

NOTES

CLASS 7

SCIENCE

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NUTRITION IN PLANTS

Nutrition: It is the mode of taking food by an organism and its utilization by the body.

Nutrients: The components of food that provide nourishment to the body.

utilize it to get energy for the growth and maintenance of their bodies.

Autotrophs- Green plants synthesize their food themselves by the process of photosynthesis. They are autotrophs.

• **Photosynthesis**: Green plants prepare their own food with the help of carbon dioxide and water taken from the environment in presence of sunlight called chlorophyll (found in green plants) for the manufacture of food. This process is known as photosynthesis. use simple chemical substances like carbon dioxide, water and minerals for the synthesis of food.



osynthesis.

utilized by living organisms for their survival.

Parasites- Fungi derive nutrition from dead, decaying matter. They are saprotrophs. Plants like Cuscuta are parasites. They take food from the host plant.

• **Heterotrophs**- A few plants and all animals are dependent on others for their nutrition and are called heterotrophs.

Parasitic: Organisms that live on the body of other organisms.

(i) Partial Parasites: Obtain some of their nutrition from the host, e.g. painted cup.

(ii) Total Parasites: dependent completely on the host for nutrition, e.g. mistletoe.

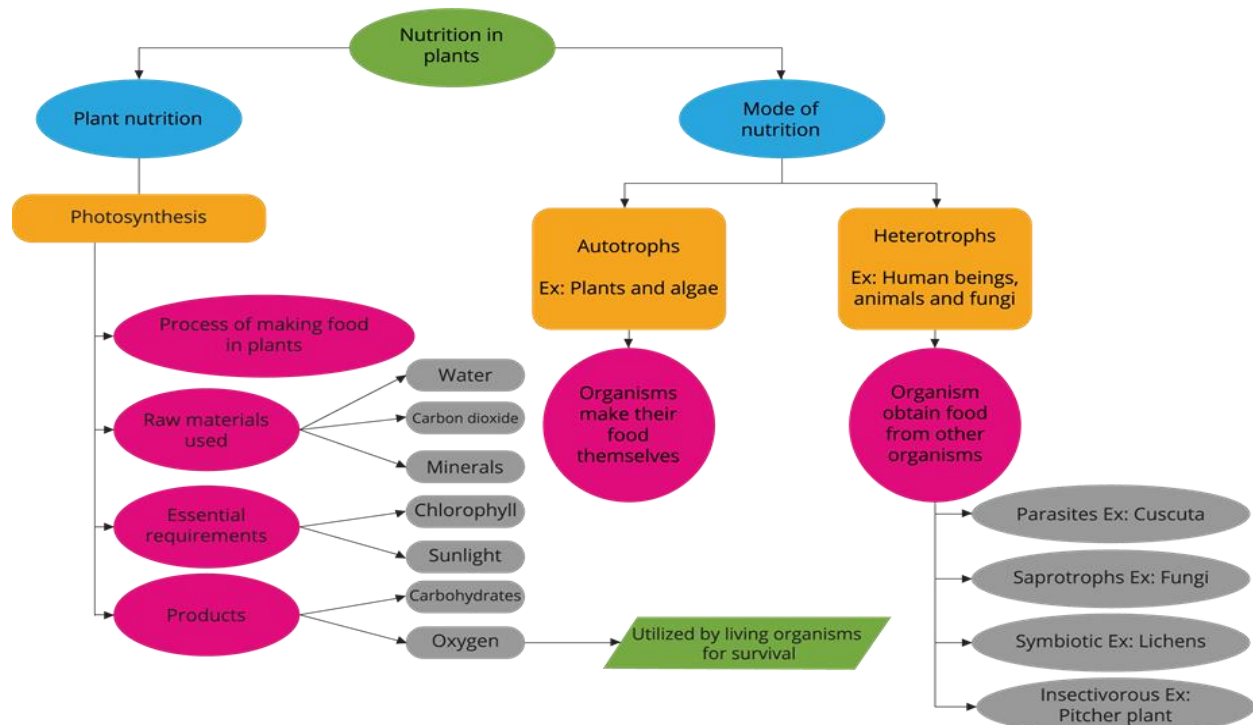
Saprophytic: Organisms that obtain nutrition from dead and decaying plant and animal matter.

• **Insectivorous Plants:** Green plants which obtain their nourishment partly from soil and atmosphere and partly from small insects. Example: pitcher plant, bladderwort, and venus fly trap.

Symbiosis: Mode of nutrition in which two different individuals associate with each other to fulfill their requirement of food.

from fungus and it in turn obtains food from alga.

