



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

SUBJECT: SCIENCE

CLASS VI: Getting to know Plants

Week: 14th December to 18th December, 2020

No of blocks: 2 or 3

TOPIC:

GUIDELINES FOR STUDENTS:

Dear Students

- Refer to the following content of the chapter.
- These notes will help you to understand the concept of the lesson.
- Do the assignment questions in the Science notebook.
- Suitable Video links have been provided for better understanding of the concept.
- Do read NCERT too for better understanding of these concepts.

SUBTOPICS:

- Leaf
- Root

INSTRUCTIONAL AIDS /RESOURCES:

- NCERT LINK FOR THE CHAPTER:

<https://ncert.nic.in/ncerts/l/fesc107.pdf>

- YouTube Links

LEARNING OUTCOMES:

Learners will be able to:-

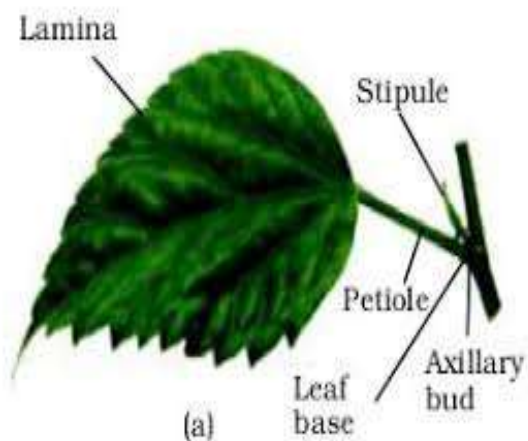
- Identify the parts of leaf .
- Discuss the function of leaf and root.
- Describe the structure of leaf and root.

Leaf

<https://youtu.be/eE6TFq1oHeM>

Activity 1:

- Put a leaf under a white sheet of paper or a sheet in your notebook.
- Hold your pencil tip sideways and rub it on the portion of the paper having the leaf below it.
- Did you get an impression with some lines in it? Are they similar to those on the leaf?
- These lines on the leaf are called veins.
- Do you see a thick vein?
- Take an impression of a leaf.
- Look at leaves of plants around you and draw them in your notebook.
- Are all the leaves the same in size, shape and colour? How are they attached to the stem?



Structure of leaf

The part of a leaf by which it is attached to the stem is called **petiole**. The broad, green part of the leaf is called **lamina**. There is a big vein in the middle. This vein is called the **midrib**.

Leaf venation: The design made by veins in a leaf is called the leaf venation. There are two types of venation: Parallel and Reticulate Venation

Comparison between Parallel and Reticulate Venation:-

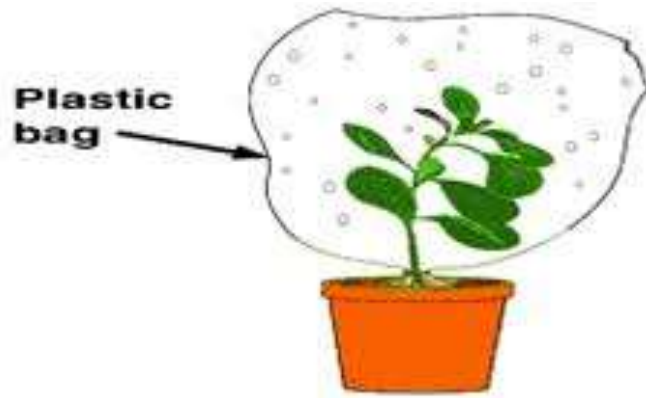
	PARALLEL VENATION	RETICULATE VENATION
Meaning	When veins (or the nerves) are arranged parallel to one another all over the leaf blade or lamina is called as parallel venation.	When veins (or the nerves) shows network or web-like arrangement all over the leaf blade or lamina, it is called as reticulate venation.
Orientation of veins	Parallel to one another.	Produce a network or web like structure.
Occurs in	Monocot plants.	Dicot plants.
Examples	Banana, bamboo,	Mango, hibiscus,

Activity 2:

<https://youtu.be/RS1nkPt7Jak>

Take a herb, two transparent polythene bags and some strings. Do this activity during day time on a sunny day. Use a healthy, well-watered plant that has been growing in the sun. Enclose a leafy branch of the plant in a polythene bag and tie up its mouth. Tie up the mouth of the empty polythene bag and keep it also in the sun. After a few hours, observe the inner surface of the bags. What do you see? Are there any droplets of water in any of the bags? Which bag has the droplets? How do you think they got there? [Don't forget to remove the polythene bag after the activity!]

Water comes out of leaves in the form of vapour by a process called **transpiration**. Through this process of transpiration, **Plants release a lot of water into the air.**



Set up showing transpiration

Questions to ponder:

- Why did we tie a bag around the leaves?
- Would we have seen the water from the transpiration of plants otherwise?
- What makes the water appear on the polythene bag?

