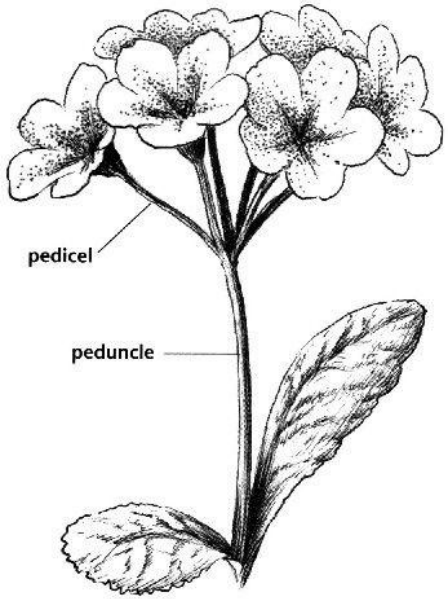
# INFLORESCENCE

•Organs of sexual reproduction in plants

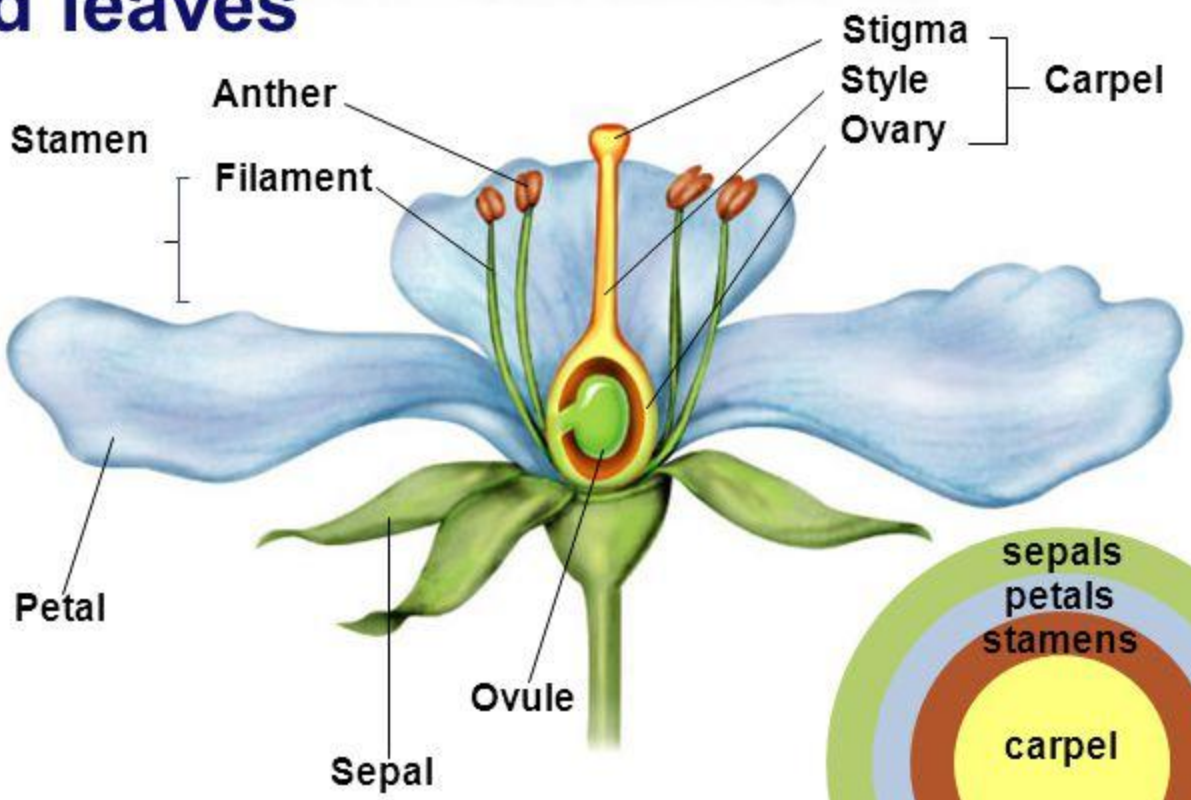
• modified shoots
• single/ in clusters
• Axillary/ terminal in position
• cluster of flowers in the axis – inflorescence
• stalk of inflorescence – Peduncle
• individual flower stalk – pedicel
• flower arise from underground stem – scape (Allium, Lotus)
• flowers from mature stem (internode) – cauline
• modified shoots – floral whorls are modified leaves
• parts of flower – calyx –greenish, veins present – miniature leaf like
• corolla – coloured, leaf like, tapering below & broad above

