CL-8 Unit-7. (Monocot)

Family- Graminae / Poaceae.

Type genus - Poa.

Character:

Habit → Plants mainly annual or perennial herb.

Stem → solid at node but hollow at internode.

Leaf → Simple lanceolate to linear and ligulate.

Inflorescence → spikelet

Flower → Bisexual, actinomorphic, hypogynous.

Pearianth → Absent or reduced to 2-3.

Androecium → stamens 3 or 3+3.

Gynoecium → carpels 1 or 3, Ovary Superior, Stigma 2, plumose.

Fruit → caryopsis.

Floral formula → Br. ⊕ ♀ $P_{0 \text{ or } 2-3}$ $A_{3 \text{ or } 3+3}$ $\underline{G_{1 \text{ or } (3)}}$

Range in vegetative structure & floral structure:

Plant like tree - Bambusa sp.

Stem solid throughout - Saccharum officinarum.

Leaf eligulate - Echinochloa. sp.

Plant with stilt root - Saccharum officinarum.

Flower unisexual - Zea mays.

Stamen monadelphous - Ochlandra.

Fruit berry - Bambusa

Fruit drupe - Coix lacryma-jobi

Economic important:

1) Cereal producing: Oryza sativa, Triticum aestivum
Zea mays.

2) Millet producing: Sorghum vulgare, Panicum milla.

3) Sugar producing: Saccharum officinarum.

4) Paper producing: Bambusa tulda, Saccharum spontaneum

5) Essential oil: Cymbopogon citrus → Lemon grass oil.
Cymbopogon nardus → Citronella oil.
C. martinii → Palmarosa oil.

6) Medicinal plant: (i) Ergot obtained from Secale cereale which help in uterine haemorrhage.
(ii) Tabashir - Silicious substances obtained from Bambusa sp. which is consider as a good tonic.

Palmae (Arecaceae).

Type genus - Areca.

Characters:

Habit: Plants usually shrubs or arborescents.
Stem: Unbranched, covered by persist leaf base.
Leaf: Pinnately compound or palmately compound.
Inflorescence: Compound spadix.
Flower: Unisexual, actinomorphic, hypogynous.
Perianth: Tepals 6, free in whorls of three each.
Androecium: Stamens in male flower usually 6 in 2 whorls.
Gynoecium: In female flower carpels three, syncarpous.
Fruit: Usually berry or fibrous drupe.
Seed: Seeds with small embryo and copious endosperm

Floral formula:

Male flower: Br ⊕ ♂ P_{3+3} A_{3+3} $G_{(0)}$

Female flower: Br ⊕ ♀ P_{3+3} A_0 $\underline{G}_{(3)}$

Range in habit:

1) Plant dioecious → Phoenix sylvestris, Borassus flabellifer.
2) Plant mangrove or halophyte → Nypa fruticans.
3) Dauble coconut → Lodoicea maldivica
4) Stem branched → Hyphaene thebaica.
5) Flower bisexual → Livistona chinensis
6) Ovary unilocular → Areca catechu

Economic importance:

1) Sago producing plant → metroxylon rumphii
2) Edible fruit producing plant → Borassus flabellifer. phoenix dactylifera., cocos nucifera.
3) Edible oil → cocos nucifera
4) Sugar producing plant → Phoenix sylvestris, Borassus flabellifer.
5) Wine producing plant → B. flabellifer.
6) Plants used as masticatory → Areca catechu.
7) Ornamental plant → Roystonea regia.
8) plant used for making furniture → Calamus. rotang.

Unit – 7 (Dicot) Malvaceae.

Type Genus → Malva.

Habit → Plants mostly herbs, sometimes shrubs with mucilaginous sap.

Stem → Fibrous, covered with stellate hair.

Leaf → Simple, Stipulate. Leaves are alternately arranged.

Inflorescence → Cymose.

Flower → Bisexual, actinomorphic, epicalyx present.

Calyx → Sepals usally 5.

Corolla → Petals 5, mainly free, twisted or imbricate,

Androecium → Stamens numerous, monadelphous.

Gynoecium → Carpels usually 5, syncarpous, ovary superior.

Fruit → Capsule or schizocarp.

Floral formula → Br ⊕ ♀ $Epik_{3-9}\ K_5\ C_5\ A_{(\infty)}\ \underline{G_{(2-5)}}$.

Range in vegetative structure and floral structure:

1) Plant tree → Thespesia populnea.
2) Flower unisexual → Napaea sp.
3) Epicalyx absent → Sida sp.
4) Fruit berry → Malvaviscus arboreus

Economic importance:

1) Plant producing cotton → Gossypium arboreum, G. hirsutum, G. barbaceum.
2) Fiber producing plant → Hibiscus cannabinus, H. tiliaceus
3) Oil producing → Grossypium herbaceum
4) Vegetable producing → Abelmoschus esculentus.
5) Timber yilding plant → Thespesia populnea

6) Ornamental plant: Hibiscus rosa-sinensis, Malva sylvestris, Malvaviscus arboreus

7) Medicinal plant: Gossypium herbaceum - Bark is used for stopping haemorrhage.

8) Dye-yielding plant: Blue colour dye obtain from Althaea rosea

9) Plant used in Perfumary: Pavonia odorata

Solanaceae.

