CAIE Biology IGCSE

8 - Transport in Plants

Flashcards

What does the xylem transport?

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Water and minerals

What does the phloem transport?

What does the phloem transport?

Sugars like sucrose

Describe the position of the xylem and phloem in the leaf

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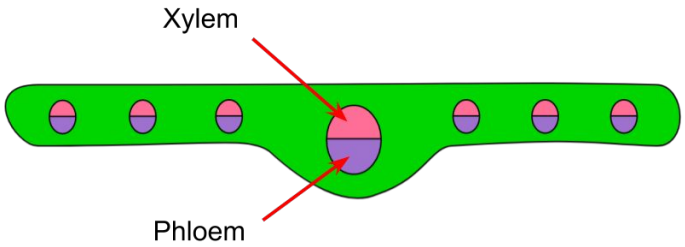
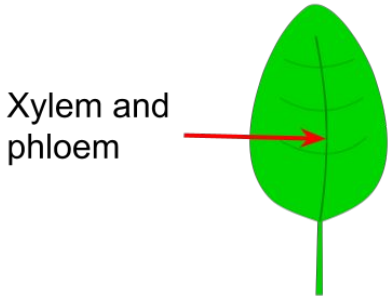
The xylem is on the top of the phloem

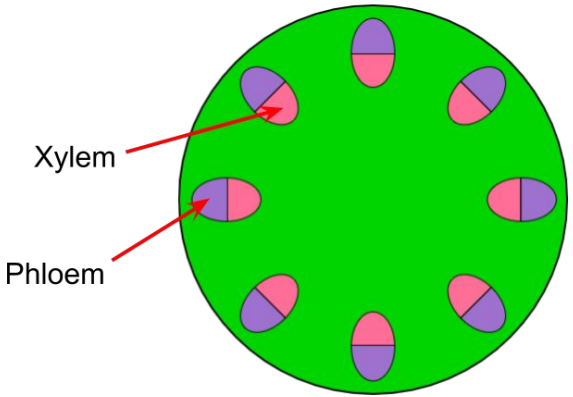




Describe the position of the xylem and phloem in the stem

Describe the position of the xylem and phloem in the stem

The xylem is on the inside of the stem

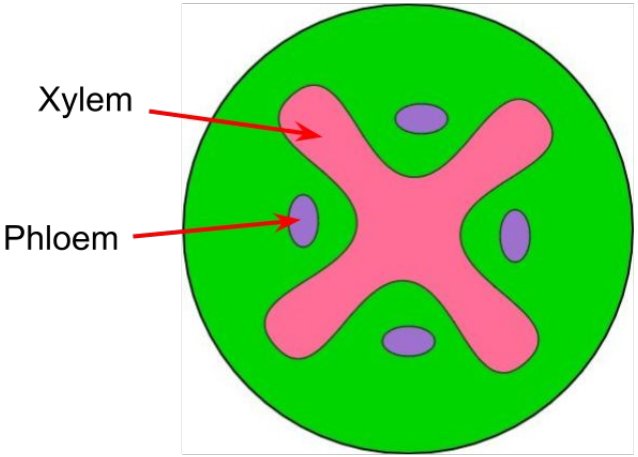


Describe the position of the xylem and phloem in the root

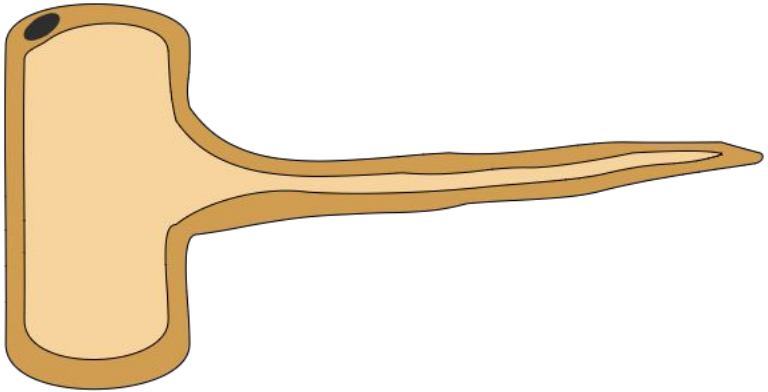
Describe the position of the xylem and phloem in the root

The xylem is in the middle in an X shape

The phloem is on the outside of the xylem

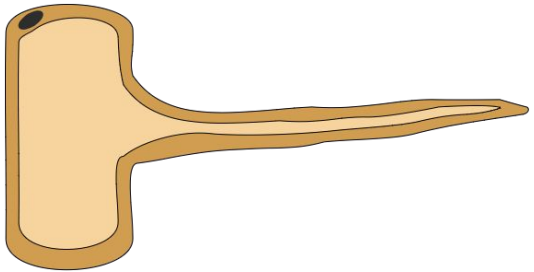


What type of plant cell does this diagram show?



What type of plant cell does this diagram show?

A root hair cell



Describe the pathway of water through a plant

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Root hair cell → Root cortex cells → Xylem → Mesophyll cells

How do you investigate the pathway of water through a plant?

How do you investigate the pathway of water through a plant?

- Place a plant into a beaker of water with stain added to it
- After several hours, the leaves of the plant should turn the same colour as the dyed water.
- This shows water is being taken up by the plant.
- When a cross-section of the plant is taken, only the **xylem** vessels will be stained.

Describe the process of transpiration

Describe the process of transpiration

- Water is lost through the stomata
- More water is drawn up to replace the lost water

What is the transpiration stream?

What is the transpiration stream?

The transpiration stream is the flow of water through a plant

Define transpiration.

Define transpiration.

The evaporation of water from the aerial parts of a plant on the surface of the mesophyll cells which is followed by diffusion of water vapour through the stomata

Why is water lost from plants? (Higher/Supplement)

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- Plants have large air spaces in them
- Plants have stomata (pores) in the leaves which allows water to diffuse out of the plant
- Plants have a large surface area for evaporation to occur

How do the interconnecting air spaces affect water vapour loss? (Higher/Supplement)

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-The interconnecting air spaces between the mesophyll cells create a **large internal surface area.**

-This increases the amount of water which can evaporate from the leaf.

How do the shape and size of stomata affect water loss?(Higher/Supplement)

How do the shape and size of stomata affect water loss? (Higher/Supplement)

- A greater number of stomata leads to more evaporation of water vapour from the leaves, increasing rate of **transpiration**.
- A larger size of stomata also leads to more evaporation and increases the rate of **transpiration**.

Explain the movement of water through a plant. (Higher/Supplement)

Explain the movement of water through a plant (Higher/Supplement)

- Water evaporates from the leaves creating a negative pressure in the xylem (**transpiration pull**)
- Water is drawn up the xylem in a column that is held together by **cohesion**

How does temperature affect the rate of transpiration?

How does temperature affect the rate of transpiration?

As the temperature increases, so does the transpiration rate

How does the wind speed affect the rate of transpiration?

How does the wind speed affect the rate of transpiration?

The faster the wind speed, the faster the water is moved away from the plant, creating a steeper gradient and increasing the transpiration rate

What causes wilting?
(Higher/Supplement)

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A lack of water which means the plant cells are not turgid and so the plant is not supported

Describe translocation (Higher/Supplement)

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Translocation is the movement of sugars and amino acids up or down the phloem from source to sink (with the use of energy)