

FACTORS AFFECTING TRANSPIRATION

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1. Transpiration is the movement of water from the roots of a plant to the leaves.

2. The factors that affect transpiration are:

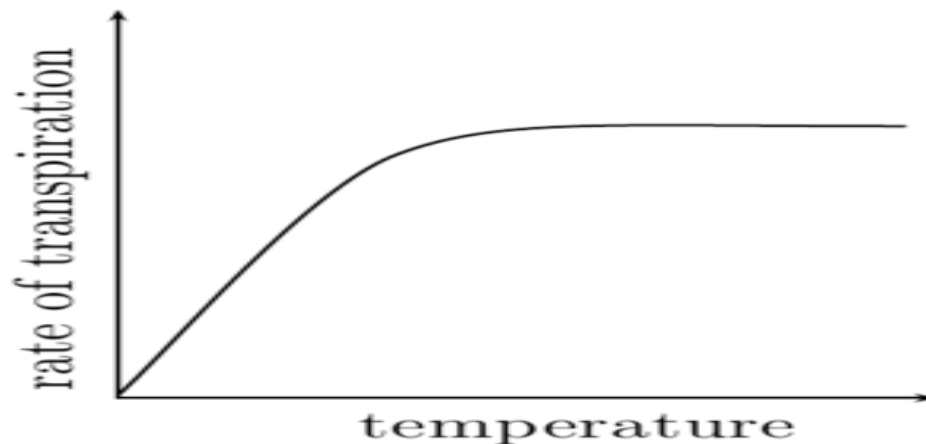
- Air movement
- Humidity
- Temperature
- Light intensity

Temperature

Transpiration increases as the temperature increases

At higher temperatures molecules move faster increasing the rate of diffusion and evaporation.

The rate of photosynthesis also increases so stomata open wider to allow gas exchange to take place.

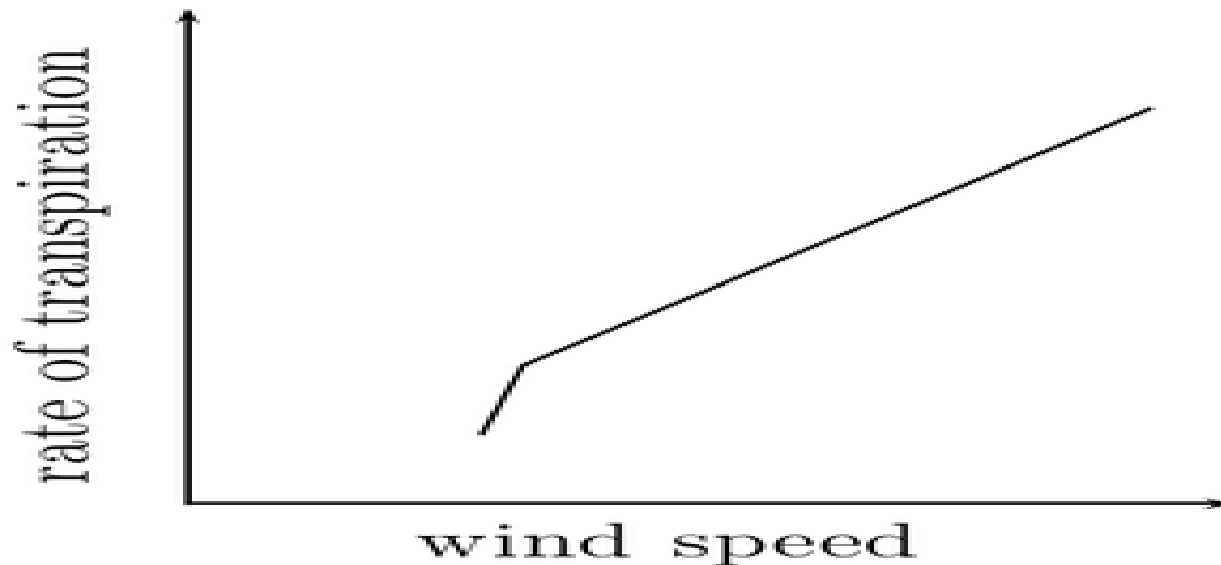


Air movement

Transpiration increases as the wind speed increases.

Increasing wind speed increases the rate of evaporation of water vapour out of the leaf.

