

8.2 Water uptake

Name: _____ Class: _____ Date: _____

Total: 7 marks

KEY WORDS root hairs 根毛 • surface area 表面积 • root hair cells 根毛细胞 • water uptake 水分吸收
• cortex 皮层

Objective

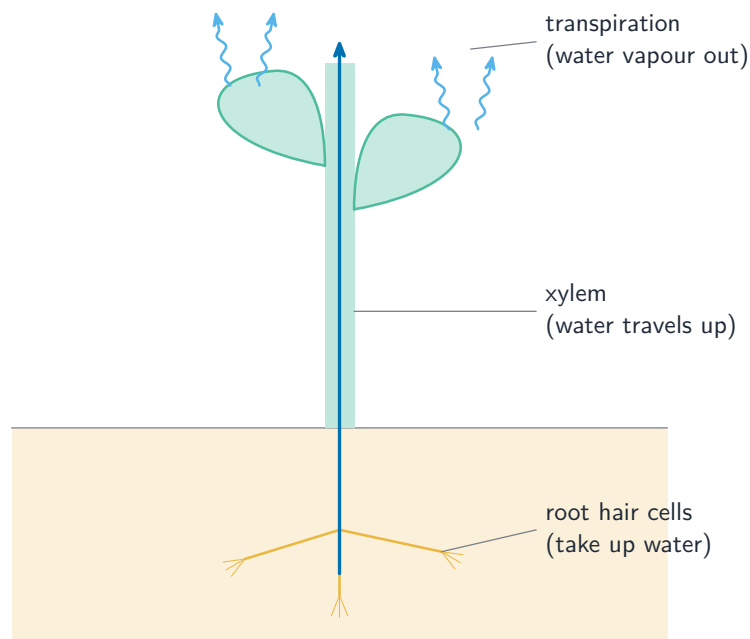
Build the skills to answer exam questions on **water uptake** 水分吸收 — **root hair cells** 根毛细胞 and the water pathway through the plant.

You must be able to:

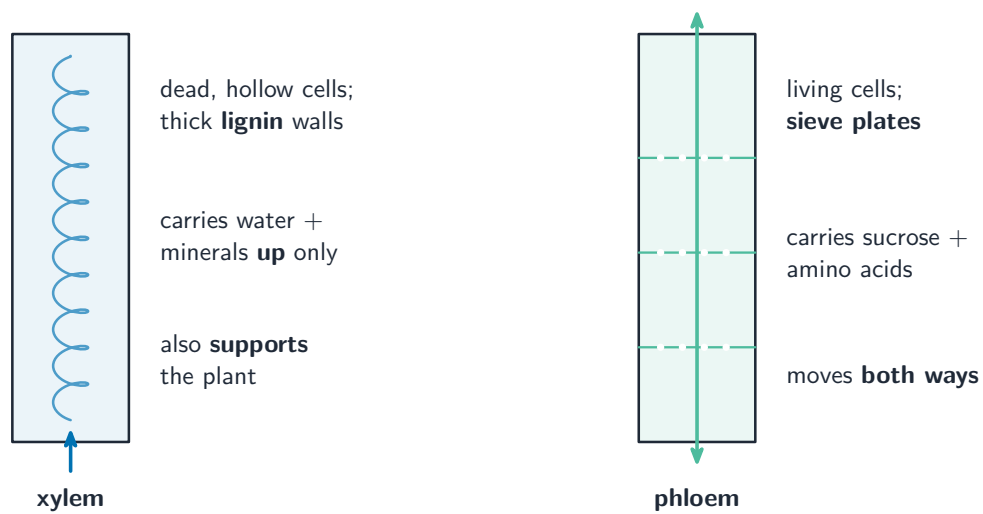
- describe how root hair cells take up water and mineral ions
- explain how root hairs increase the surface area
- state the water pathway through the plant

1 Worked examples

■ Root hairs and the pathway



Pathway: root hair cell → root cortex → xylem → mesophyll cells in the leaf



Water taken up travels in the xylem

- many **root hairs** → very large surface area → fast uptake of water and mineral ions.

2 Practice

2.1 Name the cells through which water enters a plant. [1]

2.2 State the water pathway from the soil to the leaf. [2]

3 Exam-style questions

3.1 Root hairs speed up water uptake because they: [1]

- **A** make food
 - **B** give a large surface area
 - **C** contain chloroplasts
 - **D** store starch
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3.2 A white flower is placed in water containing a coloured stain.

(a) State where the stain will appear in the plant. [1]

(b) Explain why this shows the route taken by water. [2]

Solutions

2.1 root hair cells.

2.2 root hair cell → root cortex → xylem → mesophyll (leaf).

3.1 B. Root hairs give a large surface area for uptake.

3.2 (a) in the veins (xylem) / the petals.

(b) the stain is carried up the xylem with the water; so the coloured parts show the path the water took.