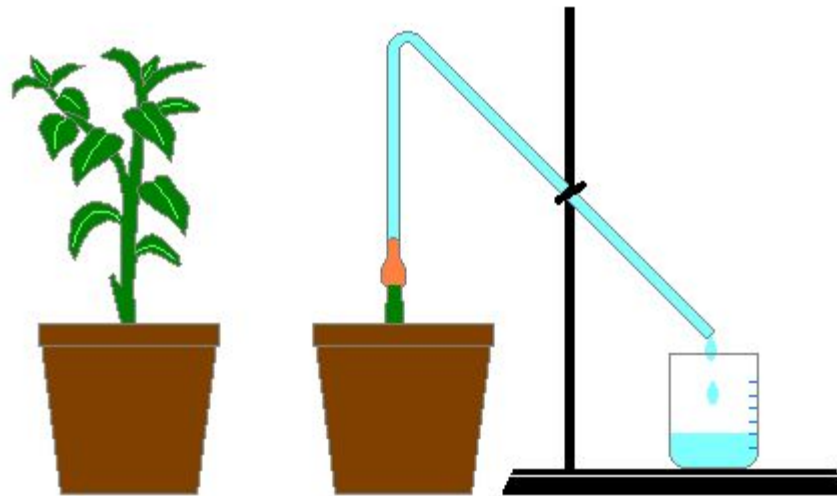
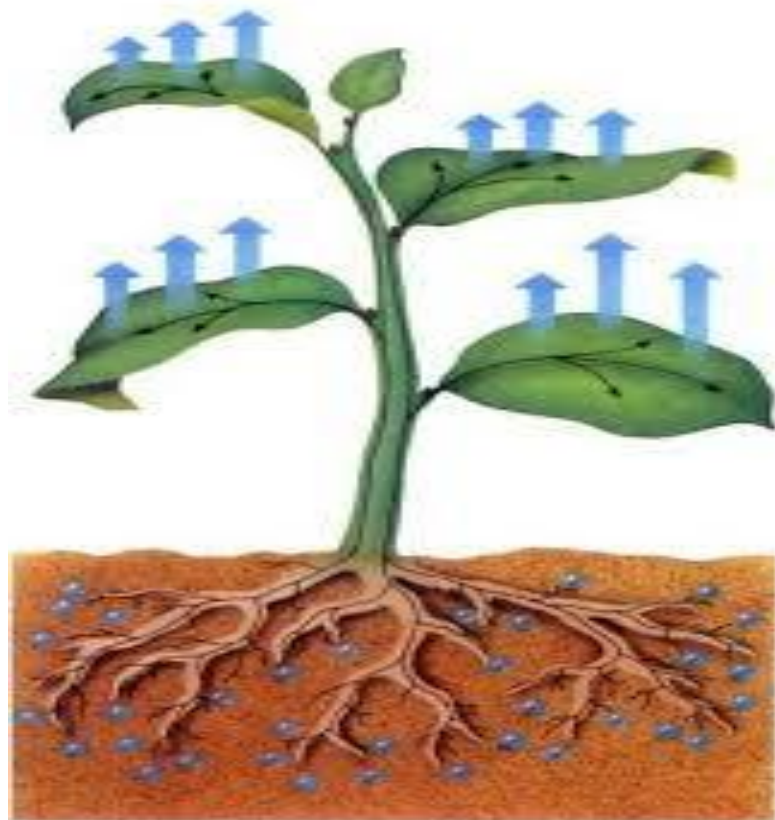


