

# The Leaf

- Roots absorb water and minerals from the soil.
- Roots also anchor the plant firmly to the soil.
- Roots are of two types - tap roots and fibrous roots.

## Root Modifications

- Prop roots – Example: banyan tree
- Stilt roots – Example: maize and sugarcane
- Roots which helps in respiration – Example: *Rhizophora*
  
- Stems, roots, leaves, and flowers are the main parts of a plant.
- The stem bears leaves, flowers, and fruits.
- It conducts water from roots to all parts of a plant.

## Stem Modifications

- For storage – Example: potato, ginger, turmeric
- For Support – Tendrils in Cucumber, pumpkins, watermelon, etc.
- For protection – Thorns in *Citrus*, *Bougainvillea*
- For vegetative propagation – Tubers and rhizomes in Potato and ginger respectively

## Leaf

- A leaf has a petiole and a lamina.
- Leaves prepare their food in the presence of sunlight and chlorophyll by a process

known as photosynthesis.

- The leaves lose water by the process of transpiration.
- The design made by leaf veins is known as leaf venation.
- Leaf venation is of two types - reticulate venation and parallel venation.

## Leaf Modifications

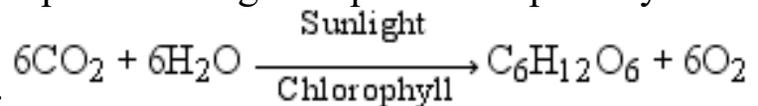
- Tendrils- Example: peas
- Spines- Example: cactus
- Fleshy leaves for storage- Example: onion and garlic

A leaf has a petiole and a lamina.

- Leaves prepare their food by using carbon dioxide and water in the presence of sunlight and chlorophyll. This process is known as photosynthesis.
- The leaves lose water by the process of transpiration.
- Transpiration helps in keeping the plant cool and in absorption of water through roots.
- Rate of transpiration depends on sunlight, temperature, wind and humidity.

- **Autotrophic nutrition**

- Synthesis of food by green plants through the process of photosynthesis.



- Photosynthesis equation-

- Events of photosynthesis

- In the grana region of chloroplast:
  - Absorption of light energy
  - Splitting of water in hydrogen and oxygen
  - Synthesis of ATP and NADPH<sub>2</sub>
- In the stroma region of chloroplast:
  - Reduction of carbon dioxide to carbohydrates

Plants carry out photosynthesis with the help of structures called stomata.

- Minute pore like structures surrounded by two guard cells
- Help in exchange of  $\text{CO}_2$  and  $\text{O}_2$

Photosynthesis is affected by factors like:

- $\text{CO}_2$  concentration
- light
- temperature