OCR A Biology A-level

PAG 05 - Potometer

Flashcards

What is the function of a potometer?

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A device used to measure the rate of water uptake of a plant, and hence the rate of transpiration.

Which factors affect the rate of transpiration?

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- Temperature
- Humidity
- Wind speed
- Light intensity
- Water supply
- Surface area
- Presence of cuticle

Why must the leafy shoot be cut underwater?

Why must the leafy shoot be cut underwater?

To prevent air bubbles from forming in the vascular tissue.

Why should the cut of the shoot be slanted?

Why should the cut of the shoot be slanted?

To increase the surface area available for water uptake.

Outline the procedure to this practical.

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1. Set up the potometer.
2. Clamp the capillary tube into the stand. Place the bottom of the capillary tube into the beaker of water.
3. Smear petroleum jelly around the join to maintain airtight conditions.
4. Leave for 5 minutes for a bubble to be drawn into the capillary tube.
5. Measure the movement of the bubble along the capillary tube in a certain length of time.
6. Repeat the experiment and change the abiotic variable

How is the rate of transpiration calculated?

How is the rate of transpiration calculated?

Measure the distance travelled by the bubbles in the capillary and the radius of the capillary.

Find the volume of water taken up by using πr^2.

Divide the volume by time.

How is light intensity controlled?

How is light intensity controlled?

By changing the distance between the lamp and the potometer.

How can wind speed be controlled?

How can wind speed be controlled?

By placing a fan near the potometer with different speeds.

How can humidity be controlled?

How can humidity be controlled?

By wrapping a plastic bag around the plant to maintain a humid environment.

What are some limitations of this method?

What are some limitations of this method?

Not all of the water taken up is transpired, some is used to maintain turgidity and for photosynthesis

The plant is dying when the stem is cut, rate of water uptake is lower than normal