Type genus - Solanum.

Characteristics features:

Habit - Herbs, Shrubs,

Leaf - Simple, alternate.

Inflorescence - cymose.

Flower - Bisexual, actinomorphic, hypogynous.

Calyx - Sepals 5, gamosepalous, persistent

Corolla - Petals 5, gamopetalous

Androecium - Stamen 5, epipetalous.

Gynoecium - Carpel 2, syncarpous, ovary superior.

Fruit - Usually many seeded berry.

Seed - seed compressed with copious endosperm.

Floral formula - $\oplus \; \varphi \; K_{(5)} \; \overline{C_{(5)}} \; A_5 \; \underline{G_{(2)}}$

Range in vegetative and floral structure:

1) Flower solitary - Datura metel.

2) Calyx enlarging forming an envelope around the fruit - Physalis minima.

3) Fruit capsule - Datura

4) Plant tree - Solanum verbascifolium

Economic importance:

1) Ornamental plant: Cestrum nocturnum, Brunfelsia americana.

2) Vegetable producing plant: Solanum tuberosum, S. melongena, Lycopersicon esculentum

3) Spice producing plant: Capsicum annuum, C. frutescens

4) Edible fruit producing plant: Physalis peruviana.

5) Medicinal plant: 'Atropine' obtain from Atropa belodona. Withania somnifera are used in treatment of cough and ~~rash~~ rheumatism.

6) Tobacco producing plant: Leaves of Nicotiana tabacum, N. rustica.

Cucurbitaceae.

Type Genus → Cucurbita

General characters:

Habit - Annual or perennial, herbs or vines.
Stem - Herbaceous, usually pentangular with ridges and furrow.
Leaf - Simple, alternate, petiole often hollow.
Inflorescence - Usually solitary.
Flower - Unisexual, actinomorphic, pentamerous, epigynous.
Calyx - Sepals 5, gamosepalous, ~~campanulate~~ tubular.
Corolla - Petals 5, gamopetalous, campanulate.
Androecium - In male flower stamen 5, synandrous.
Gynoecium - Carpels 3, syncarpous, Ovary inferior
Fruit - Pepo.

Floral formula: ⊕ ♂ $K_{(5)}\ C_{(5)}\ A_{(2+(2)+1}\ \underline{G}_{(0}$

⊕ ♀ $K_{(5)}\ C_{(5)}\ A_0\ \bar{G}_{(3)}$

Range in vegetative and floral structure:

1) ~~Plant tree - Dendrosicyos.~~

1) Plant tree - Dendrosicyos sp.

2) Plant without tendrill - Eoballium sp.

3) Plant dioecious - Trichosanthes dioica

4) Petals free - Fevillea sp.

5) Stamens free - Fevillea sp.

Economic importance:

1) Vegetable producing plant:

Cucurbita maxima, cucurbita pepo, Trichosanthes dioica, Lagenaria siceraria, momordica charantia.

2) Edible fruit producing plant:

Cucumis sativus, citrullus vulgaris, C. melo.

3) Plants used for making musical instrument -

The hard dried pericarp of Lagenaria siceraria.

4) Medicinal plant:

Roots of Bryonia dioica are used in the treatment of piles and asthma.

5) Ornamental plant:

Eoballium sp, Sechium sp.

Compositae / Asteraceae.

Type genus: Aster

Habit: Plant mostly herbs.

Leaf: Simple, alternate and exstipulate; provided with oil passage.

Inflorescence: Capitulum. Subtented by involucral bracts.

Flower: Actinomorphic (Disc florets) or zygomorphic (Ray florets), bracteate, epigynous.

Calyx: Absent or represented by hairy pappus.

Corolla: Petals 5, gamopetalous, tubular (disc florets) or ligulate (Ray florets).

Androecium: Stamens 5, epipetalous, syngenesious.

Gynoecium: Carpels 2, syncarpous, ovary inferior

Fruit: Cypsella.

Floral formula:

Ray florets: ♀ K_0 or pap $C_{(5)}\ A_0\ \underline{G}_{(2)}$

Disc florets: ⊕ ♂ ♀ K_0 or pap $\overline{C_{(5)}}\ A_{(5)}\ \underline{G}_{(2)}$

Range in vegetative structure & floral structure:

1) Plant tree - Vernonia arborea.
2) Plant aquatic - Erigeron sp.
3) Inflorescence homogamous - Vernonia cinerea.
4) Corolla bilabiate - Nutesia sp.

Economic & Importance:

1) Ornamental plants: Helianthus annuus, Tagetes patula, Dahlia pinnata, Zinnia elegans., Chrysanthemum coronarium

2) Medicinal plants:

The drug 'Arnica' obtained from the capitulum of Arnica montana.

3) Edible plants:

Leaves of Lactuca sativa is used as salad.

4) Oil producing: Edible oil is obtained from seeds of Helianthus annuus,

5) Rubber yeilding plants: Rubber is obtained from the latex of Parthenium argentatum.

Advance features of compositae:

1) Predominance of herbaceous habit.
2) Inflorescence capitulum.
3) Flower Zygomorphic, epigynous.
4) calyx modified into pappus.
5) Ray florets is ligulate and showy which attracts the insects.
6) Stamens syngenecious, and ovary inferior.