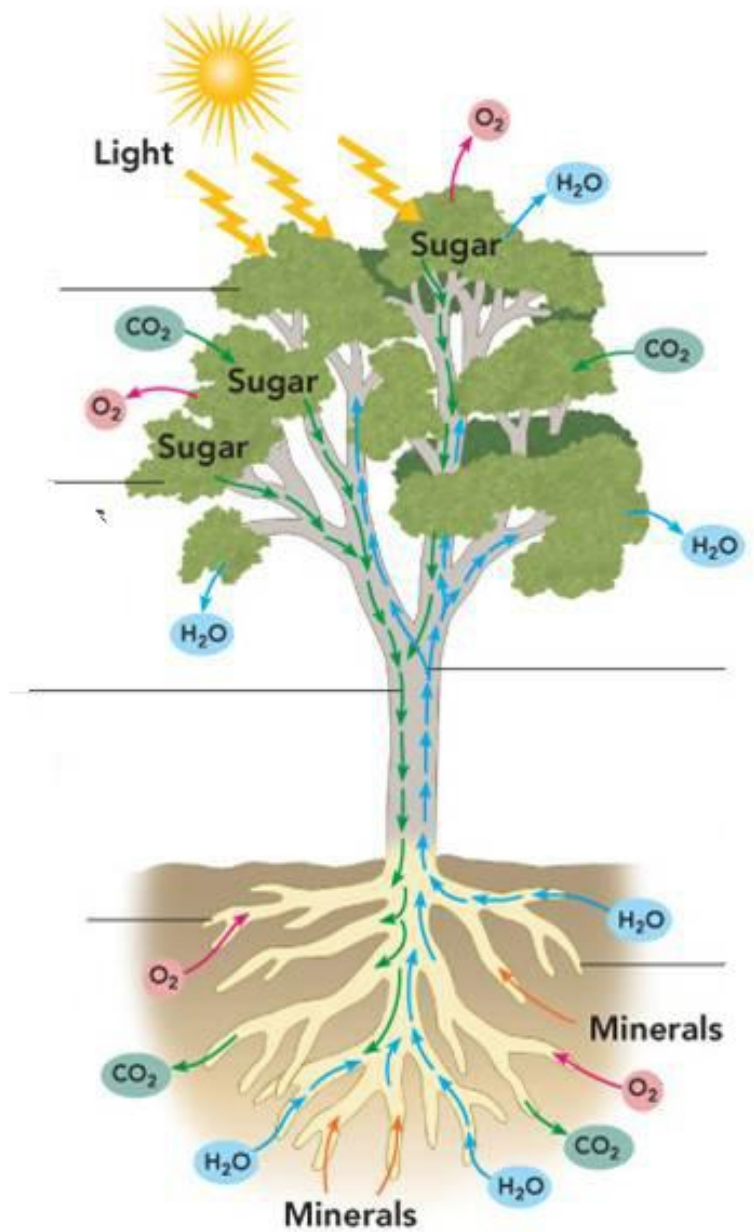
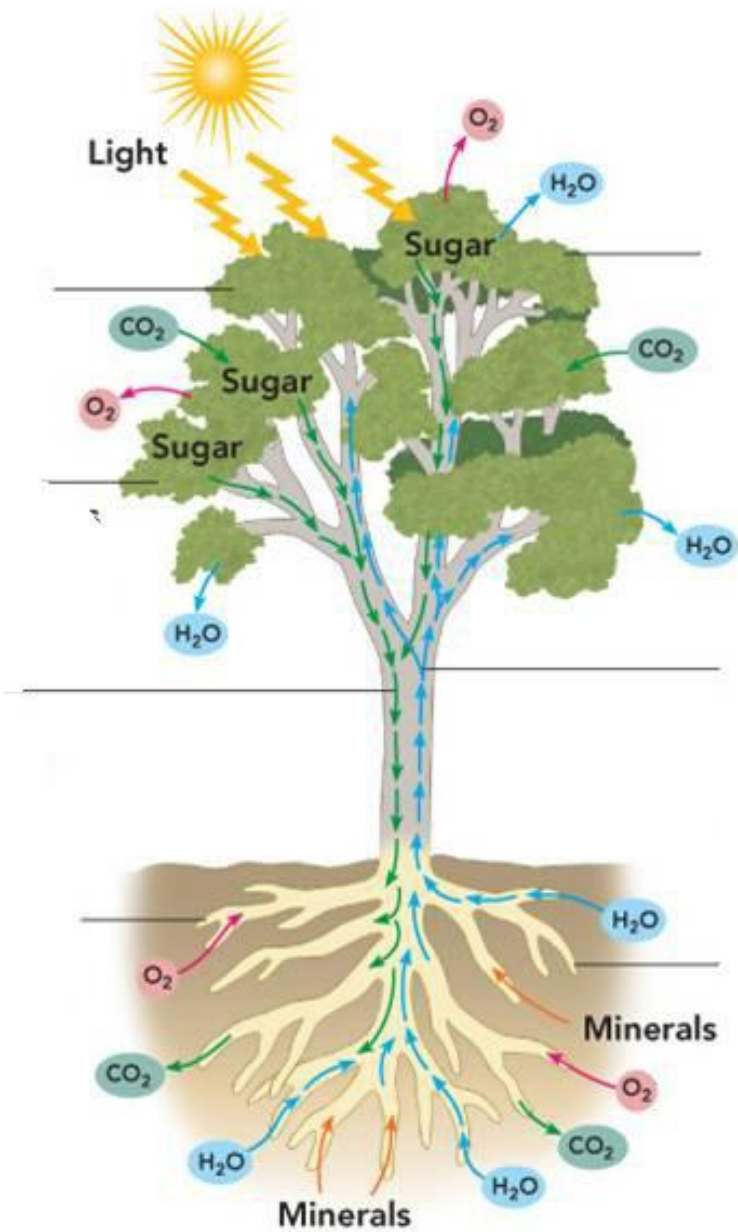
# Осмос құбылысы

