BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

SUBJECT:-Science

Class VII - CHAPTER:- Nutrition in Plants

GUIDELINES:

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.
- You may follow the given link/PDF to refer to cl 7science ncert/LIVING SCIENCE BOOK FOR THIS CHAPTER:
- http://ncert.nic.in/textbook/textbook.htm?gesc1=1-19
- **Kindly note that the PDF of Living Science chapter1, is only for reference purpose, so that the child may enhance his/her understanding of this chapter's concepts. The questions / assignments given in the attached pdf are not to be done in the science notebook.**
- **However, questions given as an assignment at the end of this elesson are to be done in the science notebook.**

SUB-TOPICS:-

1. **Photosynthesis: Food making process in Plants**
2. **Synthesis of plant food other than carbohydrates**

Students, in the previous lesson, the process of photosynthesis was introduced to you. Let us learn about this process in detail -

1.Photosynthesis: Food making process in Plants

Materials/Conditions necessary for Photosynthesis:

The materials/conditions necessary for photosynthesis to take place are:

1. Carbon dioxide
2. Water
3. Sunlight
4. Chlorophyll

Now let's understand how a plant obtains these materials.

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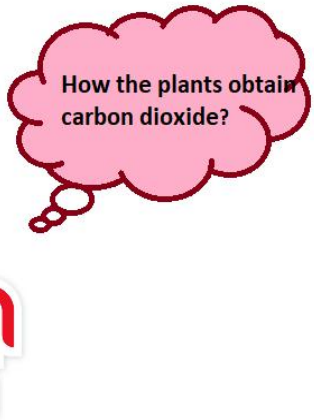
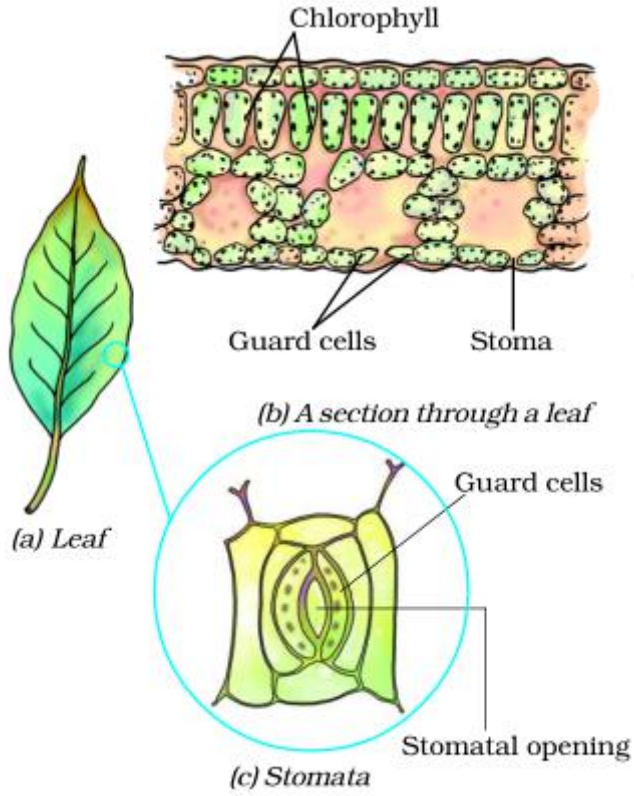


In order to answer this question, we should first understand the structure of a leaf!

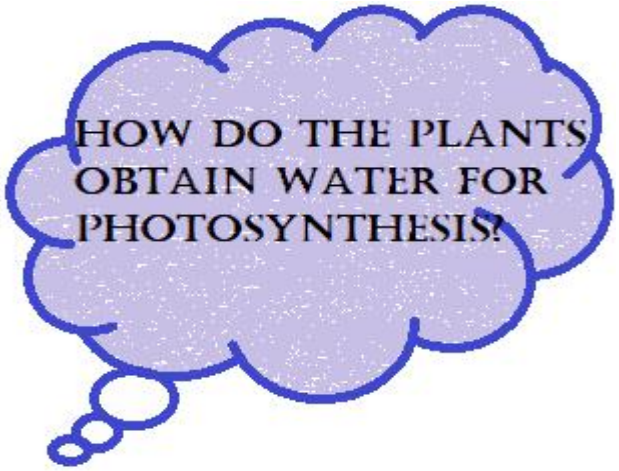
Leaf: The food factory of a plant:



- There are a large number of tiny pores called stomata on the surface of the leaves of plants.
- The carbon dioxide gas enters the leaves of the plant through the stomata present on their surface.
- Each stomatal pore is surrounded by a pair of guard cells. The opening and closing of stomatal pores is controlled by the guard cells.

Now, watch the video through the link given below. This video will help you to understand the structure and functions of a leaf :
https://www.youtube.com/watch?v=co0JdqUlycg

Hope, now it's clear to you that how does Carbon Dioxide enter a leaf?



