place?
3. Write the composition of soil.
4. What are the different layers of soil?
5. How is the soil useful for us?

F. HOTSPOT

1. Define humus.
2. 'Protection of soil is very important.' Discuss.

Practice Time

G. Your turn

- Take soil from different places like roadside, garden and mud. Try to find out the composition of the soil and describe its properties. Which soil can be used for following purposes :
 - (a) To grow plants
 - (b) To make pots
 - (c) To make bricks
 - (d) To make buildings

- Let us test that soil holds water. Take four types of soil, 100 g each, in four various pieces of clean cloth. Keep a container under each of the cloths to hold the water. Pour 100 ml of water, measured with another beaker, on each type of soil. Let the water drain off the soil for five minutes. Now, observe the quantity of water in each of the beakers. Note down your observation and discuss.

H. Take a tray and fill it with soil. Bring the tray close to your mouth and blow on the soil. What do you observe? You will observe that the soil is blown away. Now place the same tray (filled with soil) in an upturned position in an empty tub, pour water on the soil. What do you notice?

The soil is washed away with water. This is how soil is blown away and washed away in nature. This process is called soil erosion.

Ask your teacher about this in the class.

I. Observe the pictures below. Write what each picture depicts about the use of soil.





J. Take some clay, mud and make a parrot using it. Let it dry. Water paint the parrot, stick some feathers and a beak of paper.

K. Unscramble the given words. Clues for each word have been given.

1. YELECY LISO (It is sticky in nature.) _____
2. TEWAR (Soil contains this.) _____
3. NDAIDOM (Precious mineral we get in soil) _____
4. MOLA (It is a mixture of sand and clay.) _____

L. Complete the following charts :