Mind Map--



Some Important Questions-

Question 1. Potato and ginger are both underground parts that store food. Where is the food prepared in these plants?

Answer: In both the plants, shoot system and leaves are above ground. They prepare food through photosynthesis and transport it to the underground part for storage.

Question 2. Photosynthesis requires chlorophyll and a few other raw materials. Add the missing raw materials to the list given below:

Answer: (a) Sunlight (b) Carbon dioxide

Question 3. The tiny openings present on the leaf surface. What are they called?

Answer: Stomata are the tiny pores present on the surface of leaves through which gaseous exchange takes place in plants.

Question 4. What is the function of guard cells of stomata?

Answer: Guard cells help in controlling the opening and closing of stomata for gaseous exchange.

Question 5. Which parts of the plant are called food factories of the plant?

Answer: Leaves are referred to as food factories of plants. This is because, leaves synthesise food by the process of photosynthesis.

Question 6. A carbohydrate is produced by plants as food source. It is constituted from which molecules?

Answer: Carbohydrates are composed of carbon, hydrogen and oxygen.

Question 7. Why do some plants feed on insects?

Answer: Insectivorous plants grow in soil which lack nitrogen, therefore they eat insects to fulfill their need of nitrogen.

Question 8. Define parasites.

Answer: Parasites they are those organisms which grow on other plants or animals for their food, e.g. Cuscuta.

Question 9. Name the bacteria that can fix atmospheric nitrogen.

Answer: Rhizobium is the bacterium which can fix atmospheric nitrogen.



Question 10.

water and minerals?

Answer: Our body does not contain chlorophyll for absorbing solar energy which is necessary for preparing food using air, water, etc.

Question 11.

you give examples of some such plants?

Answer: Plants such as gram, pulses and beans are leguminous.

Question 12. Algae are green in colour. Why?

Answer: Algae contain chlorophyll which imparts green colour to them.

Question 13. What do you understand by nutrition?

Answer: The process of utilising nutrients like carbohydrates, proteins, fats, etc., to generate energy is called nutrition.

Question 14. Fungus can be harmful and useful. Give an example showing both of these traits of fungus.

Answer: Fungus produces antibiotics like penicillin used to treat diseases and fungus can also harm us by causing fungal infections on skin and hair.

Question 15. A unique feature in leaves allows them to prepare the food while other parts of plants cannot. Write the possible reason for this.

Answer: Leaves contain chlorophyll which is essential for food preparation and is absent in other parts of plant.

Question 16. Algae and fungi form a unique association sharing benefits from each other. What is the name of association between them?

Answer: Lichens.

Question 17. In a plant, photosynthesis occurs in a part other than leaf. Name that plant and the part where photosynthesis occurs.

Answer: Cactus, the part where photosynthesis occurs are stem and branches which are green.

Question 18. Why is Cuscuta, categorised as a parasite?

Answer: Cuscuta derives its nutrition using an association where it deprives its host of all valuable nutrients and absorbs them itself. Hence, it is called a parasitic plant.

Question 19. Plant cannot use the nitrogen present in the soil directly. Why?

Answer: Plants can use nitrogen only in soluble form while in soil nitrogen is present in inorganic form.

Question 20. Why insectivorous plants are called partial heterotrophs?

Answer: Insectivorous plants are autotrophs, i.e. they prepare their own food. They are partial heterotrophs as they eat insects for obtaining nitrogen.

Question 22. What is the stored food form in sunflower seeds?

Answer: In sunflower seeds, glucose is stored in the form of oils (fats).

Question 23. What do you understand by saprotrophic mode of nutrition?

Answer: The mode of nutrition in which organisms take their nutrients from dead and decaying matter is called saprotrophic mode of nutrition.



Question 24. A mutually beneficial relationship that occurs between two plants. It is known by what name? Give an example.

Answer: Symbiosis is the mutually benefitting association between two plants, e.g. lichens.

Question 25. For testing the presence of starch in leaves, a boiled leaf is used. Why?

Answer: Boiling the leaf removes chlorophyll/green colour from the leaves.

Question 26. Mosquitoes, bed bugs, lice and leeches suck our blood. Can they be called as parasites?

Answer: Yes, these animals/insects are parasites as they harm the hosts while they suck blood.

Question 27. Insectivorous plants have one or the other specialised organs to catch their prey. What is that organ?

Answer: Leaves of insectivorous plants catch the prey.

Question 28. Farmers spread manure or fertilisers in the field or in gardens, etc. Why are these added to the soil?

