

GCSE Biology A (Gateway)

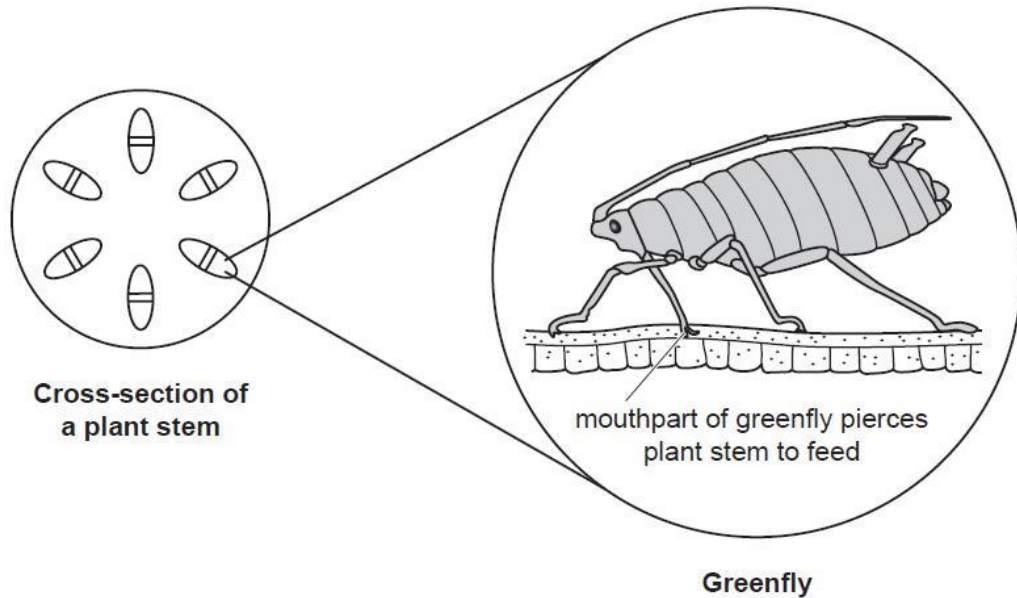
J247/01 B1-B3 and B7 Foundation (Foundation Tier)

Question Set 19

1

The diagram shows a cross-section of a plant stem.

A greenfly feeds on the plant by piercing through to the tissue shown in the cross-section of a plant stem.



- (a) (i) What is the name of the tissue in the stem that the greenfly is trying to reach with its mouthpart?

Tick (✓) one box.

Phloem

Root hair

Xylem

[1]

- (ii) Explain why plants infested with greenfly have very poor growth.

[2]

The greenfly feed on the sugars in the phloem so there is less sugar for processes like respiration and protein synthesis. This makes growth difficult.

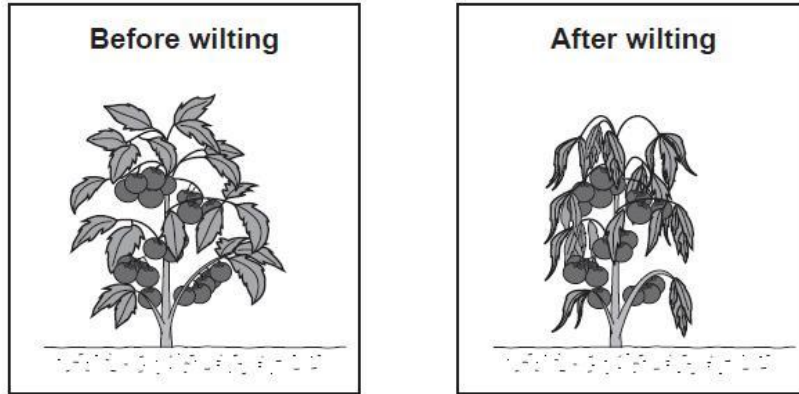
(b)

A gardener carries out an experiment using two similar tomato plants. The tomato plants are grown in pots.

She puts one inside a glasshouse and one outside beside the glasshouse.

To decide which plant loses the most water, the gardener looks to see which plant wilts first.

The diagrams show a plant before and after it has wilted.



- (i) On a windy day, the plant **outside** the glasshouse wilts first. Explain why.

The one outside is exposed to the wind while the one inside is protected from the wind. So translocation occurs more rapidly for the plant outside and so it wilts first. [2]

- (ii) The gardener's results do not provide very accurate information about the effect of wind on water loss.

How could the gardener improve the design of her experiment?

The gardener needs to record the time it takes for each plant to wilt. Also the experiment should be repeated on windy and non-windy days and then use the mean times to compare results [3]

(c)

Fifty years ago, scientists experimenting on plants had to inject dyes to measure water flow.

Now they can use modern methods such as MRI and X-ray imaging.

Scientists are now developing new ideas on how water flows through a plant that are different from theories developed fifty years ago.

Explain why.

[2]

Techniques like x-ray and MRI show up the inside structure of the xylem and by taking images at regular intervals they can see how water flows through the plant and xylem. Many observations like this disprove older theories so they develop new ideas based on current new observations.

Total Marks for Question Set 19: 10



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