CLASS VIII

SUBJECT- BIOLOGY

TOPIC- TRANSPORT OF FOOD AND MINERALS IN PLANTS

Synopsis

- Roots not only fix the plant in the soil giving it support but the most important function is to absorb water and mineral nutrients from the soil.
- The root hairs are the cluster of very fine, delicate, tubular, thread like structures arising as an outgrowth from the secondary and tertiary roots.
- Diffusion-Movement of molecules of a substance from their higher concentration to their lower concentration.
- Osmosis- The diffusion of water molecules from dilute solution to concentrated solution through a semi permeable membrane.
- Root Pressure-The pressure which developes in the cortical cells of root and pushes the water and minerals into the xylem vessels.
- Plasmolysis-The shrinkage of protoplasm from the cell wall due to withdrawal of water when a cell is placed in a hypertonic medium.
- Transpiration-Loss of water in the form of water vapour from aerial parts of plant.
- Potometer is used to measure the rate of transpiration.
- Factors affecting transpiration-Intensity of light, temperature, velocity of wind, humidity.
- Significance of transpiration- Ascent of sap, stimulate root growth, cooling effect, development of mechanical tissue.
- Transpiration is regarded as ' necessary evil' to the plants.
- Xylem consists of tracheids, tracheae, xylem parenchyma, xylem fibre.
- Phloem consists of sieve tubes, companion cells, phloem parenchyma, phloem fibre.
- Xylem transport water and minerals whereas phloem translocate food to different parts of the plant.
- Macronutrient helps in synthesis of organic molecules and development of osmotic potential
- Micronutrients are involved in functioning of enzymes.
- Diseases are caused by deficiency of essential nutrients.

W0RK SHEET

Qs A. Name the followings: -

a. The process of uptake of mineral against the concentration gradient using energy cell.
b. The tissue which conducts manufactured food in plants.
c. The pressure which is responsible for upward movement of water across the cortical cells of the root.
d. Movement of solvent molecules from its higher concentration to its lower concentration through a semipermeable membrane.
e. Shrinkage of protoplasm when a cell is kept in a concentrated solution.
f. The force which helps in the conduction of water.
g. The apparatus used to record the rate of transpiration in plants.
h. The nutrient responsible for yellowing of leaves.
i. The micronutrient responsible for cracked stem.
j. The major component of protoplasm.

Qs B. Differentiate between the followings:-

a. Diffusion and Osmosis
b. Plasmolysis and Deplasmolysis
c. Micronutrient and Macronutrient
d. Endosmosis and Exosmosis

Qs C. State whether the following are True or False. If false, rewrite the correct statement:-

a. The cell wall is semi permeable.
b. Transpiration helps in absorption of water.
c. The rate of transpiration will be more if the air is humid.
d. Companion cells are devoid of nuclei.
e. Root hairs absorb minerals from the soil by diffusion.

Qs D. Draw the labelled diagrams of:

a. Phloem elements
b. Fully grown Root hair

Qs E. Answer the following questions:-

a. Mention three purposes for which the plants need water.
b. What is transpiration pull?
c. Briefly explain how the rate of transpiration is affected on a windy day and a humid day?
d. Mention two advantages and two disadvantages of transpiration.
e. What is wilting?
f. What is chlorosis?
g. What is the importance of osmosis to plants?
h. Name the forces that are responsible for ascent of sap.
i. Mention the functions of phloem parenchyma and phloem fibre.
j. Define active transport and turgor pressure.

Qs F. Complete the exercises at the end of the chapter – Pg No- 27 and 28

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