Answer: Plants absorb mineral nutrients from soil. Thus, declining their concentration in soil. Fertilisers and manures enhance or add these essential nutrients back in soil.

Question 29. A cell is formed of many sub-components. Identify different constituents of the cell. Are animal and plant cells similar?

Answer: A cell contains nucleus, cytoplasm, vacuole, cell organelles like chloroplast, mitochondria, etc. No, animal cells are different from plant cells.

Question 29.

Different modes of nutrition have been observed in plants. What are they? Give example of each.

Answer:

Plants show two major modes of nutrition, i.e.

(i) Autotrophs are those which can synthesise their own food.

(ii) Heterotrophs are those which are dependent on other plants and animals for their food. They are of following types:

(a) Parasites, e.g. *Cuscuta*

(b) Saprotrophs, e.g. fungi.

Question 30. Autotrophs and heterotrophs are two different organisms with distinct modes of nutrition state. How are they different from each other?

Answer: The difference between autotrophs and heterotrophs are as follows:

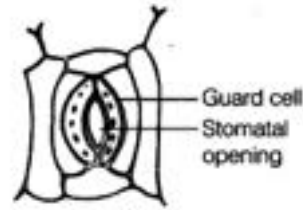
Autotrophs	Heterotrophs
They can prepare their own food	They cannot prepare their own food
Autotrophs take simple inorganic substances and change it into complex organic food, e.g. green plants.	They take in complex food and breakdown it into simple compounds, e.g. all animals, fungi and non-green plants.

Question 31.

Observe the given figure and label the following terms given in the box. Stomatal opening, guard



cell



Answer: Labelled figure is given

Question 32.

Nitrogen is an essential nutrient for plants growth. But farmers who cultivate pulses as crops like green gram, bengal gram, black gram, etc., do not apply nitrogenous fertilisers during t cultivation. Why?

Answer:

Roots of pulses (leguminous plants) have a symbiotic association with a bacterium called Rhizobium. This bacteria convert gaseous nitrogen of air into water soluble nitrogen compounds and give them to the leguminous plants for their growth. Hence, farmers need not use nitrogenous fertilisers.

Question 33. Pooja is worried about her new shoes which she wore on special occasions that they were spoiled by fungus during rainy season. Is she right to worry, if yes, then tell why does fungi suddenly appears during the rainy season?

Answer: Yes, the fungi reproduces by spores which are generally present in the air and grow on any article that are left in hot and humid weather for a long time. During rainy season they land on wet and warm things and begin to germinate and grow.

Question 34

field of wheat are infected with fungus but no one is aware of this. Harish rushed to his field have been infected with fungi. He should use an antifungal agent in his fields to stop this infection.

(a) What is fungus?

(b) Can fungus only cause diseases or can it be helpful also?

(c) What values are shown by Harish?

Answer: (a) Fungus are saprophytic organisms usually present as spores in atmosphere which can germinate on any substrate in optimal conditions.

(b) Fungus are also useful in that they produce many antibiotics which can cure different types of infections like penicillin.

(c) Harish is sincere, curious and knowledgeable with a keen sense of applying it where necessary.

Question 35. Wild animals like tiger, wolf, lion and leopard do not eat plants. Does this mean that they can survive without plants? Can you provide a suitable explanation?

Answer: Animals like tiger, wolf, lion and leopard are carnivores and do not eat plants. They hunt and eat herbivorous animals like deer, gaur, bison, zebra, giraffe, etc., which are dependent on plants for food. If there are no plants, herbivorous animals will not survive and ultimately animals like tiger, wolf, lion and leopard will have nothing to eat.



Match the Column I with Column II.

Column I		Column II	
(a)	Saprotroph	(i)	Pitcher plant
(b)	Chlorophyll	(ii)	Food factory of plants
(c)	Bacteria <i>Rhizobium</i>	(iii)	Green plant leaf
(d)	<i>Cuscuta</i>	(iv)	Fungi
(e)	Insects	(v)	N ₂ -fixing
(f)	Mango tree	(vi)	Stomata
(g)	Leaf	(vii)	Parasite
(h)	Tiny pores present on leaf	(viii)	Raw material
(i)	CO ₂ and water	(ix)	Saprophyte
(j)	Mushroom	(x)	Autotroph

Answers:

1. (a) – (iv), (b) – (iii), (c) – (v), (d) – (vii), (e) – (i), (f) – (x), (g) – (ii), (h) – (vi), (i) – (viii), (j) – (ix)



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