Sexual Reproduction In Plants

Reproduction ensures continuity of species generation after generations as the older individuals undergo senescence and die.

Angiosperm- The most advance plants of plant kingdom that produces the Flowers.

Flower- A Flower is a modified stem which functions as a organ of sexual reproduction in plants, as they produce gametes by meiosis.

The biologist finds flowers as morphological and embryological marvels.

Flower and floral parts show adaptations to ensure formation of end-products of sexual reproduction, the fruit and seeds.

Flowers are used for Aesthetic Beauty, Ornamental Value, Social, Culture & Religious celebrations etc.

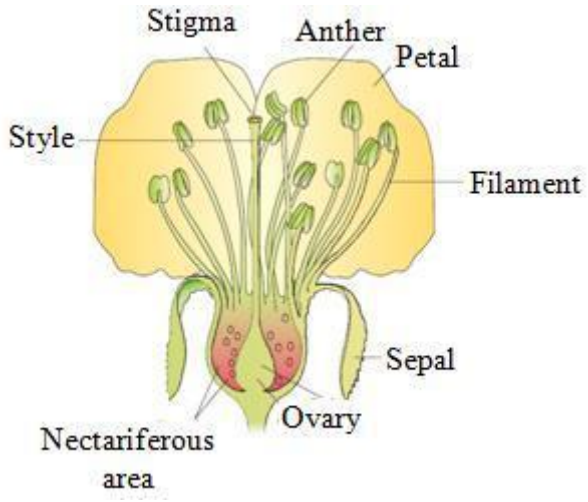
Floriculture: A branch of horticulture concerned with the cultivation of flowering and ornamental plants.

Structure of a Flower

A flower is modified shoot that has condensed internodes and the floral leaves arranged in whorls.

Pedicel: The stalk of the flower.

Thalamus/Receptacle: The swollen or expanded portion of the stalk which bears the floral leaves.



A typical flower consists of four whorls:

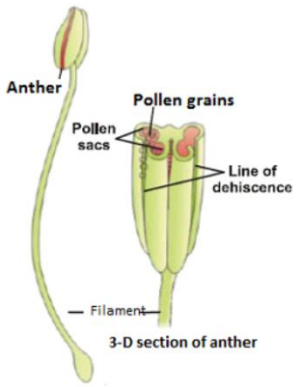
1. **Calyx:** Collection of **Sepals** (leaves like structure) that encloses the flower and protect it during bud stage.

   If the sepals are free, it is called polysepalous and if united called gamosepalous.

2. **Corolla:** Collection of Petals (Bright colour leaf like structure) that helps in attracting insects. It may have fragrance.

   If petals are united known as Gamopetalous and if free polypetalous.

3. **Androecium**: Collection of **Stamens**.



A Stamen is a modified leaf/ microsporophyll. The proximal end of Stamen is attached to thalamus or petals.

- Epipetalous: Stamen attached to petals. Sunflower
- Epiphyllus: Stamen attached to perianth. Ex: Liliaceae
- Gynandrous: Stamen attached to pistil. Ex: Calotropis.
- Staminode: Sterile or non-functional anther.

The Stamen (male reproductive part) comprises the anther & filament.

a) **Filament:** A long slender stalk that carries food and water to anther. Its length is variable.

Monoadelphous: Filament fused into single bunch. Ex China Rose
Diadelphous: Filament fused to form two bundles. Ex- Pea
Polyadelphous: Filament fused to form more than two bundles. Ex- lemon

b) **Anther:** A bilobed structure present at tip of filament. Each lobe has two theca i.e. dithecous.

Syngenesious: Anther united and filaments free. Ex Sunflower.
Longitudinal groves separate two theca**.** Anther is four-sided (tetragonal) structure consisting four **microsporangia (develop to pollen sacs)**.

Connective: The sterile tissue between the lobes (dorsal side). It is an extension of the filament containing conducting strands.

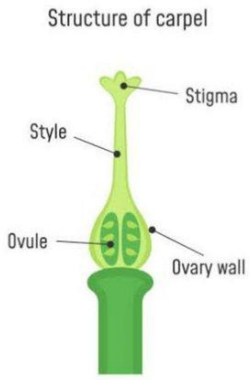
4. **Gynoecium** – Collection of **Pistil** or **Carpels.**

   Monocarpellary: Gynoecium consist of single pistil. Ex: Mango, beans

   Multicarpellary: Gynoecium consist of more than one pistil. In Multicarpellary the pistil

may be fused together (**Syncarpous)** or may be free **(Apocarpous).**

The Pistil (female reproductive part) comprising three parts – stigma, style, and ovary.



a) **Stigma:** Landing pollen grain.
b) **Style:** Elongated slender part beneath the stigma
c) **Ovary:** Bulged basal part containing Locule (Ovarian Cavity).
   Placenta is located inside ovarian cavity.
   Placentation refers to the mode of ovule attachment on the ovary wall.
   Types of Placentation: Marginal (Pea), Axile (Lemon), Parietal (Mustard), Basal (Marigold), Free central (Primrose)

   Megasporangia (Ovule) arises from placenta.
   Monolocular Ovary (one ovule in an ovary) ex: wheat, paddy, mango.
   Multilocular Ovary (many ovules in an ovary) ex: papaya, watermelon, orchids.