Осмотық қысым - ерітінді диффузиясы кезіндегі ерітілген заттың шала өткізгіш мембрана арқылы тудыратын асқын қысымы.





**Су және қоректік заттар  
өсімдік жасушасына қалай  
сіңіріледі және қалай  
таралады?**



A water potential gradient creates tension

Outside air  $\Psi$   
= -10.0 to  
-100.0 MPa

Leaf  $\Psi$  (air spaces)  
= -7.0 MPa

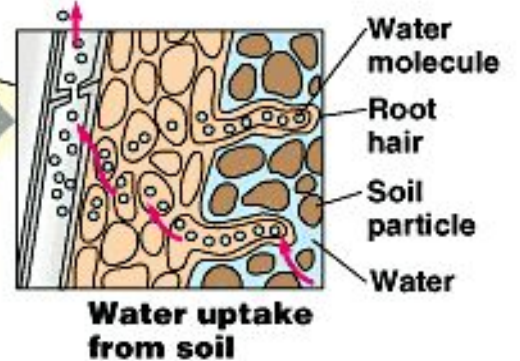
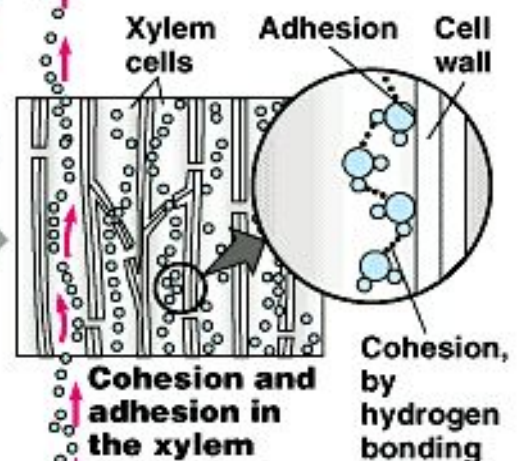
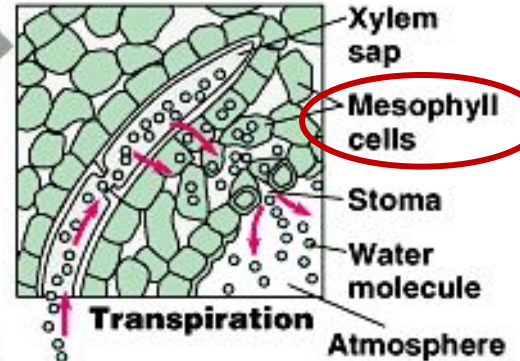
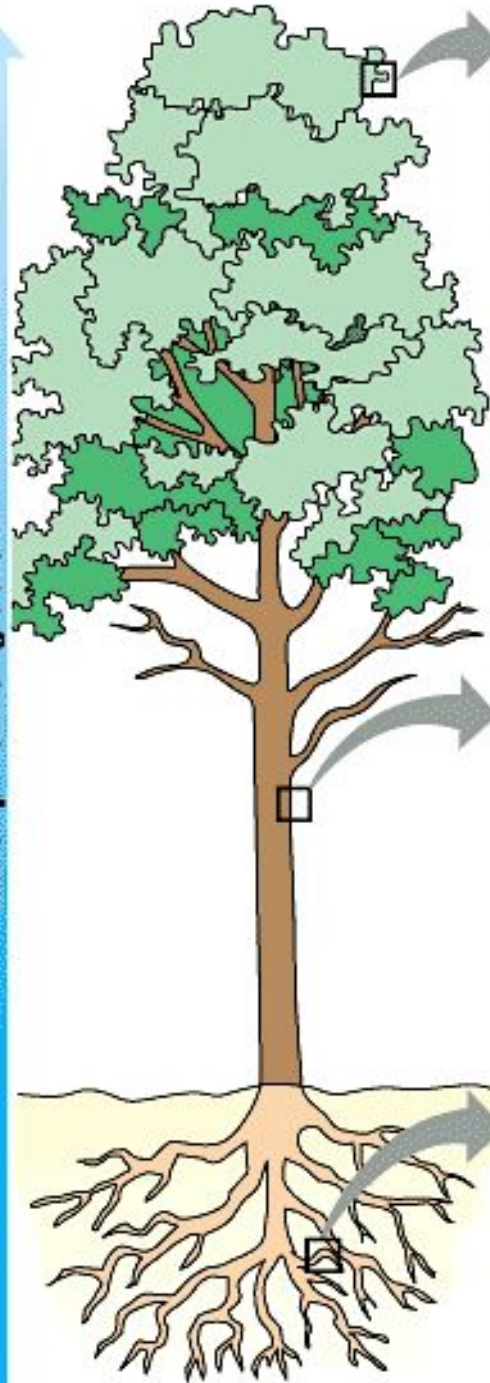
Leaf  $\Psi$  (cell walls)  
= -1.0 MPa

