

## Definitions and Concepts for CAIE Biology IGCSE

### Topic 8: Transport in Plants

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*Definitions in **bold** are for supplement only*

**Air spaces** - Intracellular spaces within the spongy mesophyll layer of the leaf that enable gaseous exchange. The air becomes saturated with water vapour providing a high concentration gradient for its diffusion into the atmosphere.

**Cohesion (water movement)** - The 'sticking' together of water molecules due to attractive forces between them. This enables water molecules to move up the xylem in a continuous stream.

**Cortex** - The tissue located between the epidermis and the vascular bundles in a plant stem or root. The cells of the cortex often store starch.

**Dicotyledons** - Plants that produce seeds that contain two cotyledons (embryonic leaves), forming two primary leaves.

**Epidermis** - A single layer of cells that helps to maintain the shape of the stem and reduces water vapour loss.

**Phloem** - A transport tissue found in plants that is specialised to transport sugars from the leaves to the rest of the plant in both directions.

**Root hair cells** - Specialised cells responsible for the uptake of water and minerals from the soil. **They have long hair-like extensions known as root hairs, which provide a large surface area for absorption of ions by active transport and water by osmosis.**

**Sinks (plants)** - The regions of a plant that store or remove sugars e.g. roots, buds, fruits.

**Sources (plants)** - The regions of a plant that produce sugars e.g. leaves, storage organs.

**Stomata** - Small holes found on the surface of a plant that can be opened or closed by guard cells to control water loss and gas exchange.

**Surface area** - The total area occupied by the surface of an object. The larger the surface area, the faster the rate of diffusion.

**Translocation** - The movement of sugars (sucrose, amino acids, etc.) up and down a plant, from sources to sinks, via the phloem. Requires energy.

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**Transpiration** - Water loss from plant leaves and shoots via diffusion and evaporation. The rate of transpiration is affected by temperature and humidity.

**Vascular bundle** - Part of the transport system in vascular plants that consists of xylem and phloem tissue.

**Wilting** - The loss of rigidity of non-woody structures of plants. This is due to greater water loss via transpiration than is taken up by the roots.

**Xylem** - A transport tissue in plants that is specialised to transport water and dissolved minerals from the roots of the plant to the leaves.

