

STIPULE AND ITS TYPE

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At the base of the petiole, in many plants, a pair of lateral appendages known as stipules are present.

Leaves with stipules are called stipulate (e.g., Hibiscus) and the leaves without stipules are called exstipulate (e.g., Mango and all monocots).

TYPES

1. Free Lateral Stipules

- Two free filiform appendages present, one on either side of the leaf base
- Appendages are thread like
- Found in *Hibiscus rosa-sinensis*



2. Adnate Stipules

- These attach themselves to the petiole for a short distance by their inner margins.
- Ultimately forming a wing shaped structure, while the apical portions remain free.
- Found in *Rosa sp.*



3. Inter-Petiolar Stipules

- In some plants with opposite stipulate leaves, a fusion of the two stipules along their outer margin, present on the same side but belonging to the different leaves, is seen at the node.
- These two fusion products or pairs of stipules would be present between the petioles of the two opposite leaves. Hence, they are termed inter petiolar stipules.
- Found in *Ixora sp*, *Moringa sp*.



4. Intra-Petiolar Stipules

- In plants with opposite stipulate leaves, a fusion of the two stipules along their inner margin, in such a way that this fusion product is axillary in position.
- Found in *Gardenis sp*, *Saraca indica*.



5. Ochreate Stipules

- In this type, stipules form a hollow tube encircling the stem from the node up to a certain height of the internode.
- Found in *Polygonum*.



6. Foliaceous Stipules

- These are large leaf-like stipules which synthesize food material.
- Found in *Pisum sp*, *Lathyrus sp*.



7. Tendrillar Stipules

- In this type, the stipules are modified into tendrils which help plants in climbing.
- Found in *Smilax sp*.



8. Spinous Stipules

- Stipules are sometimes modified into hard and pointed structures called spines. Such stipules prevent the plants from being eaten by animals.
- Found in *Zizyphus jujuba*.

