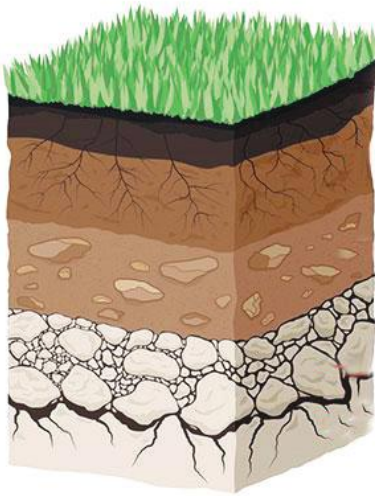




Soil covers much of the land on the Earth. At some places, its layer is thick. At other places, its layer is thin. Our food grows in the soil. We make bricks of soil to make houses. Crops are grown in soil.



### LAYERS OF SOIL

Soil has mainly three layers : Top soil, Subsoil and Bedrock.

1. **Top Soil** : It is the dark-coloured soil at the top. Plants grow in Top soil.
2. **Subsoil** : It is under the layer of Top soil. It is light-coloured soil containing many rocks.
3. **Bedrock** : It is the solid rock at the bottom.



### How is soil made up of?

How was soil formed on the Earth? Long time ago, the surface of the Earth was covered with rocks. There was no soil on the Earth. Due to the changes in weather, the rocky surface turned hot and cold. It led to cracks developing in the rocks.

The fast flowing rain and river water widened the cracks. They broke the rocks into small pieces. Since then, the rivers have continued to break rocks into smaller pieces. Sand is formed when hard rock breaks into tiny pieces.

The weather, fast flowing water and strong winds break the rocky surface of the Earth and form soil.



*Weathering of rocks by water*

## KINDS OF SOIL



There are four types of soil : sandy, clayey, loamy and gravel.

1. **Sandy Soil** : It has more sand and less humus. You can feel it by touching. Sandy soil remains wet only for a short time. It dries up easily. It is good for the crop of water-melons.

2. **Clayey Soil** : It has more clay. It is smooth to touch. It is soft. It remains wet for a long time. Wheat and cotton grow well in it. It turns hard when dry.



3. **Loamy Soil** : It has a good amount of humus, some fine soil and sand. It remains wet for a long time. It does not turn hard when dry. Most plants grow well in loamy soil.

4. **Gravel** : This kind of soil is made of pieces of rocks. It is not suitable for plants.

## Humus

Humus is a soil formed by mixture of soil and decayed animals and plants.

### Test your Self

1. What are the three layers of soil ?  
\_\_\_\_\_
2. What are the four types of soil? Which one is good for the plants and why ?  
\_\_\_\_\_
3. Is humus good or bad for the soil and why?  
\_\_\_\_\_

## Activity 1

Take some leaves. Soak them. Wet a piece of land. Place the leaves on wet land. Cover them with stones. Leave them undisturbed for two weeks. Now, turn the stones. Some parts of the leaves have turned into humus. Humus makes soil fertile.

Animals living in soil eat dead plants and mix them with soil. Thus humus is formed.



## Soil Contains Air

### Activity 2

Fill a glass container with water. Put some dry soil in it. You will see bubbles coming out of the soil. The bubbles contain air. This shows that soil contains air.



## Structure of Soil



Gravel



Sand



Clay



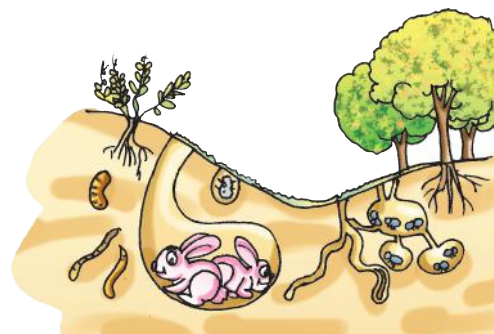
Loam



Humus

## Plants and Animals Help the Soil

Plants help to hold the soil in place. They stop the soil from being washed away. Animals make burrows in the soil. These burrows help water and air move easily through the soil. They help to keep the soil soft. Plants grow easily in soft soil.



