

8 Xylem and phloem – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
transport tissues	运输组织	_____	_____	_____
xylem	木质部	_____	_____	_____
phloem	韧皮部	_____	_____	_____
mineral ions	矿物质离子	_____	_____	_____
lignin	木质素	_____	_____	_____
sucrose	蔗糖	_____	_____	_____
amino acids	氨基酸	_____	_____	_____
vascular bundles	维管束	_____	_____	_____
root hair cells	根毛细胞	_____	_____	_____
surface area	表面积	_____	_____	_____

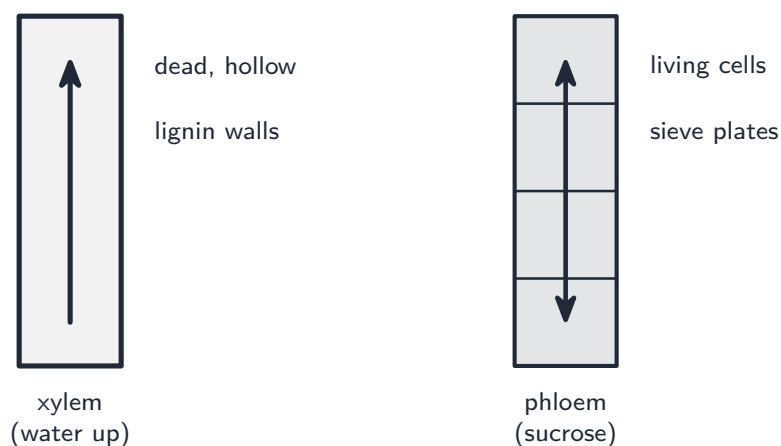
Recall

Plants have two **transport tissues** 运输组织 running through the roots, stem and leaves: **xylem** 木质部 and **phloem** 韧皮部.

New ideas

Read these first, then do the Practice.

■ 1 Xylem and phloem

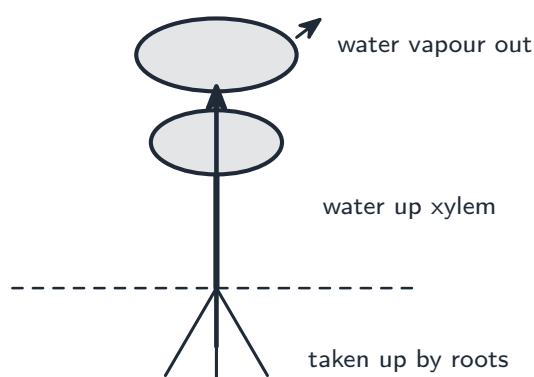


- **xylem** carries water and **mineral ions** 矿物质离子 **up** from the roots, and supports the plant. Its cells are dead, hollow tubes with walls strengthened by **lignin** 木质素.
- **phloem** carries **sucrose** 蔗糖 and **amino acids** 氨基酸 to wherever they are needed. Its cells are living.

They lie side by side in **vascular bundles** 维管束.

■ 2 Water uptake

Water enters through **root hair cells** 根毛细胞. Their huge number gives a large **surface area** 表面积 for fast uptake. The water then travels up:



root hairs → xylem → leaves.

Watch out: **xylem** carries water and minerals **up** only, in *dead* hollow tubes;

phloem carries sucrose and amino acids *both* ways, in *living* cells — keep the two apart. Root hair cells speed uptake by giving a large surface area.

Practice

Try these in order.

8.1 What does xylem carry, and in which direction? [2]

8.2 What does phloem carry? [1]

8.3 Why are xylem walls strengthened with lignin? [1]

8.4 Through which cells does water enter a plant? [1]

8.5 Why do root hairs help the plant take up water quickly? [1]

8.6 Challenge. Give **two** ways the structure of a xylem vessel suits its job of carrying water up the plant. [2]