Important Definitions

The process of **loss of water** in the form of water vapour from the leaves and other aerial parts of plant is called Transpiration.

Ganong's Potometer is a device which measures the rate of **water intake** by a plant.

Stomatal Transpiration is a type of transpiration which occurs from the leaves through stomata

Cuticular Transpiration is a type of transpiration which occurs directly from the surface of the leaves and stems

Lenticular Transpiration is a type of transpiration which occurs from the lenticels which are the minute openings on the surface of the old woody stems

Special **pore-bearing structures** present on the margins of leave to allow **exudation** are called ***Hydathodes***

Guttation is the loss of water as *droplets* along the margin of leaves through hydathodes

Bleeding is the *direct flowing* out of plant sap from any cut surfaces in case of injury.

Adaptations To Reduce Excessive Transpiration

Sunken Stomata- The stomata may be sunken or covered by hairs. Eg: Nerium

Fewer Stomata- No. of stomata may be reduced

Narrow Leaves- Leaves may become narrower to reduce surface area. Eg: Nerium

Reduced Exposed Surfaces- Leaves may get wavy, rolled or folded to reduce exposed surface.

Loss of Leaves- Leaves may be dropped or absent or changed into spines. Eg: Cacti

Thick Cuticle- Leaves may be covered by thick cuticle. Eg: Banyan & most evergreen trees.

Ganong's Potomenter

Precautions in use of Potometer:	Limitations in the use of Potometer:
1. The potometer should be made completely water-tight	1. Introduction of air bubble is not very easy
2. The twig should be cut obliquely so that it allows larger surface for water intake and avoid suction of air bubble into the twig under water which will stop the absorption of water into the xylem	2. Twig may not remain fully alive for a long time
	3. Any changes in the outside air temperature may affect the position of air bubble in the capillary tube.

Ganong's Potomenter

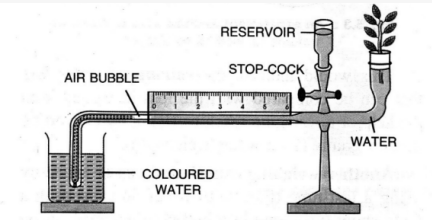

Fig. 5.5 : Ganong's potometer for measuring water uptake

Significance Of Transpiration

Cooling Effect	Evaporation causes cooling. Hence, transpiration helps plants in hot sunny days to cool.
Suction Force	Provides Transpiration Pull which is responsible for the upward movement of water in tall plants
Distribution of Water & Mineral Salts	Since leaves are present at the tips of all branches, transpiration helps to draw water or minerals towards them and thus helps in their distribution throughout the plant's body.

Factors Affecting Transpiration

Intensity Of Sunlight	Since during the day, stomata are open to facilitate inward diffusion of CO_2 for photosynthesis & are closed at night. Therefore more transpiration occurs during the day
Temperature	Increase of temperature allows more water to evaporate. Higher the temperature, more is the transpiration.

Factors Affecting Transpiration (cont)	
Velocity of Wind	Transpiration increases with the velocity of wind. The faster the wind blows, more is the the transpiration from the surface of leaves.
Humidity	Transpiration is reduced if the air outside is humid since high humidity in the air reduces the rate of outward diffusion of the internal water vapour across stomata, thereby reducing the rate of transpiration.
Carbon Dioxide	Increase in CO_2 level over normal 0.03% causes stomatal closure, resulting in decrease of transpirtation
Atmospheric Pressure	Rate of Transpiration increases with the decrease in atmospheric pressure.

By **seremin** (seremin)
cheatography.com/seremin/

Published 7th August, 2022.
Last updated 7th August, 2022.