Activity 3:

https://youtu.be/0s_xZqvwm_s

Requirements: a leaf, spirit, a beaker, test tube, burner, water, a plate and iodine solution.

- Put a leaf in a test tube and pour spirit to completely cover the leaf.
- Now, put the test tube in a beaker half filled with water. Heat the beaker till all the green colour from the leaf comes out into the spirit in the test tube.
- Take out the leaf carefully and wash it in water.
- Put it on a plate and pour some iodine solution over it, what do you observe? Compare your observations with those done in previous chapters, when you tested food for presence of different nutrients. We saw that a slice of raw potato also shows the presence of starch.

Potatoes get this starch from other parts of the plant and store it. However, leaves prepare their food in the presence of sunlight and a green coloured substance present in them. For this, they use water and carbon dioxide from air. This process is called **photosynthesis**. Oxygen is given out in this process.

The food prepared by leaves ultimately gets stored in different parts of plant as starch.

How do we know that the leaf has prepared the starch and not received it from another part of the plant?

- To test this, the above activity can be repeated with a little difference. Place a potted plant with green leaves, in a dark room for a day or two.
- Now, cover a portion of a leaf of the plant completely with black paper and leave the plant in the Sun for a day.
- Remove the leaf covered in black paper and repeat the test for starch.
- What do you see? Which part of the leaf shows the presence of starch? Leaves produce starch in the presence of sunlight. We see that the stem supplies leaf with water. The leaf uses the water to make food. The leaves also lose water through transpiration.
- How do the stem and leaves get the water? That is where the roots come in!

SOME FUNCTIONS OF LEAVES: (FOR REFERENCE)

- 1. Produce oxygen for animals for respiration**
- 2. Remove carbon dioxide from the air**
- 3. Produce food for the plant**
- 4. Create shade**
- 5. Create hiding places for wildlife**
- 6. Are a source of food (for animals and people)**
- 7. Reduce soil erosion by intercepting rain as it falls**
- 8. Lower the air temperature as a by product of transpiration**

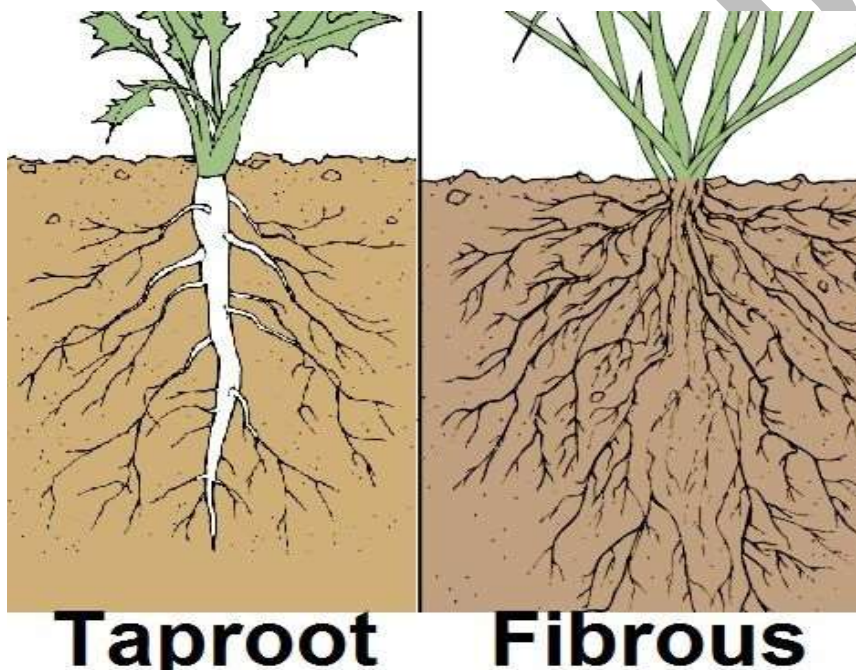
Roots:

Activity 4 :

https://youtu.be/K0_tAHBdXec

Requirement: two pots, some soil, khurpi (for digging), blade or a pair of scissors and water.

- Select two weeds of the same kind from an open ground and dig them out.
- Take care that their roots do not break.
- Plant one of the weeds in the soil in pot A.
- Cut off the roots from the other weed and plant it in the soil in pot B.
- Water them regularly. Observe the plants after a week.
- Are both plants healthy? Both the plants are watered regularly, but, one is without roots, isn't it?



Activity 5:

Requirement: seeds of gram and maize, cotton wool, bowls and some water.

- Take two bowls.
- Place some wet cotton wool in them.
- Put 3 or 4 seeds of gram in one and maize in the other.
- Keep the cotton wet by sprinkling water every day, until the sprouts have grown into young plants. After a week try to separate the young plants from the cotton wool.

