

Plant Transport

Xylem and Phloem Function:

- Xylem: Transports water, mineral ions, and solutes from roots to leaves.
- Phloem: Transports nutrients (sucrose and amino acids) from leaves to the rest of the plant.

Water Uptake in Roots:

- Root Structure: Root hair cells increase surface area for water and nutrient absorption. Water enters the roots via osmosis and moves into the xylem through the root cortex and endodermis.

Water Movement in Plants:

- In the Xylem: Water moves upward due to transpirational pull (water loss via transpiration creates negative pressure), root pressure (positive pressure from water entering roots), and cohesion (water molecules stick together).
- In the Leaf: Water enters through the vascular bundle, used in photosynthesis or evaporates into air spaces, then diffuses out via stomata in the process called **transpiration**.

Transpiration:

- The loss of water vapor from the leaf through stomata.
- Factors affecting transpiration rate include:
 - Temperature: Higher temperatures increase transpiration.
 - Humidity: Higher humidity decreases transpiration.

Translocation:

- The movement of sucrose and amino acids in the phloem from the source (site of production) to the sink (site of storage or use in respiration/growth).
- The source and sink can change depending on the plant's growth stage. For example, leaves are usually the source but may become a sink during periods of growth.



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