

1

Know the Plant World Closely

The vacation is over. How exciting it is to go to school with an umbrella, playing in the rain! When did you wake up today? Did you take enough food before coming to school? What did you eat today? Try to write it down.

Which among these food items did you get from plants?



The picture shows diverse food materials.

From where do we get them?

All are parts of plants, aren't they? Are you able to identify these plants?

Tabulate them down in your science diary.

- Root

Do we use only the leaf of amaranthus (*cheera*) for our food?

Haven't you seen cauliflower? Which part of it do we eat?

Expand the table by adding the names of plants whose stems and flowers we use as food.

We use different parts of plants for food. The edible part in each plant is different.

Do all plants have edible parts?

Observe the pictures. What do we use these plants for?



Pepper



Cloves



Turmeric



Ginger



Cardamom

We make use of plants as spices, medicines, and for many other purposes. Look at the picture. Common plants like adathoda, curry leaf plant, hibiscus, *kurumthotti* (common cida), *panikoorka* (Spanish thyme), neem and touch-me-not are shown in the picture. Spot out these plants from your surroundings and tabulate their uses in your science diary.



Can we imagine a world without plants?

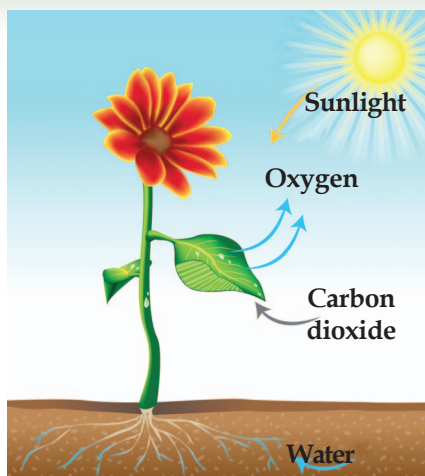
All animals depend on plants for food.

Plants provide food for us. But where do they get their food from?

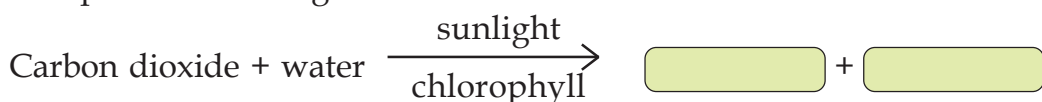


Photosynthesis

Plants absorb water through their roots. This water contains various minerals. Plants also absorb carbon dioxide from the atmosphere through minute pores present in their leaves. All these are done for preparing food. Preparation of food takes place in the leaves. This process is called photosynthesis. Sunlight and the pigment present in leaves called chlorophyll, are essential for photosynthesis. The product of photosynthesis is glucose. Oxygen is also formed along with this, and it is released during daytime. The glucose formed through photosynthesis is later converted into starch. Plants prepare their own food and are hence known as autotrophs.



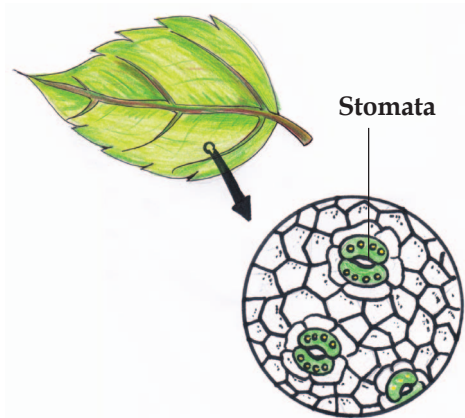
Complete the boxes given below.



How do plants get carbon dioxide?

Try this activity.

Peel off a little of the outer layer from the lower side of a betel leaf or taro (colocasia) leaf. Dip the layer in dilute stain. Place this layer on a glass slide using a point brush. Observe this through a microscope. Don't you see pores in the leaves?



Stomata

Plants absorb carbon dioxide and release oxygen during photosynthesis. This gaseous exchange takes place through small pores in the leaves. These pores are called stomata. They also release water from plants to the atmosphere.

Draw the picture of the stomata you have observed through the microscope and write a note about this activity in your science diary.



See the video *Vathakavinimayam Sasyangalil* (Edubuntu – School Resource)

Observe the plants around you. On which part of the plant does the sunlight fall more?

Are leaves of plants arranged so as to get maximum sunlight? Write the result of your observation in the science diary.



Chlorophyll

The green-coloured pigment seen in plants is chlorophyll. Chlorophyll absorbs the sunlight needed for photosynthesis. It is present more in the leaves.

Are all leaves green in colour?

Haven't you seen the red amaranthus? Does photosynthesis take place in them?

Try this experiment.

Materials required : Leaf of red amaranthus; blotting paper.

Rub the leaf of red amaranthus on a blotting paper. Observe the colour change in the paper. Analyse the observations.

Write down the notes of the experiment in your science diary.

Is there chlorophyll in red amaranthus?



Didn't you realise that red amaranthus has chlorophyll?

If so, what could be the reason for its red colour?

Different colours

Observe the picture. Besides chlorophyll, other pigments are also present in plants. Hence leaves with the pigment xanthophyll appear yellow in colour, those with carotene appear yellowish orange and those with anthocyanin appear red in colour.

