

TOPIC:MORPHOLOGY OF FLOWERING
PLANTS:IMPORTANT TECHNICAL TERMS AND
FAMILIES

LECTURE NO:18

CLASS:XI

DATE: 11TH MAY 2020

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SEMI-TECHNICAL DESCRIPTION OF A TYPICAL
FLOWERING PLANT

Symbols used in Floral Formula –

Plant Part	Symbol/Abbreviation
Bracteate	Br
Ebracteate	Ebr
Bracteolate	Br ^l
Actinomorphic	⊕
Zygomorphic	% or ⊕

Bisexual (Hermaphrodite)	♂ ♀
Staminate	♂
Pistillate	♀
Calyx, Sepals free	Knumber
Calyx, Sepals united	K(number)
Corolla, Petals free	Cnumber
Corolla, Petals united	C(number)
Androecium, stamens free	Anumber
Androecium monodelphous	A(number)
Gynoecium, carpels free	Gnumber
Gynoecium, carpels united	G(number)
Ovary superior (Hypogynous flower)	<u>G</u>
Ovary Inferior (Epigynous flower)	G ⁻
Ovary Half-inferior (Perigynous flower)	G –

Epiphyllous $\overline{P} \quad A$

Epipetalous $\overline{C} \quad A$

Floral formula also shows cohesion and adhesion within parts of whorls and in between whorls. Brassicaceae).

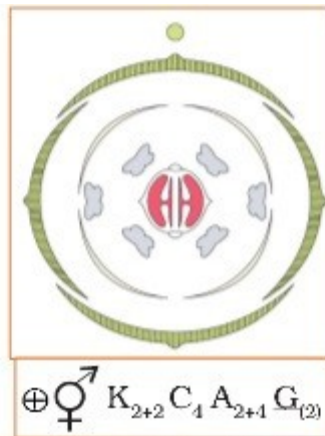


Fig: Floral diagram with floral formula of mustard (Brassicaceae)

DESCRIPTION OF SOME IMPORTANT FAMILIES

Fabaceae

- This family was earlier called Papilonoideae, a subfamily of family Leguminosae.
- **Habitat** – It is distributed all over the world
- **Vegetative Characters** –
 - Trees, shrubs, herbs;

- root with root nodules;
- Stem: erect or climber;
- Leaves: alternate, pinnately compound or simple; leaf base, pulvinate; stipulate; venation reticulate.
- **Floral characters –**
 - **Inflorescence:** racemose
 - **Flower:** bisexual, zygomorphic
 - **Calyx:** sepals five, gamosepalous; imbricate aestivation
 - **Corolla:** petals five, polypetalous, papilionaceous, consisting of a posterior standard, two lateral wings, two anterior ones forming a keel (enclosing stamens and pistil), vexillary aestivation
 - **Androecium:** ten, diadelphous, anther dithecous
 - **Gynoecium:** ovary superior, mono carpellary, unilocular with many ovules, style single
- **Fruit –** legume
- **Seed –** one to many, non-endospermic.
- **Floral Formula –** $\oplus \overset{\text{♂}}{\underset{\text{♀}}{\text{Q}}} K_{(5)} C_{1+2+(2)} A_{(9)+1} \underline{G}_1$
- **Economic importance –**
 - pulses (gram, arhar, sem, moong, soyabean)
 - edible oil (soyabean, groundnut)
 - dye (indigofera)
 - fibres (sunhemp)
 - fodder (Sesbania, Trifolium),

- ornamentals (lupin, sweet pea);
- medicine (muliathi).

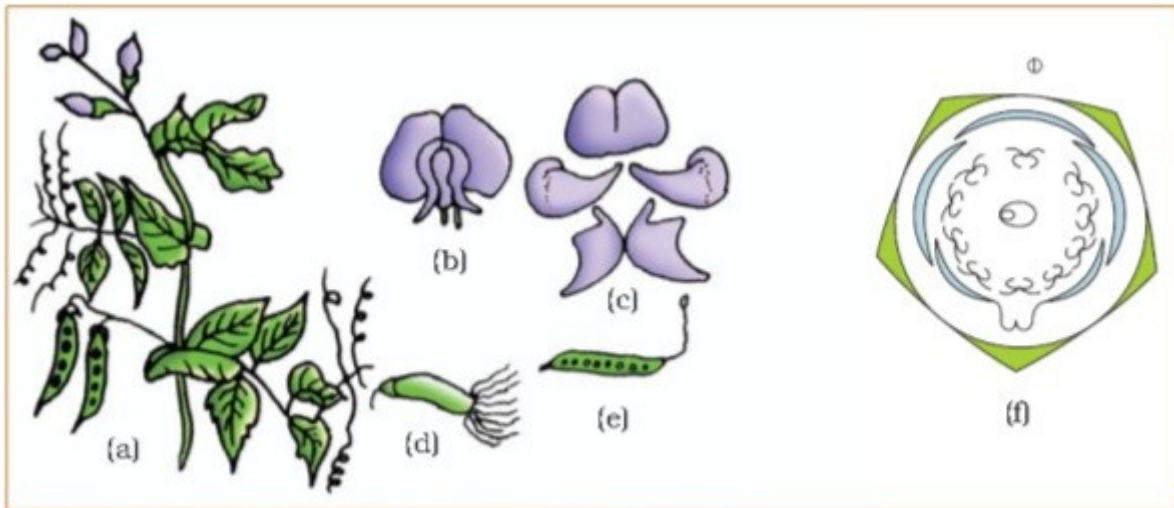


Fig: *Pisum sativum* (pea) plant: (a) Flowering twig (b) Flower (c) Petals (d) Reproductive parts (e) L.S.carpel (f) Floral diagram

