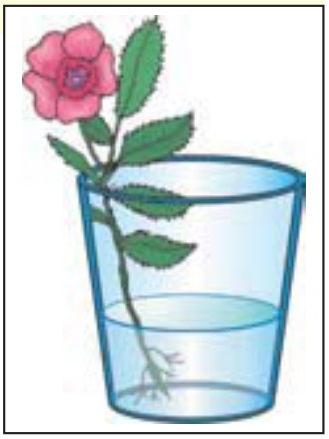
Unit 3

Parts of Plants

Some useless plants are found grown around your school campus. Find out them with the help of your teacher and try to pluck it out from the soil including its roots if your teacher permits. Can we pluck every small herb including roots easily ? Note down your observation.

Thus, we can say that roots anchors plants to the soil.

What is required ? A ever green (*Vinca*) plant with white flower and roots, beaker / glass, ink, water.



What to do ?

- ☞ Bring a plant with roots bearing white flowers e.g. *Vinca.*
- ☞ Take some water in beaker / glass. Put some drops of ink to make water colourful.
- ☞ Now put down the plant into the glass in such a way that the roots remain sunken (submerged) in the water. Next day observe it and note down the changes.

How does it happen ?

Note : We shall use this plant in upcoming activities, hence keep the plant with proper care.

Normal functions of root :

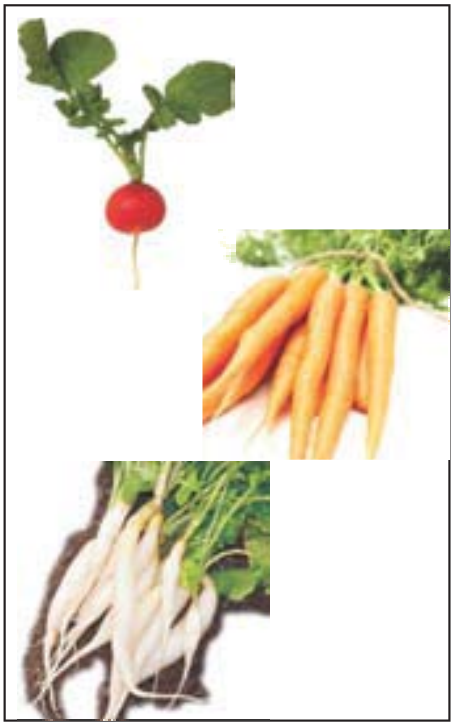
(1) Anchors the plant into soil.

(2) Absorbs water and minerals from soil.

In addition to normal functions root also performs some other functions which are not performed by the roots of all the plants. Such type of functions are known as special functions.

Storage of food :

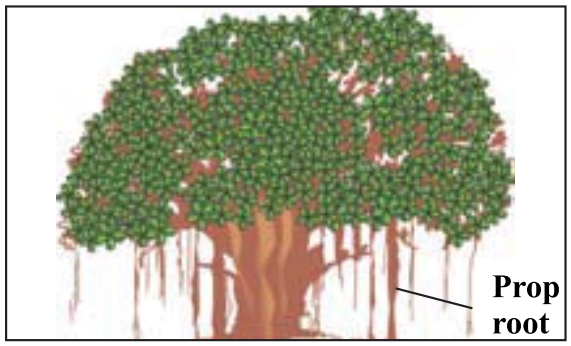
Let us go to school garden or farm in which carrot or radish are cultivated. Observe the swollen and fleshy part of the radish or carrot. Compare it with the root of any other plant. Discuss with your teacher that why it is fleshy ? And note down it.



You can see storage of food in plant like radish, carrot, sweet potato and beet root. Write down some other examples of food storing roots.

Stilt Root :

- Observe the plants of maize, sugarcane or millet.
- You will see the structure shown in the diagram. Discuss about that with your teacher or a farmer. What is that and why it is so ? Note down that.



These roots arise from the stem and they are prop roots, which provide mechanical strength to the stem. Roots found un Banyan tree are known as prop root.

Special functions of root :

(1) Some roots store food.

e.g. _____

_____

(2) Some plants show prop roots or stilt roots which provide mechanical support to stem.

E.g. _____

_____

In previous activity we observe that colourful water absorbed by root convert the white flower into colourful. How does this water being transported from roots to the flowers ?

- Take the plant used in previous activity. Take transverse section of its stem.
- Put transverse section on a slide.
- Put a drop of water by using a dropper.
- Now cover it with cover slip.
- Observe prepared slide under the microscope.
- Spherical structures shown in diagram are tracheas.
- Structure of a trachea is like an elongated tube. Water and mineral salts are conducted upward by trachea.

Observe stem, branches or leaves of any plant found around your school. You will see that...

Stem provides support to the plant and also arrange leaves in such a manner that they get enough sunlight.

