

# The Green Plants : Producers of Food



**P**lants are living beings. Most of the plants are green, because they have a substance in their leaves that is green in colour. They make their own food and provide food for animals and human beings. Let us know how.

## LESSON OBJECTIVE

### You will know

- Food making in plants
- Some special plants
- Interdependence of plants and animals
- Balance in nature

## FOOD MAKING IN PLANTS

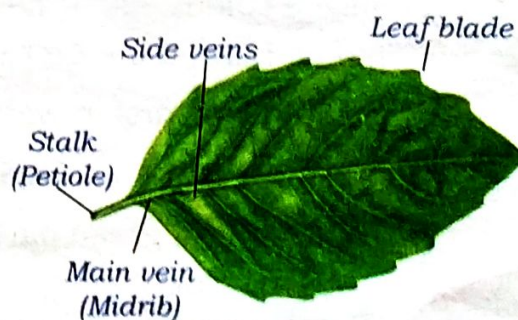
Plants make their food with the help of water from the soil and carbon dioxide from the air. In the presence of sunlight, green leaves put together water and carbon dioxide and convert them into food or simple sugar. So leaves are called the “kitchen of plants”. Plants release oxygen in this process. To understand how leaves make food for the plant, let us understand the functions of different parts of a leaf.



Some green plants

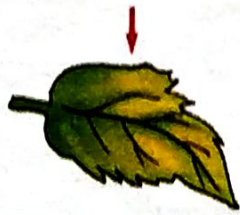
## Parts of a Leaf

The flat part of a leaf is leaf blade. Leaf is attached to the stem by stalk (or petiole). Each leaf generally has one main vein called midrib and many side veins. The midrib and side veins help in bringing water and minerals from the stem and carrying out the prepared food to other parts of the plant.



Parts of a leaf

Through pores, or stomata, carbon dioxide and water enter the leaf



Stomata

Leaf section as seen under a microscope

The underside of the leaf has many tiny openings called stomata. Under a microscope these kidney-shaped openings can be seen clearly. The stomata help in the exchange of gases.

The cells of the leaves contain a green coloured substance called chlorophyll. It traps the energy from the sunlight and helps the plant to prepare its food. Only green plants can make their own food.

### How do Leaves Prepare Food ?

The process of making food in plants is known as photosynthesis. The word photosynthesis consists of two words photo and synthesis, 'photo' means 'light' and 'synthesis' means 'to put together'. Thus, plants put together carbon dioxide and water in the presence of sunlight to make their food. Plants prepare their food in the form of starch or sugar, a part of which is used for the daily requirements of the plant and extra part is stored in either leaves, fruits, stem or roots of the plant. Oxygen released in this process, goes into the air.



