Chapter- 6

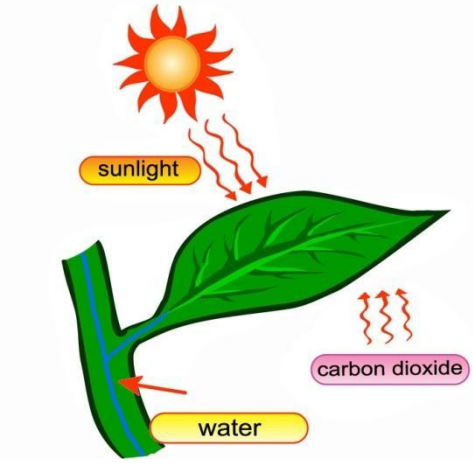
Plants: Preparing and Storing Food

STUDY NOTES

Let's learn

Chlorophyll:

- The presence of a substance that makes a leaf green is called chlorophyll.
- Green leaves need water, air, and sunlight to prepare food.
- Only green leaves can prepare food since they contain chlorophyll.



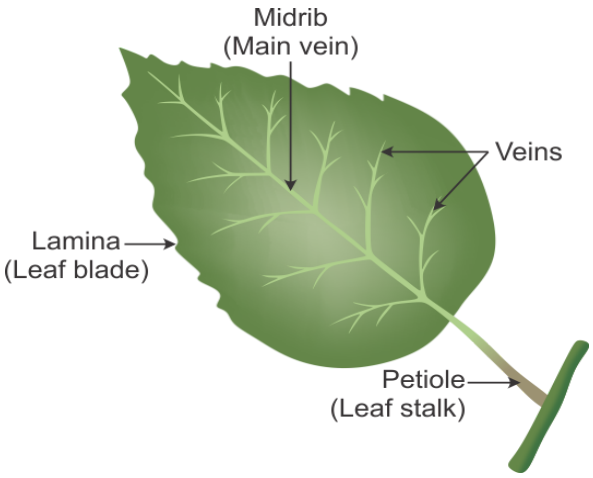
Food For Plants:

- A plant takes in water from the soil and carbon dioxide from the air.
- In the presence of sunlight, green leaves change air and water into food in the form of starch.
- Sunlight provides energy to these leaves for preparing food.

Photosynthesis:

- 'Photo' means light and 'synthesis' means putting together.
- Since sunlight is required to put water and carbon dioxide together as food this process is known as photosynthesis.

Parts of Leaf:



- **Midrib:** The main vein running along the center of the leaf.
- **Lamina:** The expanded flat component of the leaf.
- **Petiole:** The stalk that attaches the leaf blade to the stem.
- **Veins**: Plant veins provide structure and support to plant leaves while also transporting water, nutrients, and energy to the rest parts of the plant.

Stomata:

- On the underside of the leaves the tiny pores are called stomata (singular stoma).
- During photosynthesis, a leaf takes in carbon dioxide and gives out oxygen and water vapor through the stomata.

Plants use their food in several ways:

- The food prepared by plants is in the form of simpler sugar. It is used in several ways by the plant.
- It is used to get energy.
- Some of it is used for growth.
- Extra food is stored in the form of starch in leaves, stems, or roots.
- We eat that part of the plant which has food stored in it.

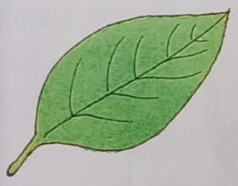
Some unusual plants:

- Moulds and mushrooms are non-green plants.
- They do not have chlorophyll; they cannot make their food.
- They get their food from dead and decaying plants and animals.

- Some leaves of croton appear red as the presence of red substances that hides the green chlorophyll.

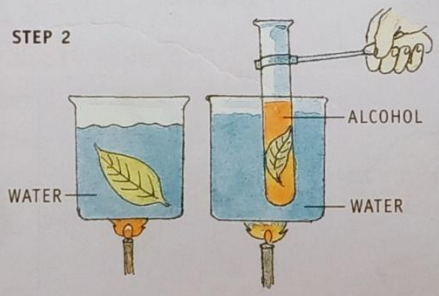
ACTIVITY 1 Does a green leaf have starch?

STEP 1



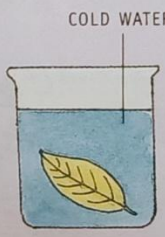
Pick a fallen green leaf of a healthy plant.

