

Lecture 4

Reproductive organs

Inflorescence

The Mimosoideae produce flowers in dense heads or small globular, spike – like inflorescences, and commonly has the floral parts arranged in the sets of four, They are rendered conspicuous by the long, coloured filaments of the numerous stamens. e.g *Leucaena leucocephala* and *Acacia spp.*

The caesalpinoideae flowers appears in clusters or racemes, with overlapping petals .The stamens are usually separated e.g *cassia spp.*, *Ceratonia spp.* and *Gleditschia*.

The flowers of papilionaceae are arranged in racemes as in *Desmodium spp.* in heads as in *Trifolium spp.* or spike-like racemes as in *Medicago sativa*. There is a central axis, along with the individual flowers develop. Each flower has its own short stalk or peduncle. The inflorescence may be terminal or auxiliary.

The flower

The corolla consists of five petals of three distinct kinds : 'standards' or 'banner' uppermost or outer petal, largest and most showy; two wing petals, with slender stalks called the claw , and an expanded portion; keel, two petals folded together, partially concealed by the wing petals, the expanded portions more or less united at the outer margin into a boat-shaped structure.

The calyx with five teeth forms a tube at the base of the corolla.

The keel encloses the stamens and pistil. The androecium consists of the ten stamens, the filaments of which may be united.

The Staminal tube surrounds a superior ovary, an elongated structure comprising one carpel with one ovule or a single row or several ovules.

A bent style surmounts the ovary and the stylar tip broadens into the stigmatic surface. The nectar resides at the bottom of the corolla tube.

Fruit and Seed

The ripened ovary forms a fruit of variable shape, called legume or pod. Some seeds shatters - dehiscent e.g *Macroptilium atropurpureum* and *Centrosema pubescens* while some are non-dehiscent e.g *Crotolaria spp.*

Pods can the reserve food is stored in the cotyledons.

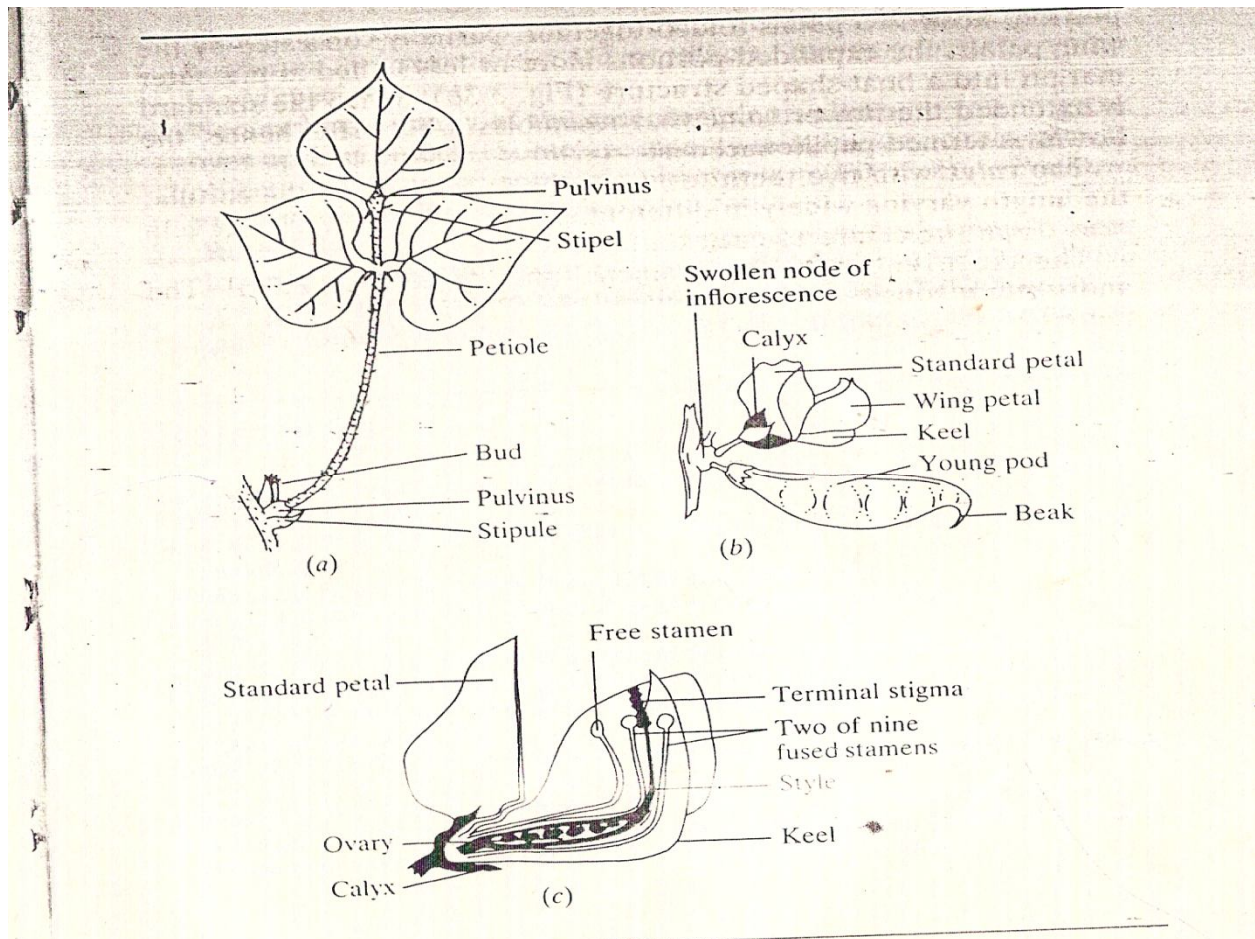
be glabrous or covered with hairs. Each seeds is enclosed in the testa or seedcoat. Hilum marks place of attachment to the ovary walls. The legume seed has no endosperm.

