TOPIC: MORPHOLOGY OF FLOWERING PLANTS-LEAF

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Venation

The arrangement of veins and the veinlets in the lamina of leaf is termed as venation.

1. **Reticulate venation –** When the veinlets form a network. e.g., Dicotyledons.
2. **Parallel venation –** When the veins run parallel to each other within a lamina. e.g., Monocot.

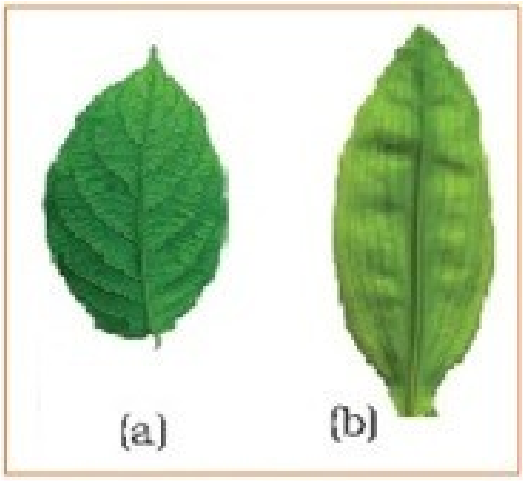

Fig: Venation (a) Reticulate (b)Parallel

Types of Leaves

1. **Simple leaf –** when lamina of a leaf is entire or when incised, the incisions do not touch the midrib.
2. **Compound leaf –** When the incisions of the lamina reach up to the midrib breaking it into a number of leaflets, the leaf is called compound.

A bud is present in the axil of petiole in both simple and compound leaves, but not in the axil of leaflets of the compound leaf.

The compound leaves may be of two types –

1. **Pinnately compound leaf –** a number of leaflets are present on a common axis, the rachis, which represents the midrib of the leaf. e.g., neem.

2. **Palmately compound leaves –** the leaflets are attached at a common point, i.e., at the tip of petiole. e.g., Silk cotton.

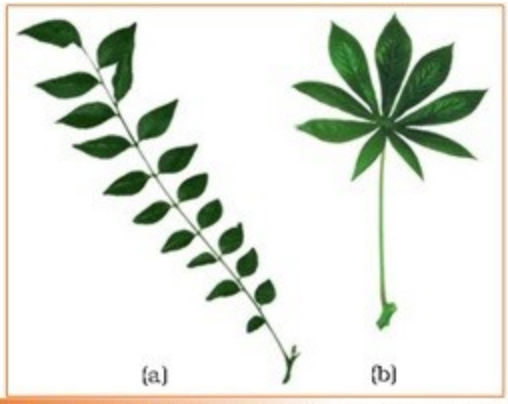

Fig: Compound leaves: (a) pinnate (b) palmate

<u>Phyllotaxy:</u>

Phyllotaxy is the pattern of arrangement of leaves on the stem or branch.

This is usually of three types –

1. **Alternate type –** a single leaf arises at each node in alternate manner.

   e.g., China rose, Mustard and Sun flower.

2. **Opposite type –** a pair of leaves arise at each node and lie opposite to each other.

   e.g., Calotropis and Guava.

3. **Whorled type –** If more than two leaves arise at a node and form a whorl.

   e.g., Alstonia.

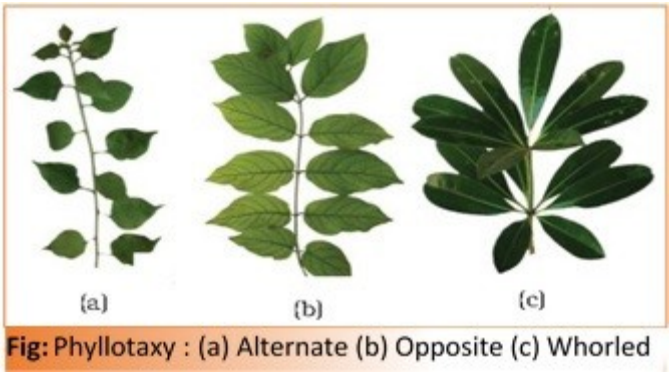

Fig: Phyllotaxy : (a) Alternate (b) Opposite (c) Whorled

Modifications of Leaves

1. **For support –** converted into tendrils for climbing. e.g., peas.
2. **For defense –** converted into spines. e.g., cactus.
3. **For food storage –** The fleshy leaves of onion and garlic.

4. **For photosynthesis (phyllode) –** In some plants the leaves are small and short-lived. The petioles in these plants expand, become green and synthesise food. e.g., Australian acacia.
5. **For insectivory –** pitcher plant, venus-fly trap.

THE INFLORESCENCE

- A flower is a modified shoot wherein the shoot apical meristem changes to floral meristem. Internodes do not elongate and the axis gets condensed.
- The apex produces different kinds of floral appendages laterally at successive nodes instead of leaves. When a shoot tip transforms into a flower, it is always solitary.
- The arrangement of flowers on the floral axis is termed as inflorescence.
- Depending on whether the apex gets converted into a flower or continues to grow, two major types of inflorescences are defined –

1. **Racemose inflorescence** – the main axis continues to grow, the flowers are borne laterally in an acropetal succession
2. **Cymose inflorescence** – the main axis terminates in a flower, hence is limited in growth. The flowers are borne in a basipetal order

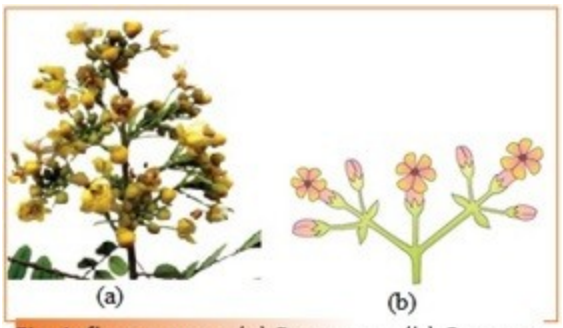

Fig: Inflorescence: (a) Racemose (b) Cymose