Are pigments present only in leaves?

In your science diary, explain the reason for the red colour of hibiscus and the yellow colour of sunflower.

Pigments give colour to leaves, stems, flowers and fruits.

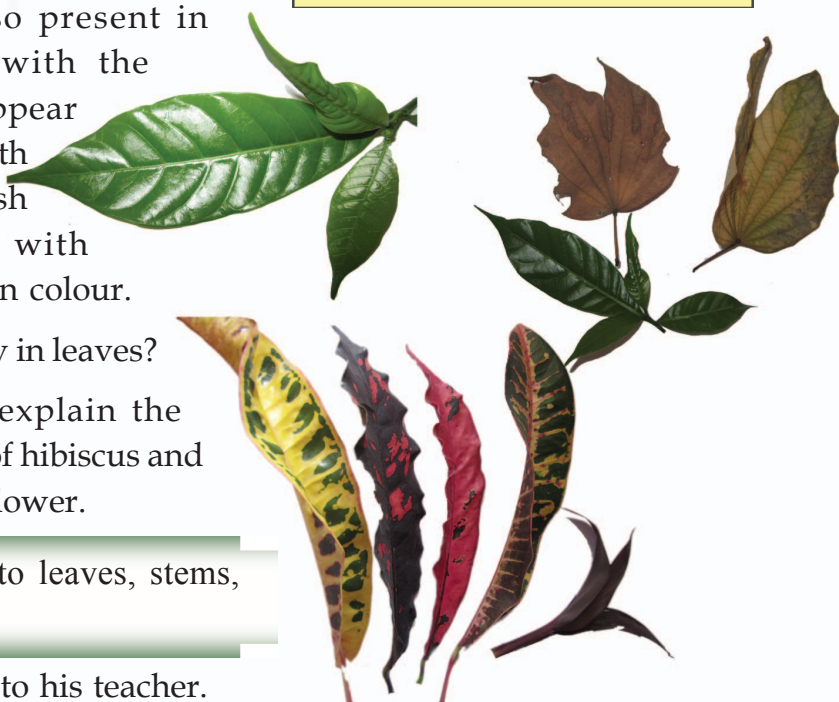
Listen to what Baiju said to his teacher.

"Teacher, I have grown some plants in my bedroom. Won't there be enough oxygen released by the plants inside the house?"



Requisites of an experiment note?

- Objective
- Materials
- Procedure
- Observation
- Inference

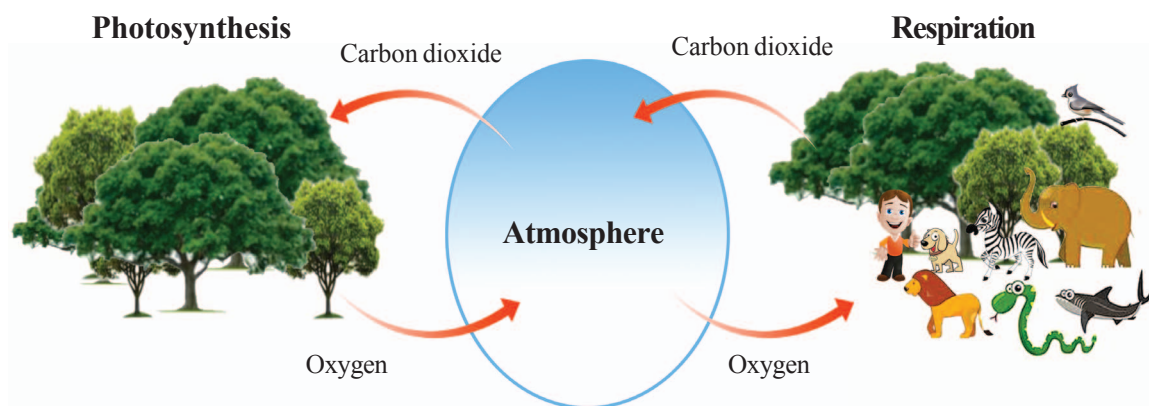


What is your response to what Baiju said?

Is there any benefit in growing plants inside the house? Will such an arrangement be helpful to get oxygen during the night?

Record your opinion in the science diary.

Photosynthesis and Respiration



Observe the picture

- Do plants release only oxygen at all times?
- Is photosynthesis possible at night? Why?
- What is the process that takes place during the day and the night in all organisms, including plants?

Does a person, who sleeps under a tree during the night, receive more oxygen?
Write down your explanation in the science diary.

- When green plants carry out photosynthesis during daytime, carbon dioxide is absorbed and oxygen is released.
- Since photosynthesis does not take place at night oxygen is not released.
- All organisms including plants respire day and night. Oxygen is taken in and carbon dioxide is given out at that time.

A place to live

This is the diary note of Safiya who went on a study tour from school:

Today, we went on a study tour from school. The orchidarium attracted me the most. Orchidarium is a garden where orchid varieties are grown. How beautiful are the orchid flowers! What surprised me was the way these plants are being nurtured. They are grown on hanging wooden planks tied with materials like coconut fibre. Some others grow on branches of trees. They don't require soil to grow....



Different varieties of orchids