- Was it easy to separate the cotton wool from the roots? Why? In above activity, we could not easily pull out the plants from the soil, right? We dug them out.

Function: The roots help in holding the plant firmly in the soil. They are said to anchor the plant to the soil.

Activity 6:

Go to an open ground where many weeds are growing.

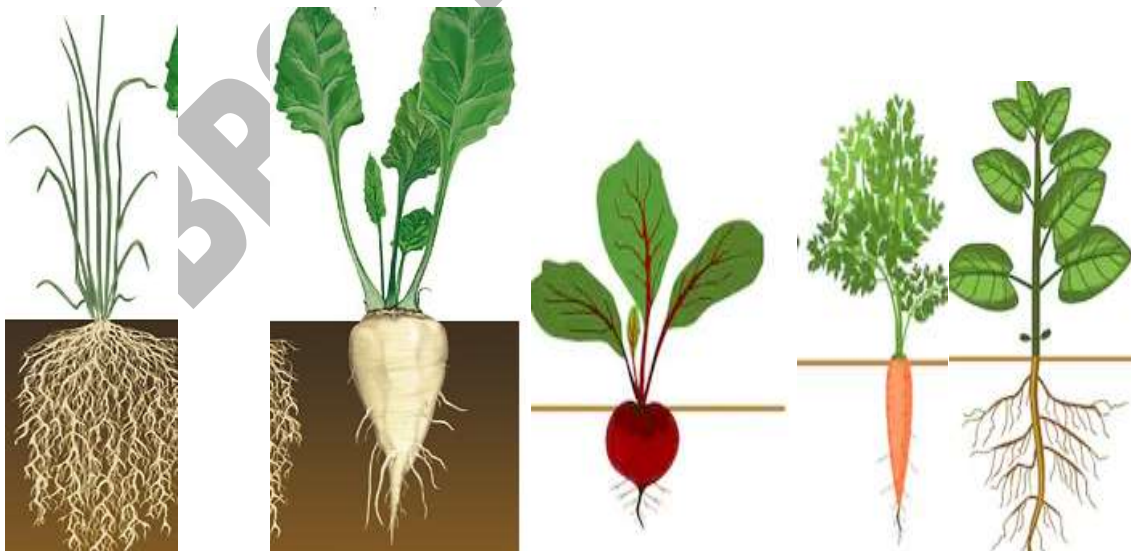
Dig out a few weeds, wash the soil off the roots and observe them. Do you find that all the weeds that you have dug out have either the kind of roots?

There is a main root which is called tap root and the smaller roots are called lateral roots. Plants with fibrous roots do not have any main root. All roots seem similar.

Separate the weeds you have collected into:-

- (a) those that have tap roots and
- (b) those that have fibrous roots.

What kind of venation do they have? leaf venation and the type of roots in a plant are related in a very interesting way.



a)

b)

c)

d)

e)

Name of plant	Type of venation	Type of root

Another main function of roots: We have learnt that roots absorb water and minerals from the soil and the stem conducts these to leaves and other parts of the plant. The leaves prepare food. This food travels through the stem and is stored in different parts of a plant. We eat some of these as roots— like carrot, radish, sweet potato, turnip and beetroot. We also eat many other parts of a plant where the food is stored.

SOME FUNCTION OF ROOTS: (FOR REFERENCE)

1. To anchor the plant in the ground
2. To take in water and minerals
3. To bring water and minerals up to the stems (xylem)
4. To bring dissolved food from the stems to the roots (phloem)
5. To store food.

LET'S DO AN ASSIGNMENT:

Q1. Which of the following combination of features would you observe in grass?

- (a) Parallel venation and fibrous root
- (b) Parallel venation and tap root
- (c) Reticulate venation and fibrous root
- (d) Reticulate venation and tap root

Q2. Which of the following is not a correct match?

- (a) Petiole : attaches leaf to stem
- (b) Lamina : green flat part of leaf
- (c) Margin : gives shape to the leaf
- (d) Veins : transpiration

Q3. Read the following sentences about photosynthesis:

- (i) Sunlight, carbon dioxide, chlorophyll and water are necessary.
- (ii) Oxygen is absorbed.
- (iii) Leaves carry out photosynthesis.
- (iv) Proteins are made during photosynthesis.

Choose the correct pair of sentences that are true to photosynthesis

- (a) (iii) and (iv)
- (b) (i) and (iii)
- (c) (ii) and (iv)
- (d) (i) and (iv)

Q4. If a plant has fibrous root, what type of venation is its leaves likely to have?

Q5. If a plant has leaves with reticulate venation, what kind of roots will it have?

Q6. Explain the process of preparation of food in leaves.

Q7. State any two functions of leaves and stem in a plant.

Q8. Contrast between tap root and fibrous root, giving examples.
