

Transport in plants

Xylem and phloem

Xylem

water and mineral ions support

Phloem

sucrose amino acids

Position

root: centre stem: outer ring leaf: veins

Xylem structure Supplement

lignin walls no contents no cross walls

Water uptake

Root hair cell

absorbs water and ions large surface area

Pathway of water

root hair cells root cortex xylem mesophyll

Stain investigation

stem in dye stain in xylem

Transpiration

Definition

loss of water vapour from leaves

Mechanism

evaporation from mesophyll diffusion through stomata

Factors increasing rate

temperature wind speed

Humidity Supplement

more humid: slower rate less steep gradient

Leaf structure Supplement

air spaces stomata number and size

Transpiration pull Supplement

water column attraction between molecules

Wilting Supplement

cells lose turgor leaves droop

Translocation Supplement

Moves sucrose, amino acids Supplement

in phloem

Source Supplement

releases sucrose e.g. mature leaf

Sink Supplement

uses or stores e.g. fruit, root tip

Source and sink at different times Supplement

tuber stores then releases