Normal functions of stem :

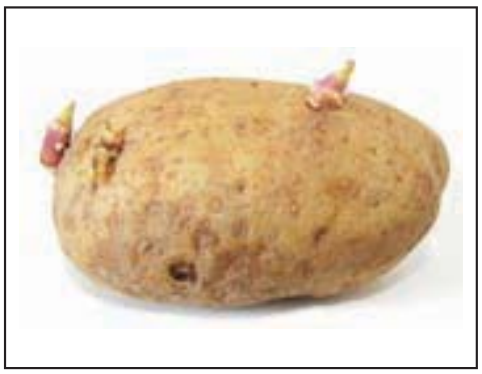
(1) Conduction of water and mineral salts absorbed by root.

(2) Arrange leaves in such a way that they can get enough sunlight.

(3) Provides mechanical strength to the plant to stand erect.

(4) Conduction of food produced by leaves.

Beyond this function stem performs other functions in several plants. They are called special functions.



- If tubers of potato is kept for some days, we find small leaves arising from it, observe them with magnifying glass, what do you find ?

Whether potato is root or stem ? Why ?

- Observe ginger and amorphophallus in the same way. Potato, ginger, amorphophallus are food storing underground stems. Note down any other example.

Food production :

Observe the plant of Opuntia. Green coloured part found in it is stem because it shows nodes and internodes. Stem of Opuntia shows chloroplast and produces its own food by process of photosynthesis.

Climbing : You may have seen stem tendrils on the climber of grapes.

What is the function of stem tendrils ?

Which other plants show stem tendrils ? Make a list.

This type of plants can climb on any support with the help of stem tendrils.

Special function of stem ;

(1) Storage of food : e.g.

(2) Food production : e.g.

(3) Climbing : e.g.

What is required ? Leafy plant, polythene bag, a piece of cloth and decanted lime water

What to do ?

- ☞ Select one leafy plant.
- ☞ Take a cup of decanted lime water in polythene bag.
- ☞ Tie the bag filled with the leaf and cover it with the cloth as shown in the diagram.
- ☞ Observe it after four to five hours and note down your observation.

Why does this happen ? What can be the reason ?

Repeat this experiment at your home at night. Observe the changes.

Like other organism plants also respire round the clock. During the process of respiration plants absorbs oxygen and release carbon dioxide.

What is required ? Plant with big leaves, Polythene bag and thread

What to do ?

- ☞ Select a plant having big leaves.
- ☞ Tie a polythene bag on one or two leaves of the plant as shown in the diagram.
- ☞ Observe it after three to four hours and note down your observation.

Small pores are seen on the leaf surface. We call them stomata. Plants release water in the form of vapor through its stomata. Hence this process is known as transpiration. Repeat this experiment at your home at night. What happens ? Note down.

Why do we experience cold under the trees or in an area where trees are more in number ?

Photosynthesis :

What is required ? A plant with big leaves, solution of iodine, two thin strips of hard-board and u-pins.

What to do ?

- ☞ Select a plant with big leaves.
- ☞ Tie thin strip of hard-bard on upper and lower surface of leaf with help of u-pin.
- ☞ Remove strips on the next day and observe the colour of the leaf ? What do you find ?

- What do you find on the surface of leaf where strips where tied ?

- What do you find on the surface without strips ?

- What is your conclusion ?

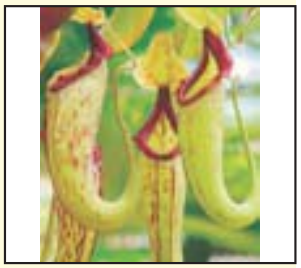
Green leaves of plants synthesize starch by using carbon dioxide of atmosphere and water absorbed by roots. This process is known as photosynthesis.

Do animal show photosynthesis ?

Try this experiment at your home at night. Note down your observation.

In some areas where plants do not get enough nutrients, they catch insects and eat them. Insect sits on the cup like structure and the leaf closes the mouth of that cup like structure thus insect is trapped.



Why do leaves are known as kitchen of the plant ?

Normal functions of leaf :

(1) Performs respiration.

(2) Performs transpiration.

(3) Produces own food through photosynthesis.

Above these functions leaves of some plants perform some special functions.

(1) Storage of food :

- Cabbage is a leaf and it stores the food.
- Onion is also food storing leaf.

(2) Protection :

Leaves of the plant like Opuntia convert into spines, which protect the plant from animals.

Special function of leaf :

(1) Stores the food

(2) Protection

Why do plants require performing some special functions ? Discuss this with your friends or teacher and note down the points.

Bring the book 'Plant Kingdom' from your school library and know other uses of plants.

Q.1 Take some specimens of monocot and dicot seeds found in your house or around. Germinate them and find the difference between their roots.

Q.2 Take a young twig with white flowers. Cut that from its distal end and then put both the cut parts into different coloured solution. Observe the colour of the flower.

Q.3 Take a transverse section of maize stem or any other monocot plant and try to observe with naked eye and try to draw a diagram.