Subterranean parts

The roots system of most legumes consists principally of an actively growing primary roots and its branches(secondary). The primary roots may penetrate the soil to a depth of 6-8cm e.g Lucerne. The roots of many leguminous plants become infected by bacteria of the species *Rhizobium*, Which grows and multiply, forming nodules which differ in size, shape and arrangement on the roots.

Growth habit

1. Bush – type – a central stalk with side branches appearing along the main stem and with axillary branches developing *Cajanus cajan*; *Desmodium tortuosum*.
2. Bunch – type- a single crown from which several stems and new tillers arise, making it difficult to identify a main stems, stems can be erect or decumbents e.g *Stylosanthus guianensis* and *Medicago sativa*.
3. Creeping – the stems trail over the ground surface e.g *Calopogonium mucunoides*, *Macroptilium atropurpureum*, some *vigna* spp.
4. Scrambling – many of the creeping plants climb onto and grow over upright objects. Some are also twining and encircle upright objects e.g *Centrosema pubescens*, *Pueraria phaseoloides*.
5. Rosette- a vegetative form of some perennials developed after flowering or the onset of cool weather e.g *Medicago sativa* and *Trifolium pratense* at the higher elevations of the tropics.



Classification

Grasses

Graminae (Poaceae) is a large botanical family with about 10,000 spp. grouped into some 650 genera and genera into 50-60 tribes; with sub families of 2 to 12.

3 group are of interest- Festucoid group-temperate grasses; Panicoid group- tropical and subtropical and Chloricoid group- few tropical cultivated and a number of valuable wild grasses the tropical and warmer areas of North American .

Examples of festucoid- Tribes of Triticae (Agropyron spp) Festuceae (Festuca, Dactylis, Lolium, poa) Bromeae (Bromus), Aveneae (Avena, Arrhenetherum) Agrostideae (Agrostis, Alopecurus, Phleum)

Panicoid- Paniceae or mellinidae (*Panicum*, *Brachiaria*, *Digitaria*, *Melinis*, *Pennisetum*, *Cenchrus*), Andropogoneae (Andropogon, Hyparrhenia, Sorghum, Lasiurus, Themedia) and Maideae (Zea, Euchlaena, Tripsacum)

Chloridoid- chlorideae (Chloris, Cynodon) and Eragrostae (Eragrostis, Dactyloctenium, Eleusine)

Legume

Order- Leguminosae (Fabaceae) family is divided into three distinct groups or families- Mimosoideae, Caesalpinoideae, Papilionoideae and subfamilies- Mimosaceae, Caesalpinaceae and Papilionaceae of the botanical order Leguminosae.

Only two spp of mimosoideae are important to us – *Leucaena leucocephala* and *Desmanthus virgatus*, although a number of shrubs and trees are browse plant of Acacia spp.

A number of Caesalpiinoideae are cultivated for fodder and only very few are used as natural browse plants.

Species of Papilionoideae are widely grown as pasture or fodder crops and are of considerable important for natural grazing or browsing.

It is a large subfamily with 200 genera and some 12,000 spp. distributed throughout the world.

Leguminosae in general are of tropical origin with Caesalpinaceae as the most primitive type .

17 tribes of Papilionoideae are recognized .

With important ones as Indigofera, Aeschynomeneae, Sesbanieae, Genisteae, Psoraleae and Trifolieae but majority of legume in cultivation belongs to the tribes – Stylosantheae, Desmodieae and Phaseoleae. The above tribes especially the last three are distributed all over the world, with Desmodieae and Phaseoleae concentrated in Latin American.