Trunk xylem  $\Psi$   
= -0.8 MPa

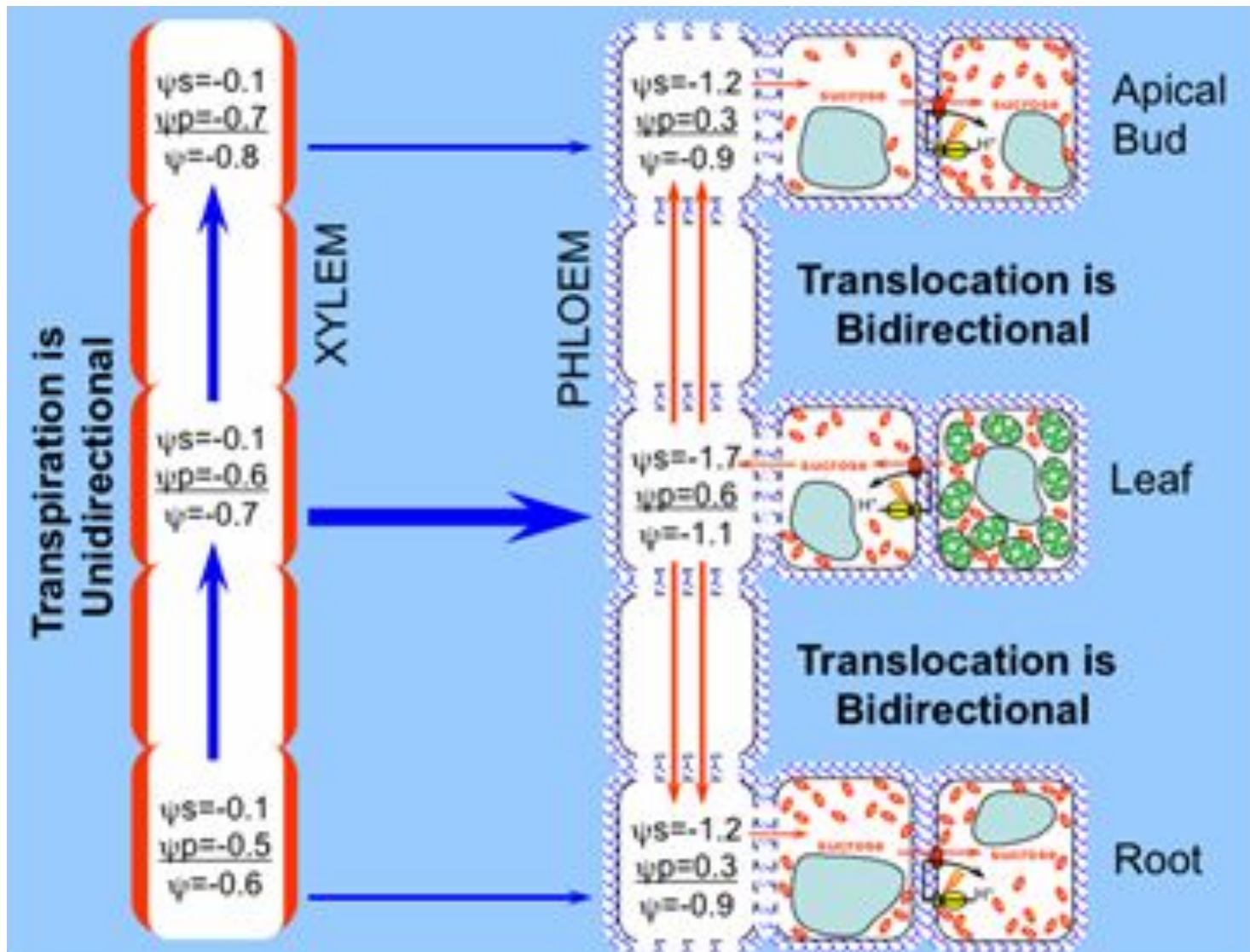
Root xylem  $\Psi$   
= -0.6 MPa

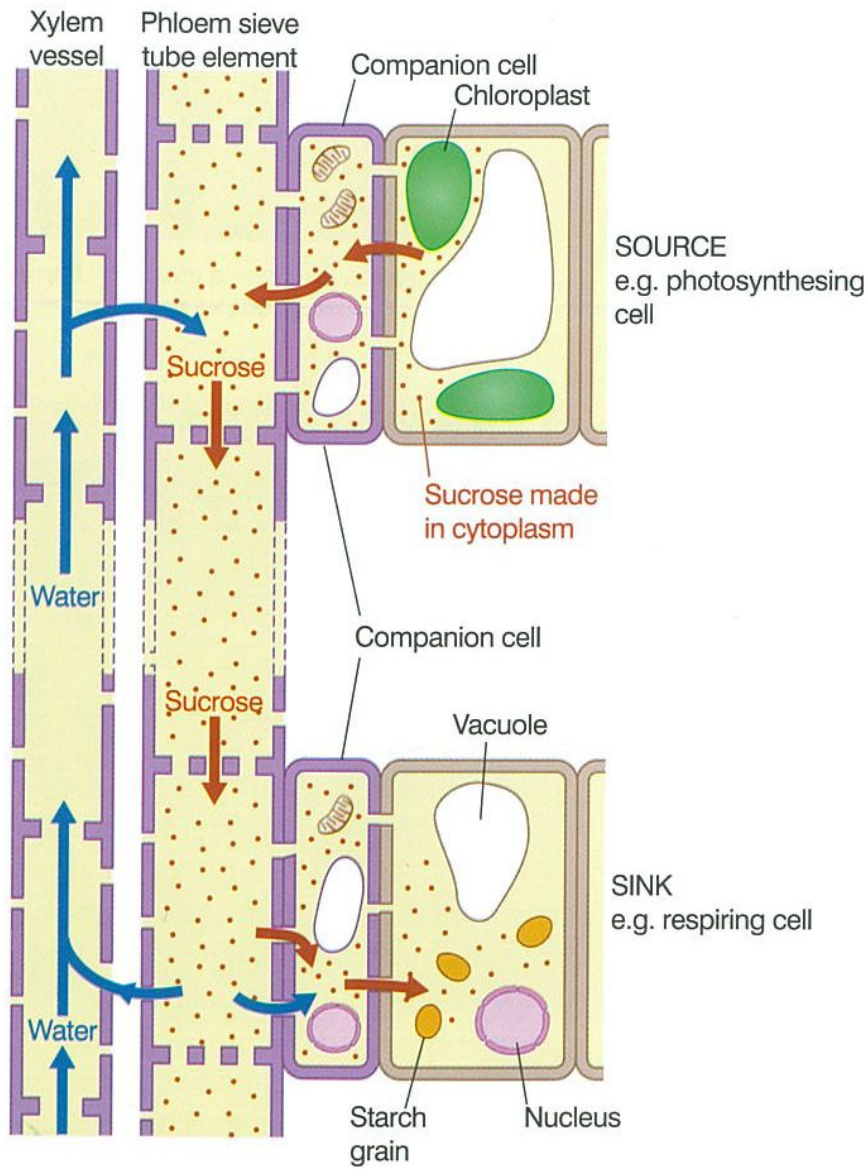
Soil  $\Psi$   
= -0.3 MPa

Water potential gradient



# Өсімдік арқылы су/минералды тұздар мен органикалық заттардың