

Xylem and phloem

What is the function of xylem?

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Xylem and phloem **Supplement**

Why is lignin in xylem walls?

Xylem and phloem **Supplement**

How do xylem vessels form a continuous tube?

Xylem and phloem

Where are xylem and phloem in a non-woody dicot stem?

Xylem and phloem

Where is xylem in a root cross-section?

Xylem and phloem

Where are xylem and phloem in a leaf?

Water uptake

What is the function of a root hair cell?

Transports sucrose and amino acids.

Transports water and mineral ions, and supports the plant.

Cells are joined end to end with no cross walls and have no cell contents.

It strengthens the thick walls, so the vessel does not collapse and the plant is supported.

In the centre, often an X shape, with phloem between the arms.

In vascular bundles in a ring near the outside. Xylem is on the inside, phloem on the outside.

Absorbs water and mineral ions from the soil.

In the veins. Xylem is on the upper side, phloem on the lower side.

Water uptake Why do root hairs increase uptake?	Water uptake Outline the pathway of water from soil to leaf.
Water uptake How can you show the pathway of water in a stem?	Transpiration Define transpiration.
Transpiration How does water leave a leaf?	Transpiration How do temperature and wind speed affect transpiration?
Transpiration What does a potometer measure?	Transpiration Supplement How do air spaces affect water loss?

Root hair cells, root cortex cells, xylem, mesophyll cells.

They give a large surface area for absorbing water and mineral ions.

The loss of water vapour from leaves.

Stand it in water with a stain. The stain is found in the xylem.

Higher temperature and more wind both increase the rate of transpiration.

It evaporates from the surfaces of mesophyll cells into the air spaces, then diffuses out through the stomata.

Interconnecting air spaces give mesophyll cells a large internal surface area for evaporation.

Water uptake by a leafy shoot, as the distance an air bubble moves in a set time.

Transpiration **Supplement**

How do stomata affect water loss?

Transpiration **Supplement**

What is transpiration pull?

Transpiration **Supplement**

Why does the water column in the xylem not break?

Transpiration **Supplement**

How does humidity affect transpiration?

Transpiration **Supplement**

Why does wilting occur?

Translocation **Supplement**

Define translocation.

Translocation **Supplement**

What is a source?

Translocation **Supplement**

What is a sink?

The pull on water in the xylem caused by evaporation from the leaves. It draws up a column of water.

The number and size of stomata affect how much water vapour diffuses out.

Higher humidity reduces the concentration gradient, so transpiration is slower.

Forces of attraction between water molecules hold the column together.

Movement of sucrose and amino acids in the phloem from sources to sinks.

Water is lost faster than it is taken up, so cells lose turgor and the plant droops.

A part of a plant that uses or stores sucrose or amino acids.

A part of a plant that releases sucrose or amino acids.

Why can a tuber be a source and a sink?

It stores sucrose as starch while the plant photosynthesises (sink), then releases sucrose to new shoots (source).