

Subject - Botany

Class - B.Sc.(Subs) Part-II Group-A (Angiosperm's Taxonomy)
&
B.Sc.(Hons.) Part-II, Paper-3rd Group-B

Topic - "Diagnostic features, Floral formula, Floral diagram and economic importance of family - Polygonaceae."

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Family : - Polygonaceae

Dicotyledones

Mahoechlamydeae

Cucumbryales

* Distribution:-

The family polygonaceae contain 40 genera and 800 species distributed chiefly in north temperate zone, but a few also occurring in tropical and arctic regions and southern hemisphere.

In India the family is represented by 8 genera and about 110 species occurring chiefly in Himalaya.

Examples - Eragrostis amabilis (Buckwheat)

Polygonum species (Knotweed)

Rumex species (Dock)

Ampelodesmos leptophylla (Coral vine)

* Habit: -

They are mostly herbs but a few in the tropic and subtropic are shrubby (e.g. Callygohum and Platopyrum) or small trees (e.g. Muehlenbeckia).

Some times climbers, such as Artigohoh.

* Stems: -

Stems are often with swollen nodes and in Muehlenbeckia platyclada the stem and branches are flattened and jointed at nodes forming phylloclades.

* Leaves: -

Leaves are usually alternate (rarely opposite or whorled), simple and entire, toothed or lobed as in Rheum.

→ Leaves are stipulate and the stipules are characteristic of the family.

→ Stipules are usually membranous and forming a complete sheath (ochrea) around the stem above the leaf base.

→ crystals of calcium oxalate are often present in the epidermal cells.

→ In Muehlenbeckia platyclada leaves are suppressed and the function of photosynthesis is taken up by the green and flattened stem.

* Inflorescence: -

Inflorescence is ~~primarily~~ primarily compound racemose whose branches are usually cymose.

Flowers: -

Flowers are small, bracteate, hermaphrodite (rarely unisexual as in some species of Rumex), actinomorphic, cyclic or ayclic and hypogynous.

* Calyx: —

Calyx is three to six, free or basally connate, often petaloid, white or red and persistent sepals which are often enlarged and membranous in fruit. The aestivation is imbricate.

→ In Oxyria there are four sepals in two dimerous whorls and in Rumex usually six sepals in two trimerous whorls. Polygonum has four or five acyclic sepals.

* Petals: —

Petals are absent.

* Androecium: —

Androecium is of five to nine (rarely more as in Calligonum) stamens.

→ The filaments are united at the base.

→ Anthers are dithecal and opening lengthwise.

* Gynoecium: —

Gynoecium is usually tricarpeal (rarely bi or tetracarpeal) and syncarpous.

→ The ovary is superior and unilocular with a solitary orthotropous basal ovule.

→ The style is two to four clefted.

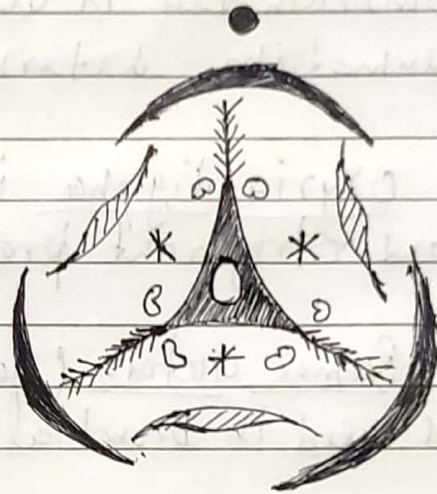
→ The stigmas are various. They are large and brush like in Rumex and capitate in Polygonum.

→ An annular nectar secreting glandular disc is mostly present at the base of the ovary.

* Floral Formulae

Polygonum: $Br \oplus \text{♀} P_5 A_{5+3 \text{ or } 5+2} \underline{G(3)}$

Rumex :- $Ebr \oplus \text{♀} P_{3+3} A_{3+3} \underline{G(3)}$



Polygonum hydrophorum

Rumex

Floral diagram

* Economic importance :-

Polygonaceae have few important foods, medicinal plants and several garden ornamentals -

1. Edibles :-

(i) Seeds of Eggyrium esculentum (Buckwheat), Kuttu) and E. tataricum (Duck wheat) are used as cereal because of their floury endosperm.

(ii) Leaves of Oxyria digyna, Rumex acetosa

"You must be the change you want to see in the world." - Mahatma Gandhi

(Garden sorrel), R. acetosella (Sheep sorrel) and Polygonum alpinum are used as vegetable or salad.

2. Medicines: -

(I) Polygonum aviculare known as homeric tea is used in the treatment of diabetes, rheumatism, external and internal ulcers.

(II) Oxyria digyna is credited for antiscorbutic and refrigerant properties.

(III) Rumex acetosa (Garden sorrel) is antiscorbutic and is used in bronchial diseases and as a blood purifier.

(IV) A flavanol glucoside, Rutin obtained from the leaves and flowers of Fagopyrum esculentum is used in the treatment of increased capillary fragility with associated hypertension.

Ornamentals: -

Some important ornamentals of the family are as follows -

(I) Polygonum sps. (Khotweed), such as P. orientale, P. alpinum, P. paniculatum etc.

(II) Antigonon leptopus (Coral vine)

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