

Leaves

- main site of photosynthesis
- Glucose ($C_6H_{12}O_6$) + Oxygen (O_2) – product of photosynthesis
- glucose is used in cellular respiration, plant growth, and storing of energy
- chloroplasts – most active organelle; where photosynthesis happens
- chloroplasts - contain the chlorophyll (green pigment)
- Light Dependent
- Dark / Calvin Cycle
- stomata = where gas exchange happens

External Parts of a Leaf

1] Leaf Blade / Lamina

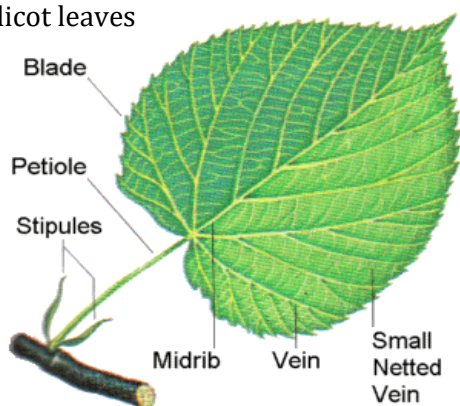
- flat expanded area
- leaf blade size varies for the maximization of absorption

2] Petiole

- stalk that connects the leaf blade to the stem, and transport materials
- it has many vascular tissues where water and nutrients pass

3] Stipules

- outgrowths; usually paired at the base of dicot leaves



4] Tip / Leaf Apex

- tip of the leaf

5] Margin

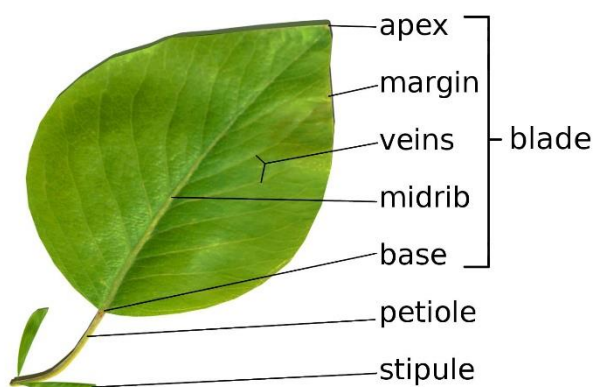
- outer edge of the leaf

6] Midrib

- middle vein of the leaf
- connects to the petiole
- main highway for nutrients and water

7] Lateral Veins

- it transports nutrients and water to necessary places in the leaf



Layers of the Leaf

1] Stomata

- where CO_2 enters and O_2 exits
- regulates the exit of water
- composed of guard cells
- usually located below
- eye-like
- it closes every night and every winter

2] Guard Cells

- protects the stomata from opening

3] Cuticle

- outermost thin layer
- waxy substance that is secreted
- it reduces the evaporation of water

4] Mesophyll Cells

- consists of 2 types: Palisade tissue cells and Spongy tissue cells
- Palisade tissue cells
 - where majority of the photosynthesis happens
 - located above
 - they get more sunlight
 - they have a lot of chloroplasts
 - they are attached together
- Spongy tissue cells
 - loosely attached so that gases can move around freely (air spaces)
 - located in the middle
 - they also perform photosynthesis

5] Epidermal Cells

- serves as a protection
- found above and underneath the leaf
- the let the sunlight in
- stop the leaf from evaporating its water through the cuticle
- 2 parts: Upper Epidermis and Lower Epidermis
- Upper Epidermis
 - where the cuticle is secreted
- Lower Epidermis
 - where the stomata are contained

6] Vascular Bundle

- veins in the leaf are the vascular bundles
- they transport sugar and water