қозғалысы



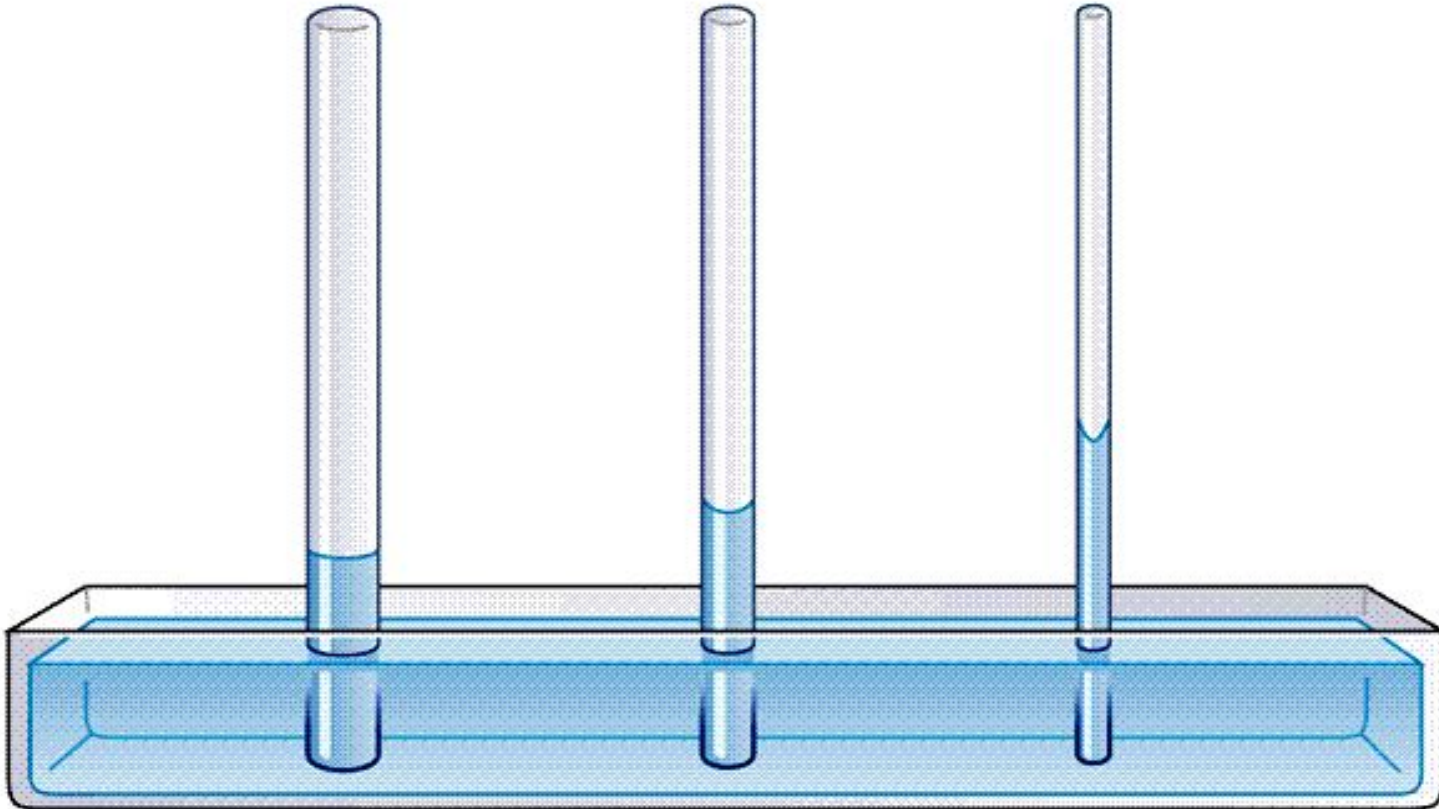


**Figure 1** Movement of sucrose from source to sink through the phloem of a plant

# Adhesion and cohesion

Kingsley R. Stern, Botany Visual Resource Library © 1997 The McGraw-Hill Companies, Inc. All rights reserved.

## Capillarity in Narrow Tubes



# Vocabulary

- Тамыр - root
- Сабақ - stem
- Жапырақ - leaf
- Ксилема - xylem
- Флоэма - phloem
- Осмос - osmosis
- Диффузия - diffusion
- Жоғарғы концентрация - high concentration
- Төменгі концентрация - low concentration