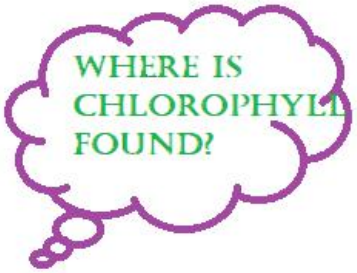
The water required by the plants for photosynthesis is absorbed by the root of the plants from the soil through the process of osmosis.

The water absorbed by the roots of the plants is transported upward through the xylem vessels to the leaves where it reaches the photosynthetic cells.

FEW FACTS:

. The plants also need other raw materials such as nitrogen, phosphorus, iron and magnesium, etc., for building their body.

NITROGEN IS AN ESSENTIAL ELEMENT USED BY THE PLANTS TO MAKE PROTEINS AND OTHER COMPOUNDS.



OKAY!

IT'S FOUNDIN THE Site of photosynthesis: Chloroplasts

- Photosynthesis takes place in the leaves of the plants.
- Leaves have green pigment called chlorophyll
- It helps leaves capture the energy of the sunlight which is then used to prepare food from carbon dioxide and water.
- Here, you see that solar energy is captured by the leaves and is stored in the plant in the form of food(i.e. starch).
- So, we can say that **Sun is ultimate source of energy for all living organisms.**

➢ **The process of photosynthesis can be represented as this equation:**

$$\text{Carbon dioxide} + \text{Water} \xrightarrow[\text{Chlorophyll}]{\text{sunlight}} \text{Carbohydrate} + \text{Oxygen}$$

Now, watch the video through the link given below. This video will help you to understand the process of photosynthesis and also its importance:
https://www.youtube.com/watch?v=LEQqd91uWsY

ACTIVITY TIME:

Take two potted plants of the same kind. Keep one in the dark (or in a black box) for 72 hours and the other in sunlight. Perform iodine test with the leaves of both the plants as you did in Class VI. Record your results. Now leave the pot which was earlier kept in the dark, in the sunlight for 3 – 4 days and perform the iodine test again on its leaves. Record your observations in your notebook.

- **Watch the given video carefully .It will help you to understand that how can we detect the presence of starch in a given leaf.**

https://www.youtube.com/watch?v=0s_xZqvwm_s

- Things to know:

The leaves other than green also have chlorophyll. The large amount of red, brown and other pigments mask the green colour. Photosynthesis takes place in these leaves also.

You often see slimy, green patches in ponds or stagnant water bodies. These are generally formed by the growth of organisms called algae. Can you guess why algae are green in colour? They contain chlorophyll which gives them the green colour. Algae can also prepare their own food by photosynthesis.

2. Synthesis of plant food other than carbohydrates

Carbohydrates are made of carbon, hydrogen and oxygen. These are used to synthesise other components of food such as proteins and fats. But proteins are nitrogenous substances which contain nitrogen. From where do the plants obtain nitrogen? Recall that nitrogen is present in abundance in gaseous form in the air. However, plants cannot absorb nitrogen in this form.

A) Soil has certain bacteria that convert gaseous nitrogen into a usable form and release it into the soil. These are absorbed by the plants along with water.
B) Also, you might have seen farmers adding fertilisers rich in nitrogen to the soil. In this way the plants fulfill their requirements of nitrogen along with the other constituents.
Plants can then synthesise proteins and vitamins.

ASSIGNMENT

Q1.MCQS:

(i). When we observe the lower surface of a leaf through a magnifying lens we see numerous small openings. Which of the following is the term given to such openings?
(a) Stomata (b) Lamina (c) Midrib (d) Veins

(ii). Which of the following raw material is available in the air for photosynthesis?
(a) Oxygen (b)Carbondioxide (c)Nitrogen (d)Hydrogen

Q2.Fill in the blanks:

(i) Proteins contain…….

(ii) Farmers enrich the soil by adding …….. and…….

(iii) In most of green plants, photosynthesis takes place in the…….

(iv) Plants are unable to use atmospheric……

(v)Green patches in stagnant water are aquatic……

(vi)During photosynthesis, …… energy is captured by the leaves and stored as food.

(vii).Photosynthesis requires chlorophyll, and a few other raw materials. Add the missing raw materials to the list given below: Water, minerals, _____, _____.

(viii).Sunlight, chlorophyll, carbon dioxide, water and minerals are raw materials essential for photosynthesis. Do you know where they are available? Fill in the blanks with the appropriate raw materials.

(a) Available in the plant : _____
(b) Available in the soil : _____, _____
(c) Available in the air : _____
(d) Available during day : _____

Q3. In desert plants, leaves are reduced to spines in order to reduce loss of water. How do such plants prepare food?

Q4. In the absence of photosynthesis, life would be impossible on earth. Justify in two points.

Q5. Draw well labeled diagrams of:

(i) A section of a leaf
(ii) Stomata

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