CHAPTER

6 Morphology of Flowering Plants

Table 1: Parts of a plant

Plant Organ	Part	Function	Modifications	Example
The Root	Root cap	Protects the apex of root and makes its way through the soil	Storage of food	Carrot, turnip, sweet potato, etc.
	Region of meristematic activity	Repeated division	Support	Banyan tree, maize, sugarcane, etc.
	Region of elongation	Growth of root in length due to reapid elongation and enlargement of cell	Respiration	*Rhizophora*
	Region of maturation	Differentiation and maturation of cell		
The Stem	Nodes- The region where leaves are born	Spreading out branches bearing leaves, flowers, and fruits.	Storage of food	Potato, ginger, zamink-and, *Colocassia*. Also acts as organs of perennation.
	Internode- The region between two nodes	It conducts water, miner-als, and photosynthates	For climbing (stem tendril)	Gourds (cucumber, pumpkins, watermelon), grapevines.
			For protection	*Citrus*, *Bougainvillea*
			For photosynthesis	*Opuntia*, *Euphorbia*
			For spreading and vege-tative propagation	Grasses, strawberry, mint, jasmine, *Pistia*, *Eichhornia,* banana, pineapple, *Chrysanthe-mum*
The Leaf	Leaf base (leaf attached to the stem).	Hold the blade to light	For climbing	Pea
	Petiole		For defence	Cacti
	Lamina or leaf blade (have veins and veinlets)	Veins provide rigidity to the leaf blade.	For food storage	Garlic and onion
			Photosynthesis	Australian acacia
			Insectivorous	Pitcher plant, venus - fly trap

Venation

- The arrangement of veins and the veinlets in the lamina of leaf is termed as venation.
- It is of two types:
  - Reticulate - Common in dicots
  - Parallel - Common in monocots

Types of Leaves

- A leaf could be simple or compound.
- Compound leaves are of two types i.e.,
  - Pinnately compound leaf - neem.
  - Palmately compound leaf - silk cotton.

Phyllotaxy

- Pattern of arrangement of leaves on the stem or branch.
- It is of three types:
  - Alternate - Chinarose, mustard and sunflower.
  - Opposite - *Calotropis* and guava
  - Whorled - *Alstonia*

The Inflorescence

- The arrangement of flowers on the floral axis is termed as inflorescence.
- Depending on whether the apex gets developed into a flower or continuous to grow, two major types are:
  - Racemose and cymose.

Flower

- It is the reproductive unit in angiosperms.
- Based on the position of floral parts on thalamus, flower, could be of 3 types.
  - Hypogynous - mustard, china rose and brinjal
  - Perigynous - Plum, rose, peach
  - Epigynous - Guava, cucumber, ray florets of sunflower

Aestivation

- The mode of arrangement of sepals or petals in floral bud with respect to the other members of the same whorl.
- The four types of aestivation in corolla are as follows:
  - Valvate - *Calotropis*.
  - Twisted - China rose, lady's finger and cotton.
  - Imbricate - *Cassia* and gulmohar.
  - Vexillary - Pea and beans.
- On the basis of the arrangement of ovules within the ovary, placentation is of 5 types:
  - Marginal - Pea
  - Axile - China rose, tomato and lemon
  - Parietal - Mustard and *Argemone*
  - Free central - *Dianthus* and *Primrose*
  - Basal - sunflower, marigold
- The fruit of mango and coconut is drupe.
- The dicot seed consist of embryonal axis and two cotyledons. At the ends of embryonal axis radicle and plumule are present.
- In monocots, seed have single shield shaped cotyledon known as scutellum.
- The outer covering of endosperm separates the embryo by aleurone layer.
- Plumule gives rise to coleoptile and radicle give rise to coleorhiza.
- On the basis of presence or absence of endosperm seed is of two types i.e.,
  - Endospermic seed - Castor
  - Non-endospermic seed - Bean, gram, and pea