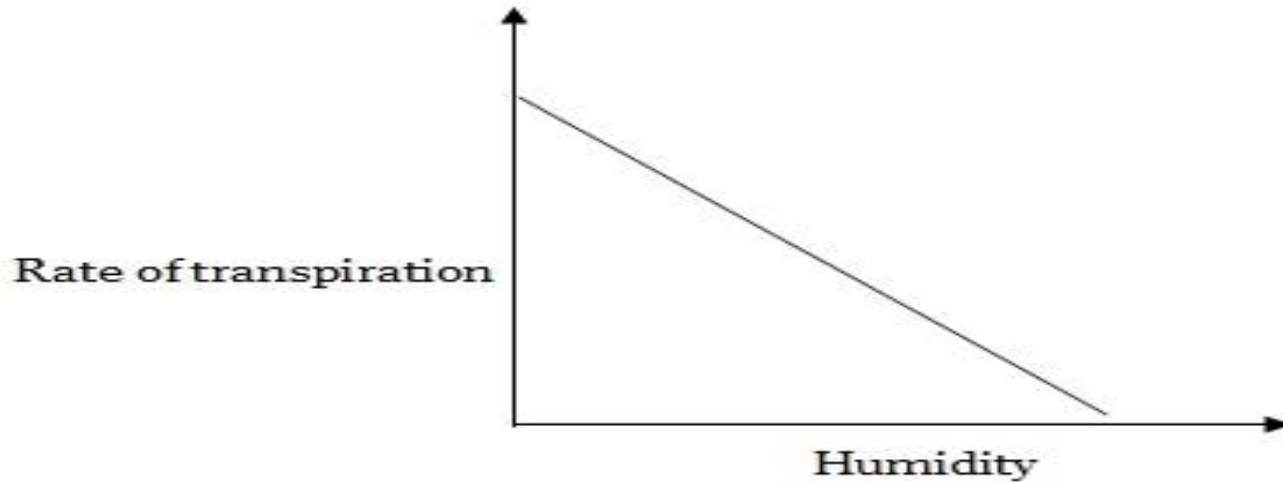
Maintains a high concentration gradient between the inside of the leaf and the surrounding air by removing water vapour as it diffuses out.



Humidity

Transpiration decreases in humid conditions

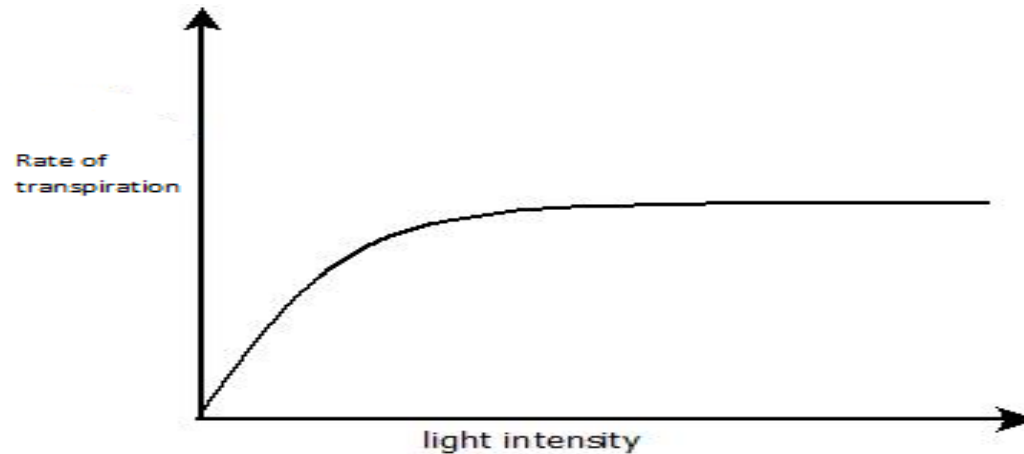
Humid conditions decrease the concentration gradient between the inside of the leaf and the surrounding air by water vapour remaining as it diffuses out.



Light intensity

Transpiration increases as light intensity increases

As light intensity increases stomata (pores in the leaf) open wider to allow more carbon dioxide into the leaf for photosynthesis



- **Temperature**

Transpiration increases as the temperature increases, up until a certain point, then the rate of transpiration remains constant.

At higher temperatures molecules move faster increasing the rate of diffusion and evaporation, until the rate of diffusion reaches a maximum.

- **Air movement**

Transpiration increases as the wind speed increases.

Increasing wind speed increases the rate of evaporation of water vapour out of the leaf.

Maintains a high concentration gradient between the inside of the leaf and the surrounding air by removing water vapour as it diffuses out.

- **Humidity**

Transpiration decreases as humidity increases.