STEP 2



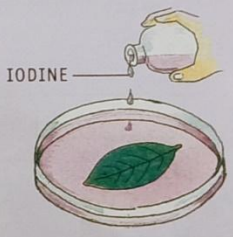
Bleach the leaf by first boiling it in water and then boiling it in alcohol.

STEP 3



Wash it in cold water.

STEP 4



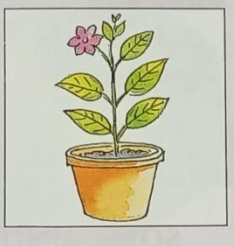
Add a few drops of iodine.

CONCLUSION: When you add iodine to the bleached leaf, it turns blue-black. This shows that starch is present in a green leaf.

ACTIVITY 2 Is sunlight needed for photosynthesis?

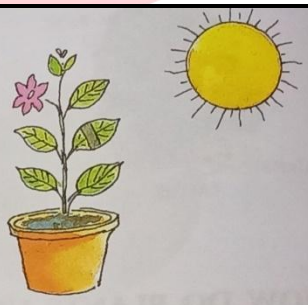
STEP 1

Take a healthy potted plant and keep it in the dark for about 24 hours.

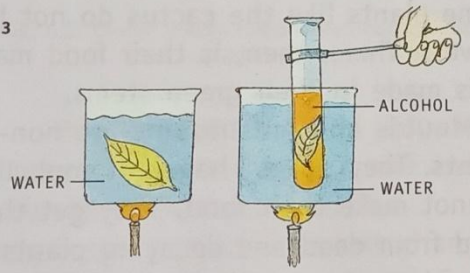


STEP 2

Cover one of its leaves partly with a strip of black paper. Keep the plant out in the sunlight for 4–5 hours.

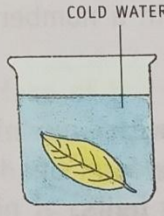


STEP 3

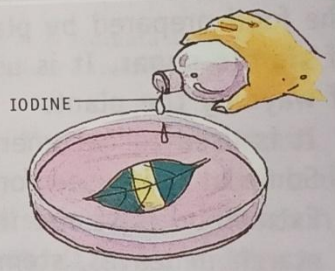


Bleach the covered leaf by first boiling it in water and then boiling it in alcohol.

