

Transpiration

Transpiration

- It is the loss of water in the form of water vapour through stomata.

Types of Transpiration

- Stomatal transpiration- Occurs through stomata
- Cuticular transpiration- Occurs through surface of stem and leaves
- Lenticular transpiration- Occurs through lenticels

Differences between Evaporation and Transpiration

Evaporation	Transpiration
Loss of water from the surface in the form of water vapours	Loss of water from aerial parts of plants in the form of water vapours
Fast process	Slow process
A physical change controlled by temperature and pressure	A partially physical and vital process controlled by various internal and external factors

Factors affecting Transpiration

External Factors:

- Light
- Wind Speed
- Humidity
- Temperature
- Atmospheric pressure
- Carbon dioxide

Internal Factors:

Water content of the leaves

Adaptations in Plants To Reduce Excessive Transpiration

- Sunken stomata
- Less stomata
- Narrower leaves
- Loss of leaves
- Reduced exposed surface
- Thick cuticle

Significance Of Transpiration

- Helps in ascent of sap
- Cools the internal temperature of plants
- Distribution of water and minerals in plants

Experiments for Demonstration of Transpiration

Cobalt chloride paper is used to check transpiration. It is a blue coloured paper which on exposure to moisture, changes

its colour to pink.

Measurement of Transpiration

Two methods for measuring transpiration are :

- **Weighing Method**
- **Potometer Method**

Potometer is a device used to measure water intake by a plant; this intake is equal to the water loss through transpiration. There are a number of designs of potometer that are used to measure transpiration. Some examples include Farmer's potometer and Ganong's potometer (to measure rate of water intake), Darwin's potometer (to demonstrate the suction force created by transpiration), Garreau's potometer (to demonstrate unequal transpiration from both the surfaces of a dorsiventral leaf), etc.

Limitations of using potometer:

- Introducing the air bubble is not an easy task.
- The twig can die after sometime.
- Changes in outside temperature can affect the position of air bubble in the capillary tube.