

**Topic: Fabaceae; Diagnostic features &
Economic Importance
B.Sc. Botany Sub. II
Group: A**

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Systematic position

Calyciflorae

Rosales

Papilionaceae (Fabaceae)

Diagnostic features:

Herbs, shrubs or trees, generally climbers; leaves alternate, stipulate, simple or compound; flower zygomorphic, hermaphrodite, corolla papilionaceous, stamens 10 or 9 diadelphous or monadelphous; carpel one, fruit legume.

Distribution:

It is commonly called pea family. It includes 375 genera. The family is represented in India by 70 genera and 754 species.

The members of this family are xerophytes, mesophytes, hydrophytes and halophytes (Desmodium laticifolium).

A. Vegetative Characters:

Habit:

The plants show great variation in habit. The plants may be herbs (*Melilotus*, *Medicago*, *Trifolium*), shrub, (*Butea*, *Flemingia*), climbers (*Lathyrus*, *Pisum*, *Vicia*), twinnings (*Dolichos*, *Vigna*) and trees (*Dalbergia*, *Sesbania*, *Erythrina*). *Aeschynomene* is an aquatic plant-

Root:

A much branched tap root system, bearing bacterial nodules.

Stem:

Herbaceous or woody, erect or twinner, branched, angular or cylindrical, solid or fistular.

Leaves:

Cauline or ramal; alternate, stipulate, compound mostly trifoliate sometimes

simple as in *Alysicarpus*; modified partly or wholly into tendril (*Lathyrus*, *Pisum*, *Vicia*) leaf base may be pulvinate. In *Lathyrus aphaca* the entire leaf becomes modified into a tendril; in *Pisum* and *Lathyrus* the stipules are foliaceous and highly developed, in *Pisum* and *Vicia* the leaflets are modified into tendrils.

In *Lupinus* and *Medicago* stipules are adnate. In *Desmodium gyrans* the two lateral leaflets perform autonomous movements. Sir J.C. Bose had done much work on the physiology of leaf movement in this species

B. Floral characters:

Inflorescence:

Racemose raceme, rarely solitary axillary.

Flowers:

Medianly zygomorphic, hermaphrodite, pedicellate, slightly perigynous, complete and pentamerous. The papilionaceous corolla is typical. The floral

characters are rather uniform.

Calyx:

Sepals 5, gamosepalous odd sepal anterior, sepaloid, ascending imbricate aestivation.

Corolla:

Petals 5, polypetalous, papilionaceous, posterior petal outermost large – the vexillum or standard; next two lateral ones-the wings or alae; and the two anterior and innermost united to form a boat-shaped structure – the keel or carina; descending imbricate or vexillary aestivation.

Androecium:

Stamens 10 or rarely nine (Abrus, Dalbergia), diadelphous or monadelphous (Crotalaria), posterior stamen is free and filaments of nine are fused to form a sheath around the ovary; in Arachis ten stamens are monadelphous and in

Sophora all ten stamens are free.

Gynoecium:

Monocarpellary; ovary superior, unilocular, marginal placentation, numerous ovules on the ventral suture; style long slightly bent at the apex, flattened, hairy or without hair (Mucuna): stigma simple or capitate (Mucana).

Fruit:

Legume or pod, indehiscent (Dalbergia), lomentum (Alysicarpus).

Seed:

Non-endospermic.

Pollination:

Entomophilous.

Floral formula:

$o\bar{p} \ \delta \ K(5) \ C_{1+2} + (2) \ A(9)+1 \ or \ (10) \ \underline{G}_1.$

Important Species:

- *Lathyrus odoratus* (Sweet pea)
- *Vigna radiata* (Moong)
- *Arachis hypogea* (Peanut)
- *Cicer arietinum* (Chick pea)
- *Dalbergia sisso* (Shishant)

Economic Importance of Fabaceae (Papilionaceae)

- **Food:** Most of the important pulses are belonged to this family. These pulses are used as food. Pulses are rich in proteins. The common species of pulses are Grain, Pea, and Kidney bean.

- **Fodders:** *Medicago sativa* (Alfalfa) is one of the best forage crops. *Vicia Melilotu* and *Trifolium* are also cultivated as main fodder crops.
- **Timber:** Many plant of this family provide timber for building furniture and fuel. Main timber plants are *Butea*, *Dalbergia* etc.
- **Vegetable oil:** The seed of *Archis hypogea* (peanut) are edible. They are also used for extraction of peanut oil. This peanut oil is hydrogenated and used as vegetable oil.
- **Dyes:** Some of its plants give yellow and indigo dyes.
- **Medicinal plants:** Many plants of this family are used in medicines. *Glycyrrhiza glabra* is used for cough and cold. *Clitoria ternatea* is use against snake bite.
- **Ornamental plants:** Some important ornamental plants are *Lathyrus* (pea), *Lupinus*, *Clitoria*, *Butea* etc.