

Plant structures and their functions

Photosynthesis

Producers make biomass

Plants and algae Start of food chains

Endothermic reaction

Light energy in $\text{CO}_2 + \text{water} \rightarrow \text{glucose} + \text{oxygen}$

Limiting factors

Temperature Light intensity CO_2 concentration

Interacting factors **Higher tier**

Shortest supply limits Plateaus on graphs

Core practical

Pondweed and lamp Bubbles per minute Control temperature

Inverse square law **Higher tier**

$\text{Intensity} \propto 1 \div d^2$ $\text{Rate} \propto \text{intensity}$

Transport

Root hair cells

Large surface area Mitochondria Active transport

Xylem

Dead, lignified cells Water and mineral ions

Phloem

Living cells Sucrose Uses energy

Transpiration

Evaporation in leaf Diffusion through stomata Transpiration stream

Stomata

Guard cells Open and close

Translocation

Leaves to growing regions Stores

Leaves and water

Leaf structure **Triple only**

Palisade mesophyll Spongy mesophyll Waxy cuticle Stomata

Water uptake factors

Light intensity Air movement Temperature

Potometer

Bubble movement $\text{Rate} = \text{distance} \div \text{time}$

Rate calculations

Mean of repeats Percentage change in mass

Extreme environments **Triple only**

Leaf size and shape Thick cuticle Fewer or sunken stomata

Plant hormones **Triple only**

Auxins and tropisms **Triple only**

Phototropism Gravitropism

Shoots **Triple only**

Towards light Away from gravity

Roots **Triple only**

Away from light Towards gravity

Auxin uses **Triple only** **Higher tier**

Weedkillers Rooting powders

Gibberellin uses **Triple only** **Higher tier**

Germination Flowers and fruit Seedless fruit

Ethene use **Triple only** **Higher tier**

Fruit ripening