

Small distance
transport

Diffusion

Cytoplasmic streaming

Active transport

Translocation

Transport over long
distance

Through vascular tissues,
xylem and phloem

Multidirectional
transport

Organic compounds
and mineral nutrients

Unidirectional
Transport

Through xylem, water
and minerals

Diffusion

Passive transport from
higher to lower
concentration

Gaseous movement in
plants

Depends on concentration
gradient, permeability,
temperature and pressure

Facilitated diffusion

Diffusion of hydrophilic
moiety through carrier
protein

Concentration gradient is
required

No expenditure of energy

Aquaporins

Water channels

Symport

Diffusion of two molecules in the same direction

Antiport

Diffusion of two molecules in the opposite direction

Active transport

Transport against concentration gradient

Uphill transport

Expenditure of energy

Osmosis

Movement of water through selective permeable membrane from higher potential to lower potential until equilibrium is achieved

Plasmolysis

Water moves out of the cell leading to shrinkage

Occurs in hypertonic solution

Flaccid

When cells are kept in isotonic solution, there is no net movement of water

Turgid

Cells become turgid when placed in hypotonic solution

Imbibition

Absorption of water by solids and colloid

E.g. water absorption by seeds, dry wood

Apoplastic path

Cell wall and
intercellular spaces

Symplastic path

System of
interconnected
protoplast

Transpiration

Loss of water through
evaporation

Guttation

Exudation of xylem sap near the tip of grasses mostly at night due to root pressure

Transpiration Pull

Driving force for transportation of water upwards from roots to leaves

Phloem translocation

Bidirectional, active process

Water, sucrose and other sugars, amino acids, hormones