Class 7 Science Chapter 1 Nutrition in plant

II. Very short answer type questions

Give two examples for the following.

Q.1 Plants that have autotrophic mode of nutrition

Ans: a) Mango b) Neem

Q.2 Plants that have heterotrophic mode of nutrition

Ans: a) Cuscuta b) Pitcher plant

Q.3 Plants that grow in nitrogen-deficient soil

Ans: a) Venus flytrap b) Sundew

Q.4 Plants that harm their host plant

Ans: a) Cuscuta b) Mistletoe

Q.5 Symbiotic plants

Ans: a) Lichen b) Pea plant with Rhizobium

III. Short answer type questions

Q.1 Define heterotrophic mode of nutrition. Name the four types of heterotrophic nutrition in plants.

Ans: Heterotrophic nutrition is the mode where plants depend on other organisms for food.

Four types: Parasitic, Insectivorous, Saprophytic, Symbiotic.

Q.2 How do parasitic plants benefit from their host plants?

Ans: Parasitic plants get water and nutrients from the host plant by attaching themselves and absorbing directly through structures like haustoria.

Q.3 What is the symbiotic association in lichens?

Ans: Lichens are a symbiotic association between a fungus (which absorbs water and minerals) and an alga (which performs photosynthesis and prepares food).

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IV. Long answer type questions

Q.1 With the help of a labelled diagram, describe the process of photosynthesis in autotrophs.

Ans: Photosynthesis Process **(for diagram refer to p.11 Fig - 1.1)**

Plants use chlorophyll, sunlight, carbon dioxide, and water to produce glucose and oxygen.

Equation: $6CO_2+6H_2O \rightarrow C_6H_{12}O_6+6O_2$

Q.2 Describe how insectivorous plants trap and digest insects for nutrition. Support your answer with examples.

Ans: Insectivorous plants grow in nitrogen-deficient soil and trap insects for nutrition:

Insectivorous plants grow in soil that is poor in nitrogen. To fulfill their nitrogen requirements, they trap and digest insects. These plants have specially modified leaves that act as traps.

For example, the pitcher plant has a tube-shaped leaf with a lid. Insects are attracted to its color and scent, fall into the pitcher, and are digested by digestive juices.

The sundew plant has sticky tentacles on its leaves that trap insects. Once an insect is stuck, the tentacles curl around it and secrete enzymes to digest it.

The Venus flytrap has leaves with sensitive trigger hairs. When an insect touches these hairs, the leaves snap shut, trapping the insect inside. The plant then secretes digestive fluids to break down the insect and absorb the nutrients. These adaptations help insectivorous plants survive in nutrient-deficient environments by supplementing their food through animal protein.

Q.3 Discuss the different ways in which nutrients are replenished into the soil

Ans: Nutrients replenished in soil by: Plants absorb essential nutrients like nitrogen, phosphorus, and potassium from the soil to grow and carry out various life processes.

Over time, continuous farming depletes these nutrients, making it necessary to replenish them for healthy plant growth and good crop yield.

One natural way to restore nutrients is through the decay of organic matter. Dead plants, animals, and animal waste decompose with the help of microbes and fungi, releasing nutrients back into the soil.

Another effective method is the use of manure and fertilizers. Manure, made from animal dung and organic waste, is rich in nutrients and improves soil texture. Chemical fertilizers contain specific nutrients like urea (rich in nitrogen), superphosphate, and potash, which directly boost soil fertility.

Crop rotation is also a common practice. Farmers grow leguminous plants like peas and beans in between other crops. These plants have a symbiotic relationship with Rhizobium bacteria, which live in their root nodules and fix atmospheric nitrogen into the soil.

Additionally, green manure involves growing certain crops and ploughing them back into the soil to enrich it. These sustainable practices help maintain soil health, reduce dependency on chemicals, and ensure long-term agricultural productivity.