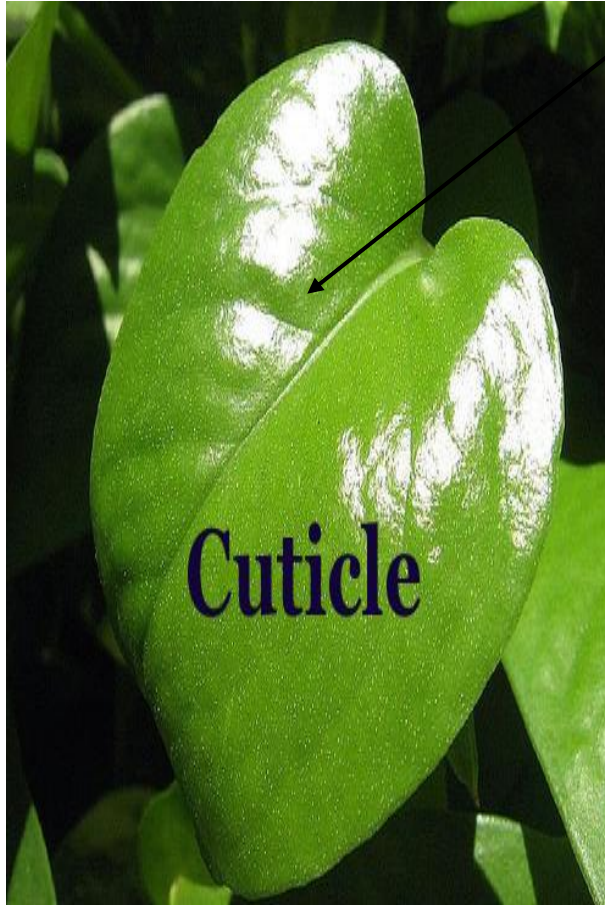
Humid conditions decrease the concentration gradient between the inside of the leaf and the surrounding air by water vapour remaining as it diffuses out.

- **Light intensity**

Transpiration increases as light intensity increases up until a certain point then the rate of transpiration remains constant.

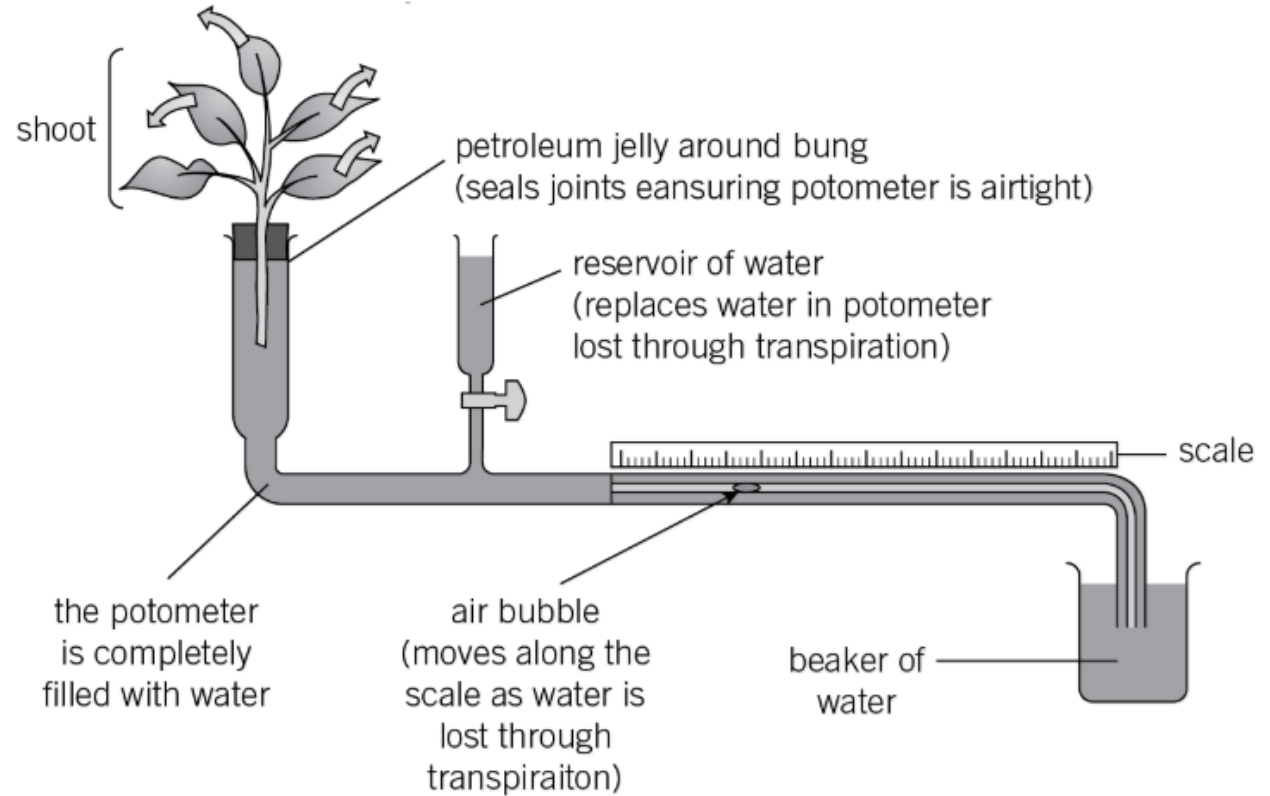
As light intensity increases stomata (pores in the leaf) open wider to allow more carbon dioxide into the leaf for photosynthesis

How are plants adapted to reduce transpiration?



1. Spines instead of leaves
2. Stomata in pits in the leaves
3. Hairy leaves
4. Rolled leaves
5. Leaves droop
6. Thick waxy cuticle

The potometer



A potometer is a device that measures the rate at which a plant draws up water.

Since the plant draws up water as it loses it by transpiration, you are able to measure the rate of transpiration.

Thank You