STEP 4

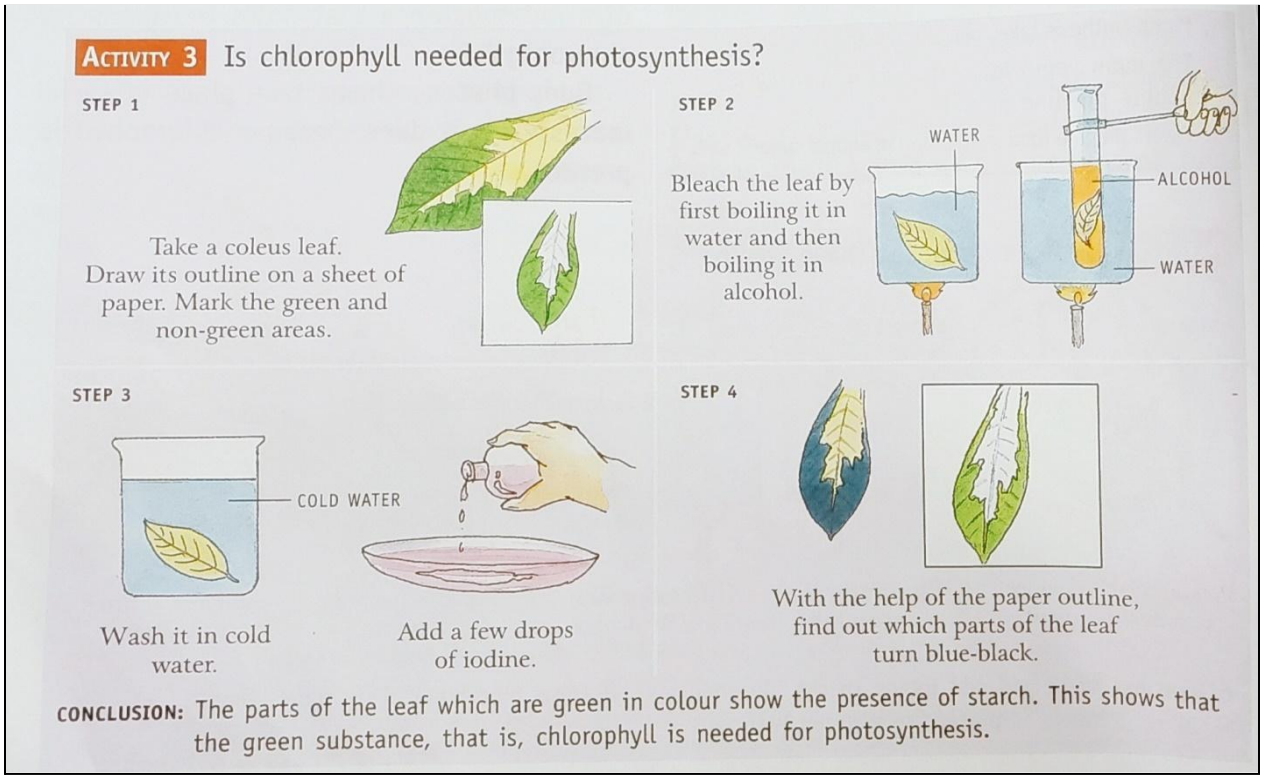


Wash it in cold water.



Add a few drops of iodine.

CONCLUSION: The part of the leaf that was covered with black paper does not turn blue-black. This part of the leaf does not contain starch, because it did not get any sunlight. So, sunlight is needed for photosynthesis.



ENERGY FLOW IN LIVING THINGS:

We need energy for every activity we do.

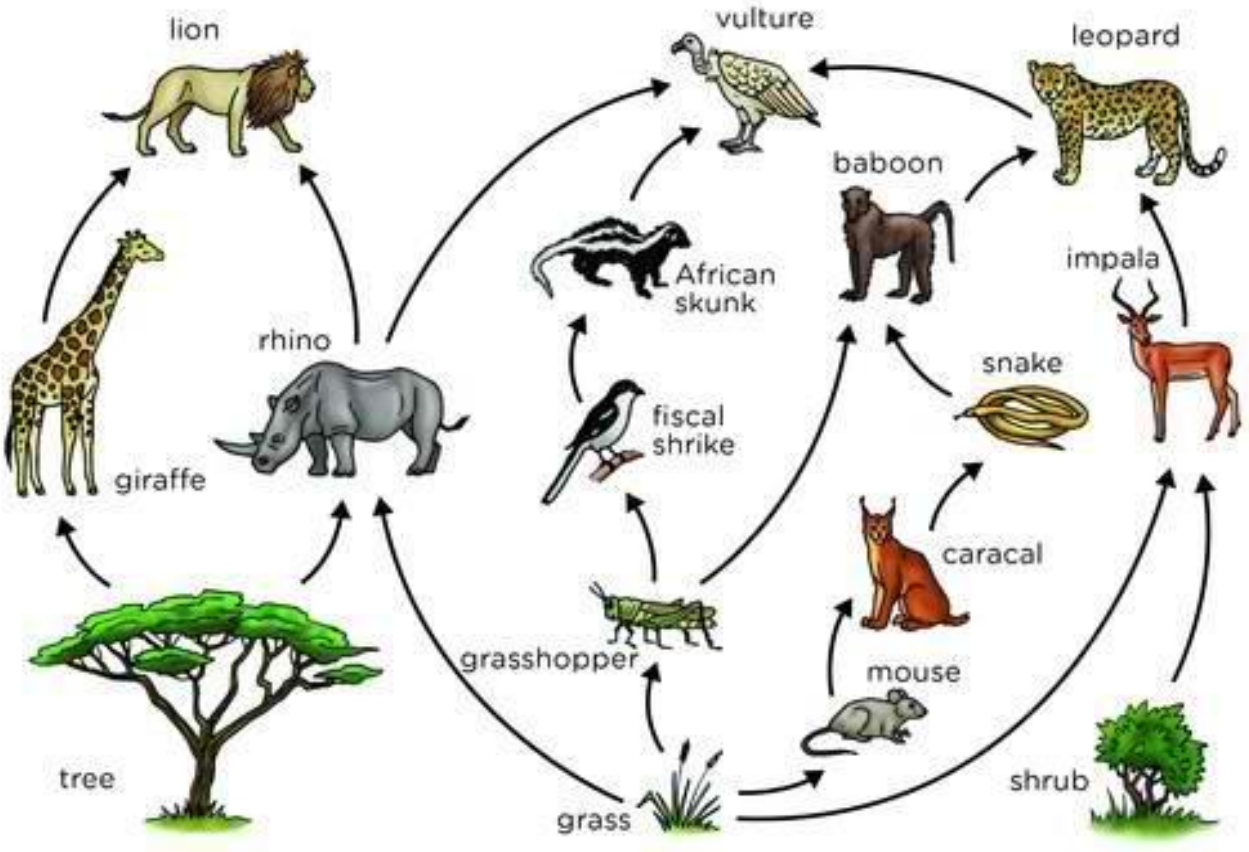
- This energy comes from food. This food is prepared by green plants. Green plants trap the sun's energy during photosynthesis to prepare food. This energy is passed on to humans and animals when they eat the plants. This way energy flows from the sun to plants and then to animals and human beings.