Sunlight

Oxygen



Carbon dioxide

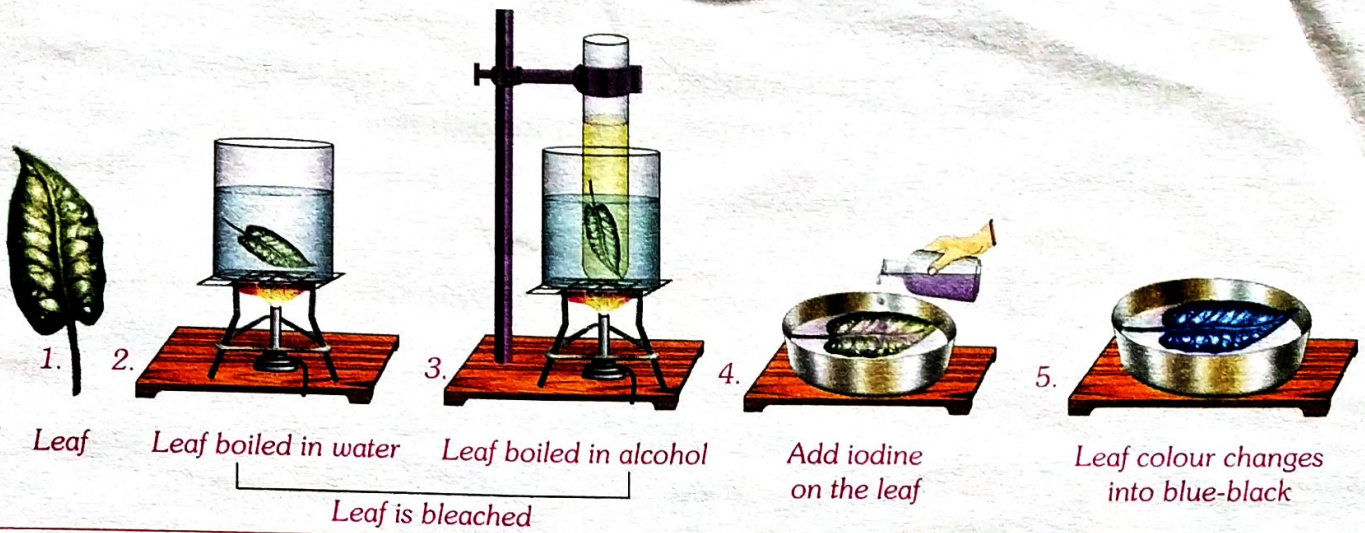
Water from soil

Photosynthesis in a green plant

### Activity 1

#### To test that only green leaves can prepare food.

1. Take a coleus leaf. It has two colours on it. Draw its outline on a sheet of paper. Mark the green and non-green areas.
2. Boil the leaf, first in water and then in alcohol (bleach it).
3. Wash the leaf and put few drops of iodine on it.
4. The colour of green part of the leaf will change into blue-black. While the non-green part will remain unchanged. This shows that food is prepared only in the presence of chlorophyll in a green leaf.



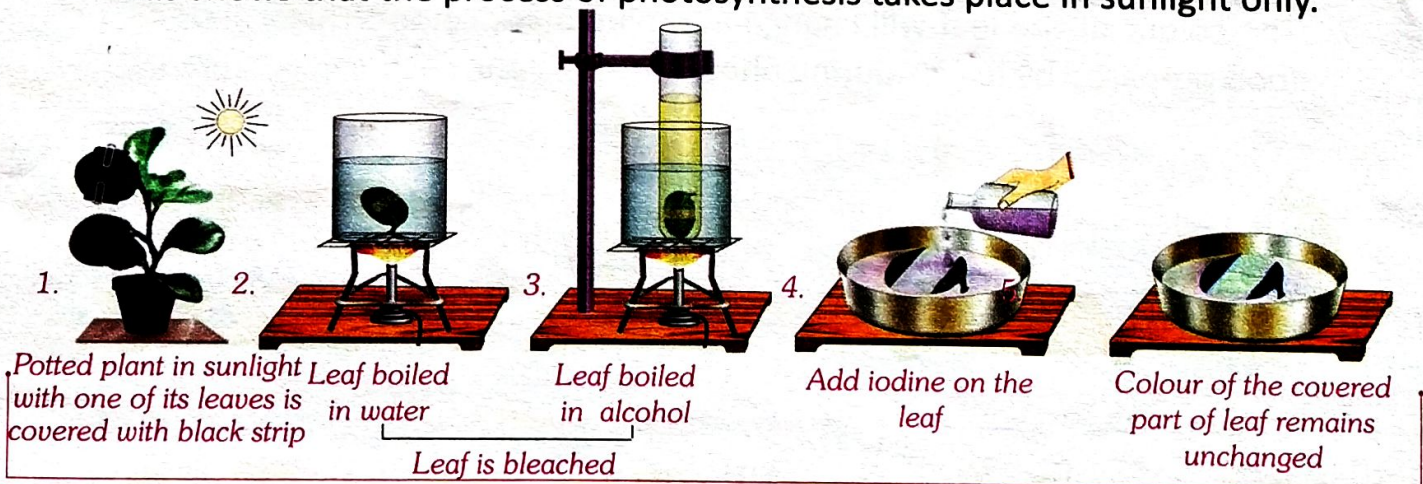
1. Leaf 2. Leaf boiled in water 3. Leaf boiled in alcohol 4. Add iodine on the leaf 5. Leaf colour changes into blue-black

Leaf is bleached

## Activity 2

**To show that sunlight is needed for photosynthesis.**

1. Place a potted plant in shade for 24 hours.
2. Cover one of its leaves with a black strip.
3. Now keep this potted plant again in sunlight.
4. Pluck the covered leaf. Boil it first in water and then in alcohol (bleach it).
5. Wash the leaf under water and put drops of iodine on it.
6. The covered part of the leaf does not turn blue-black as there is no starch in it. This shows that the process of photosynthesis takes place in sunlight only.



1. Potted plant in sunlight with one of its leaves is covered with black strip 2. Leaf boiled in water 3. Leaf boiled in alcohol 4. Add iodine on the leaf 5. Colour of the covered part of leaf remains unchanged

Leaf is bleached

## How Plants Use Their Food ?

The food prepared by leaves in the form of glucose or simple sugar is used to get energy and growth of the plant. The remaining food is stored in the form of starch in leaves,

stem, roots or fruits. The food stored in fruits, roots, leaves and stem is eaten by the animals. During the process of photosynthesis, the sun's energy is trapped in the form of food. This energy is passed on to us in the form of food that we get from the plants.



Food stored in leaves



Food stored in stems



Food stored in roots



Food stored in fruits



Food stored in seeds

## Activity 3

### To test the presence of starch in leaves.

1. Take a leaf of any healthy plant.
2. Boil the leaf first in water and then in alcohol (keep the leaf and alcohol in the test tube) (bleach it).
3. Boil the leaf thoroughly.
4. Wash it under cold water.
5. Take this leaf in a dish.
6. Put few drops of iodine on it.
7. The colour of the leaf will change into blue-black colour. This shows that the food prepared by leaves during photosynthesis is in the form of starch.