### Do You Know ?

Dust is very, very fine sand. It is also helpful. Clouds are formed around dust particles. So there would be no rain. If there is no dust.

## SOILS AND CROPS

### Irrigation

Thus different types of soil are suitable for different types of crops. Good crops need fertile soil, water and manures. If sufficient water is not available through rainfall,



Irrigation by sprinklers



Irrigation with the help of water pump

water is supplied by other means. Supply of water from means other than rains is known as **irrigation**. Irrigation is done through water pumps and other means. Irrigation by sprinklers is the best as it acts like rains.

## Good Seeds

Good seeds produce healthy plants. Farmers can get good seeds from Government Agricultural Stores.

## Proper Manuring

Compost is used as manure. Some well-known fertilizers are Urea, N.P.K., C.A.N and super phosphates.

## Seed Storage

Seeds should be stored in metal boxes. They should be well-dried before storing. They should be protected against moisture and insects.



## PROTECTION AGAINST PESTS AND DISEASES

Pests and insects damage plants. These should be killed by spraying pesticides and insecticides.

## Removal of Weeds

Unwanted plants are called **weeds**. Weeds grow along the planted crops. They use the food from the soil. As they grow faster than the crops, they hinder growth. They must be removed to protect crops.



*Dandelion*



*Creeping Thistle*



*Milkweed*

## CROP ROTATION



If the same crop is grown year after year, the soil loses certain important nutrients. The plants become weak in their absence. The soil remains fertile by growing different crops in the same field. This is called Crop Rotation. For example, maize and wheat are grown alternatively with groundnut.



## Know the Keywords :

- Weathering : Breaking of rocks into fine particles by natural agents like sun, water, rain and wind.  
Humus : Top layer of soil consisting of dead plants and animals.

## Point to Remember

- Soil formation takes hundreds of years.
- The Top soil containing humus is the most fertile layer.
- Soil is a mixture of four main ingredients : Weathered rock, organic matter, air and water.

## EXERCISE TIME

### A. Multiple choice questions (MCQs).

Tick (✓) the correct option :

1. Dead plants and animals produce \_\_\_\_\_.  
a. Humus  b. Clay  c. Moisture
2. Top soil is dark due to \_\_\_\_\_.  
a. Humus  b. Moisture  c. Clay
3. \_\_\_\_\_ comes on the surface when dry soil is added to water in a jar.  
a. Clay  b. Humus  c. Weeds
4. Unwanted plants are called \_\_\_\_\_.  
a. Weeds  b. Pets  c. Irrigation
5. Good crop requires \_\_\_\_\_.  
a. Sand  b. Irrigation  c. Weeds

### B. Tick (✓) the correct and cross (X) the incorrect ones :

1. Plants get water and mineral salts from soil.
2. Plants grow in all the layers of the soil.
3. Tiny living animals are part of the soil.
4. Humus is formed by soil and decayed plants and animals.
5. Water passes easily through clay.



### C. Fill in the blanks :

1. \_\_\_\_\_ does not hold water for a long time.
2. \_\_\_\_\_ soil becomes wet and stippery.
3. \_\_\_\_\_ is fertile soil.
4. When a lump of soil is shaken in water, \_\_\_\_\_ comes on the surface of water.
5. \_\_\_\_\_ is formed by weathering of rocks.

### D. Match the following :

- |   |                      |
|---|----------------------|
| 1. The layer of the Earth we live on.     | a. Bedrock           |
| 2. Stopping the soil from eroding.        | b. Soil Erosion      |
| 3. Breaking down or carrying away of soil | c. Crust             |
| 4. Layer of soil to grow plants.          | d. Top Soil          |
| 5. Third layer of soil.                   | e. Soil Conservation |

### E. Answer the following questions :

1. What are the main elements of soil?
2. What are the three layers of the soil?
3. Which kind of soil is the best soil?
4. What is crop rotation?
5. Why are weeds harmful to crops?



## Creative Work

- Collect information about the crops grown in your area. Find out the types of soil needed for each crop.
- Visit a farm house. Observe various activities done in agriculture.
- Take two pots. Put garden soil in them. Plant similar seedlings in both. Water one plant and keep another without water. See the effect on the growth of the plants.