ANIMALS AND PLANTS DEPEND ON EACH OTHER

- Animals and plants depend on each other for survival, animals need food to eat and oxygen to breathe.
- Plants give animals this food and oxygen; this is why fish live longer in an aquarium with water plants in it than in one without them.
- Plants need carbon dioxide to prepare food, animals breathe out carbon dioxide, and this is used by plants. So, plants and animals depend on each other.

BALANCE IN NATURE

- A balance needs to be maintained between the number of plants and animals.



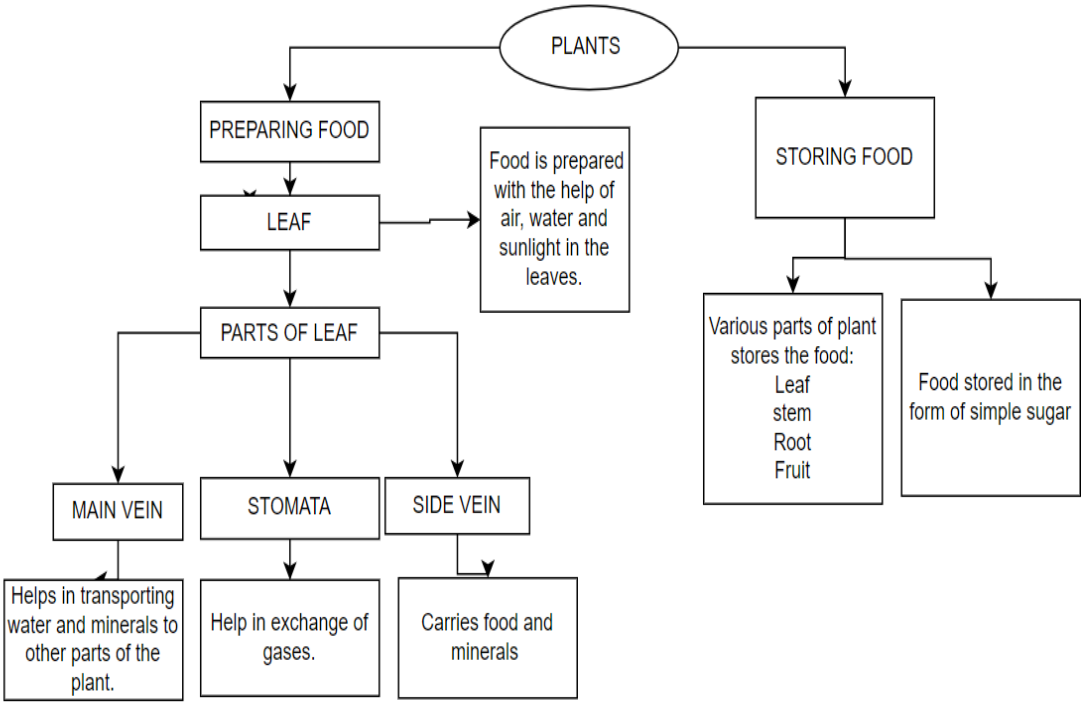
- Plants may not be able to supply enough food and oxygen to all the animals. Or, if there is a sudden increase in the number of plants, the carbon dioxide breathed out by animals may not be enough for the plants. Similarly, if there is a sudden decrease in the numbers of either plants or animals it will disturb the balance in nature.

