

CLASS 8 ANSWERS LESSON 1 (REST OF THE ANSWER)

ANSWER IN DETAIL

1. Each root hair is an extension of an epidermal cell. Root hairs are unicellular, delicate and easily damaged. They are replaced daily by new cells. They increase the surface area for absorption of water and nutrients from the soil. They form a network and hold the soil tightly and allow the plant to stand upright.

2. Root hairs absorb water from the soil by osmosis, and minerals by active transport. Water and minerals are transported from the root to all parts of the plant in the following steps.

A. The pressure developed in the roots due to continuous inflow of water is called root pressure.

B. Helps in pushing the plant sap upwards into the stem.

C. Root pressure appears only when the rate of absorption is higher than the rate of transpiration.

D. Water along with minerals moves further upwards through the xylem of stem towards the leaves.

E. This is due to transpiration which exerts a pull from above.

3. The greater the transpiration, the greater is the rate of absorption of water from the soil. When water is lost through leaves, a suction force is created which pulls up water from the xylem of roots to the stem and then to leaves. This is called transpirational pull. As a result, the amount of water in the roots gets reduced and water from the soil enters the root hair by the process of osmosis. This process continues and water moves upwards.

4. There are several factors: temperature, wind, and humidity that affect the rate at which transpiration takes place. These factors are as follows:

Time of the day : The stomata in leaves are opening during the day and are closed at night. Thus, more transpiration takes place during the daytime.

Temperature : Higher the temperature, faster is the rate of transpiration. Therefore, transpiration is faster on hot days as compared to cold days.

Humidity : Transpiration is lower on a humid day because the air already contains a lot of moisture.

Wind : Wind increases the rate of transpiration since water evaporates faster from the leaves on a windy day.

Light : Light increases the rate of transpiration as light causes the stomata to open.

5. Xylem is the vascular tissue extending throughout the length of the plant. It helps in the transport of water molecules and dissolved substances from the roots to the aerial parts of the plant. Xylem mostly occupies the centre of the vascular bundle. It consists of tracheids, vessel elements and xylem parenchyma.

Phloem : It runs alongside the xylem tissue. It consists of sieve cells which form long narrow tubes with perforated sieve plates along their length. The function of these tissues is to

transport food nutrients such as sucrose and amino acids from the leaves to all other tissues of the plant. Phloem is made up of living cells which contains cytoplasm but no nucleus. Companion cells are nucleated cells present next to sieve elements, they carry out metabolic functions required for the prolongation of sieve elements.

6. Some elements are essential for plant for example carbon, oxygen, hydrogen, etc. Plants are not able to grow normally and complete their life cycle in their absence. Essential elements are further classified into two categories which are as follows :

Macronutrients (Major elements) : These elements are required by plants in large quantities. Carbon , hydrogen, oxygen, nitrogen, phosphorus, potassium, magnesium and calcium are examples of macronutrients.

Micronutrients (Minor elements) : These elements are required by plants in small quantities. Iron, copper, boron, zinc, manganese and chlorine are examples of micronutrients.

Home work : At length (d), Observe and perform . Review your learning