Solanaceae

- It is a large family, commonly called as the 'potato family'.
- **Habitat** – It is widely distributed in tropics, subtropics and even temperate zones.
- **Vegetative Characters** –
 - Plants mostly, herbs, shrubs and small trees
 - **Stem:** herbaceous rarely woody, aerial; erect, cylindrical, branched, solid or hollow, hairy or glabrous, underground stem in potato (*Solanum tuberosum*)
 - **Leaves:** alternate, simple, rarely pinnately compound, exstipulate; venation reticulate
- **Floral Characters** –

- **Inflorescence:** Solitary, axillary or cymose as in Solanum
- **Flower:** bisexual, actinomorphic
- **Calyx:** sepals five, united, persistent, valvate aestivation
- **Corolla:** petals five, united; valvate aestivation
- **Androecium:** stamens five, epipetalous
- **Gynoecium:** bicarpellary, syncarpous; ovary superior, bilocular, placenta swollen with many ovules
- **Fruits** – berry or capsule
- **Seeds** – many, endospermous
- **Floral Formula** – $\oplus \overset{\text{♂}}{\underset{\text{♀}}{\text{K}}}_{(5)} \overset{\text{♂}}{\underset{\text{♀}}{\text{C}}}_{(5)} \overset{\text{♂}}{\underset{\text{♀}}{\text{A}}}_{(5)} \underline{\text{G}}_{(2)}$
- **Economic Importance** –
 - source of food (tomato, brinjal, potato),
 - spice (chilli);
 - medicine (belladonna, ashwagandha);
 - fumigatory (tobacco);
 - ornamentals (petunia).

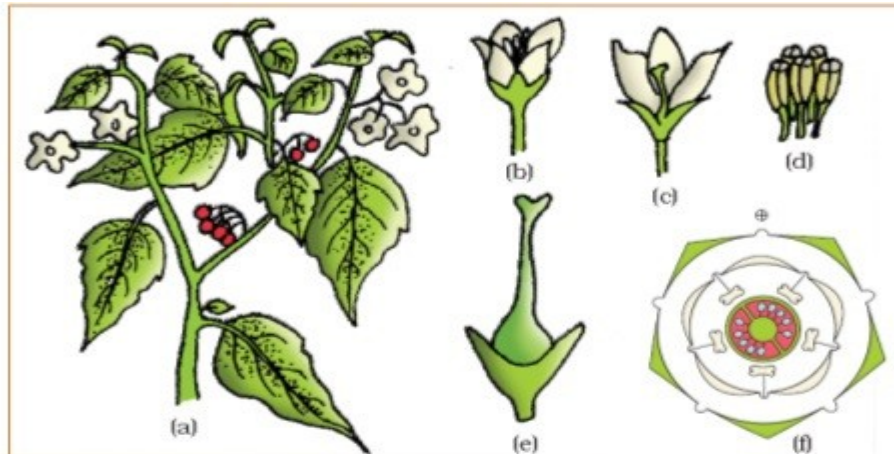


Fig: *Solanum nigrum* (makoi) plant : (a) Flowering twig (b) Flower (c) L.S. of flower (d) Stamens (e) Carpel (f) Floral diagram

Lilaceae

- Commonly called the 'Lily family'.
- It is a characteristic representative of monocotyledonous plants.
- **Habitat** – It is distributed world wide.
- **Vegetative characters** –
 - Perennial herbs with underground bulbs/corms/ Rhizomes
 - Leaves mostly basal, alternate, linear, exstipulate with parallel venation
- **Floral characters** –
 - **Inflorescence:** solitary / cymose; often umbellate clusters
 - **Flower:** bisexual; actinomorphic
 - **Perianth:** tepal six (3+3), often united into tube; valvate aestivation

- **Androecium:** stamen six, (3+3)
- **Gynoecium:** tricarpellary, syncarpous, ovary superior, trilocular with many ovules; axile placentation
- **Fruit** – capsule, rarely berry
- **Seed** – endospermous
- **Floral Formula** – $\oplus \text{ } \overset{\text{♂}}{\text{P}}_{3+3} \text{ } \overset{\text{♀}}{\text{A}}_{3+3} \text{ } \underline{\text{G}}_{(3)}$
- **Economic Importance** –
 - ornamentals (tulip, Gloriosa),
 - medicine (Aloe),
 - vegetables (Asparagus)
 - colchicine (*Colchicum autumnale*).



Fig: Allium cepa (onion) plant: (a) Plant (b) Inflorescence (c) Flower (d) Floral diagram