- To maintain this balance in nature, we have to protect both plant and animal life.
- Under wildlife protection programs, wild animals are given special protection in forest reserves and sanctuaries.

Programs like ***Vanamahotsava*** help promote the planting of trees. People are made aware of the harmful effects caused by the continuous cutting down of trees.

> If life on earth has to go on, a balance in nature must be maintained.

MEMORY MAP



Let us answer

A. Tick the correct answer.

I. The main vein of a leaf carries

a. chlorophyll b. oxygen c. food

2. Air enters a plant through the stomata on its

a. leaves b. flower c. stem

3. Which of the following is a non-green plant?

a. cactus b. croton c. neem

4. Removing the green in a leaf is called

a. Photosynthesis. b. bleaching breathing

5. Which program me helps to save trees?

a) Vanamahotsava b) Project Tiger c. Operation Flood

B. Fill in the blanks.

l. The presence of a substance called_____ makes a leaf green.

2. The process by which food is prepared in plants is called_____.

3. _____are openings on the underside of a leaf.

4. Moulds and_____ are non-green plants.

5. Animals need food to eat and_____ to breathe.

C. Write short answers.

1. What do green leaves need to produce food?
2. From where do leaves get energy for preparing food?
3. In what form is extra food stored in plants?
4. Name the part of a cactus plant that prepares food for the plant.
5. Leaves of croton appear dark red. Do these leaves have chlorophyll?

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D. Answer these questions.

1. How would you show that a green leaf has starch in it?
2. Write the functions of the stomata.
3. How do plants use their food?
4. How is energy from the sun passed on to other animals?
5. How do plants without chlorophyll survive?
6. A balance between plants and animals is essential. Why?

Teacher's Note

- Let the children see the internal parts of a leaf under a microscope. Holding a leaf in their hand, the parts of a leaf could be shown. The starch test can be conducted in class or at home. Show some fruits, leaves, seeds, roots, or stems of plants where food is stored.

Improve Your Gk

- 5 June is World Environment Day. Plant a few saplings in your school or at home. You can do so on your birthday too. Look after the plant as it grows into a tree. It may bear fruit and it will give shade to all.

ANSWER KEY

A1. Food

2. Leaves

3. Croton

4. Bleaching

5. Vanamahotsava

B1. Chlorophyll

2. Photosynthesis

3. Stomata

4. Mushrooms

5. Oxygen

C1.Green leaves need water, carbon dioxide, and sunlight to prepare food.

2. Sunlight provides energy to leaves for preparing food.

3. In the form of starch the extra food is stored in the plant.

4. Stem helps the cactus plant to prepare its food.

5. Leaves of croton have chlorophyll they appear dark red because of the presence of red substances that hides the green chlorophyll.

D1. When we add iodine to the bleached leaf, it turns blue-black. This shows that starch is present in green leaves.

2. The main function of stomata is to open and close the pores in the leaves for an exchange of gases.

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- It allows the plant to take in carbon dioxide and give out oxygen for photosynthesis. Based on the weather conditions, it closes or opens its pores to keep the moisture content developed.

3. Plants use their food in several ways:
   - The food prepared by plants is in the form of simpler sugar. It is used in several ways by the plant.
   - It is used to get energy.
   - Some of it is used for growth.
   - Extra food is stored in the form of starch in leaves, stems, or roots.
   - We eat that part of the plant which has food stored in it.

4. Energy of the sun can be passed to other animals as:
   - Green plants trap the sun's energy during photosynthesis to prepare food.
     - This energy is passed on to humans and animals when they eat the plants.
     - This way energy flows from the sun to plants and then to animals and human beings.

5. Plants without chlorophyll can survive as:
   - Without the green chlorophyll all plants would be white.
   - It doesn't make food for itself like other plants but instead gets its nourishment through a mutually beneficial fungal.
   - Ultimately it gets nourishment from the trees.

6. A balance between plants and animals is essential because
   - If there is a sudden increase in the number of animals then, plants may not be able to supply enough food and oxygen to all the animals.
   - If there is a sudden increase in the number of plants, the carbon dioxide breathed out by animals may not be enough for the plants.
   - Similarly, if there is a sudden decrease in the numbers of either plants or animals it will disturb the balance in nature.

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