

Investigation into factors affecting transpiration

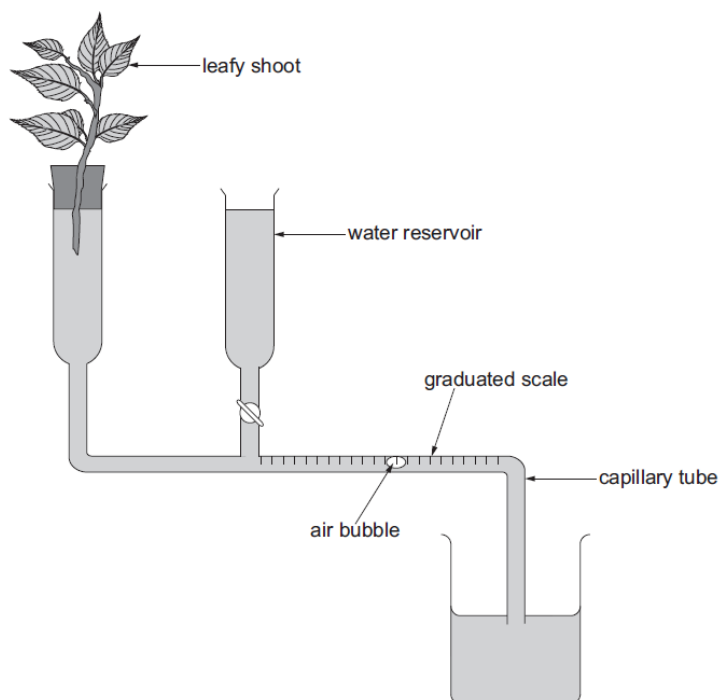
Introduction

Transpiration is the evaporation of water from the leaves of a plant, which causes the uptake of water from the roots. It is assumed that the volume of water taken up at the roots is equal to evaporation from the leaves. In this investigation a freshly cut plant stem will carry out transpiration. The rate of transpiration can be measured by the distance travelled by an air bubble along a capillary tube in a particular time.

Apparatus

potometer
 100 cm³ beaker of water
 leafy shoot cut under water
 clamp stand, clamp and boss
 scissors
 stopwatch
 Vaseline
 paper towel
 bowl of water

Diagram of Apparatus



Method

1. Immerse the potometer in the bowl of water and make sure the apparatus is full of water with no air bubbles.
2. Put the cut end of the leafy shoot in the water, taking care to keep the leaves above the surface.
3. Diagonally cut the last centimetre from the stem underwater.
4. With the potometer and stem still underwater, gently push the stem into the bung as shown in the diagram. Make sure it is a tight fit.
5. Remove the assembled apparatus from the water and apply Vaseline to all the joints to avoid air entering the apparatus.
6. Gently dab the leaves with the paper towel to remove excess water.
7. Clamp the potometer in an upright position with the capillary tube in the beaker of water.
8. Remove the capillary tube from the beaker to allow an air bubble to form and then return it to the beaker.
9. When the air bubble reaches the start of the scale begin timing.
10. After a set amount of time record how far the air bubble has travelled along the scale.
11. Repeat steps 8-10 twice more.

Analysis

1. Calculate the mean water loss per minute.