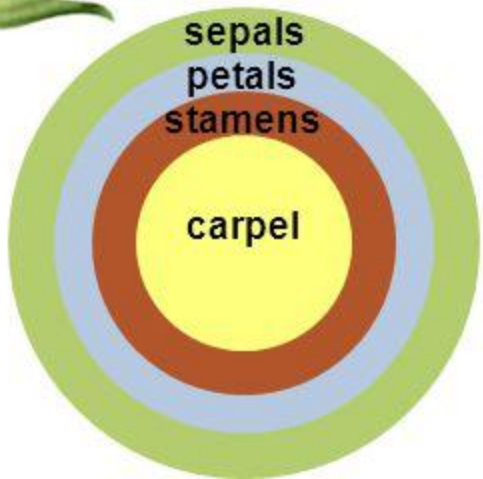




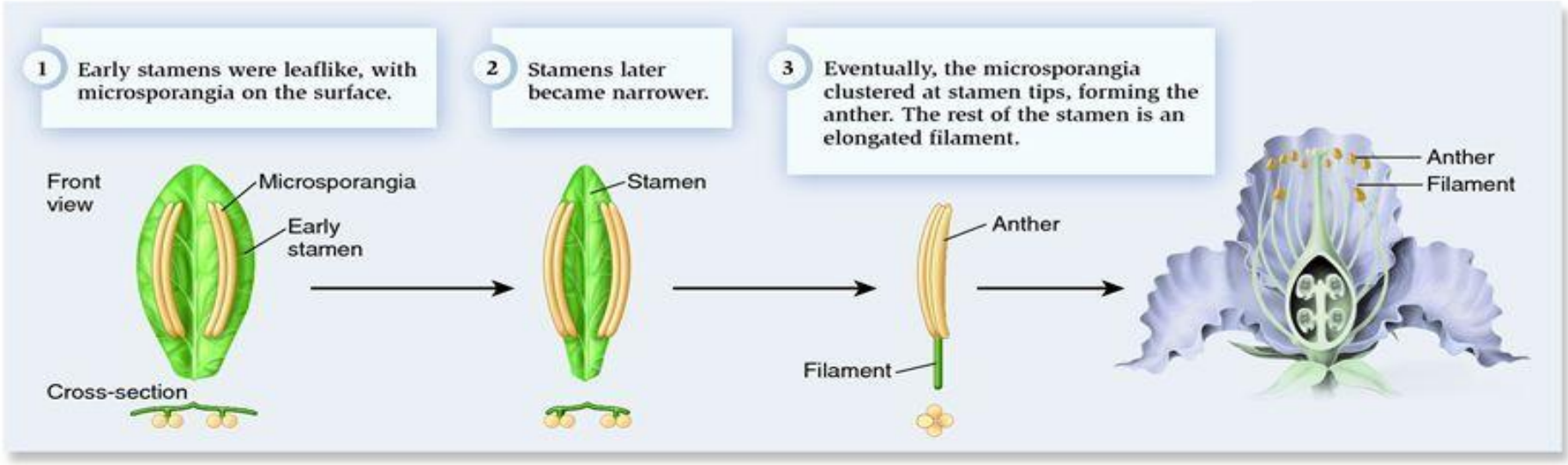
# Flower

- Modified shoot with 4 rings of modified leaves
  - sepals
  - petals
  - stamens
    - male
  - carpel
    - female

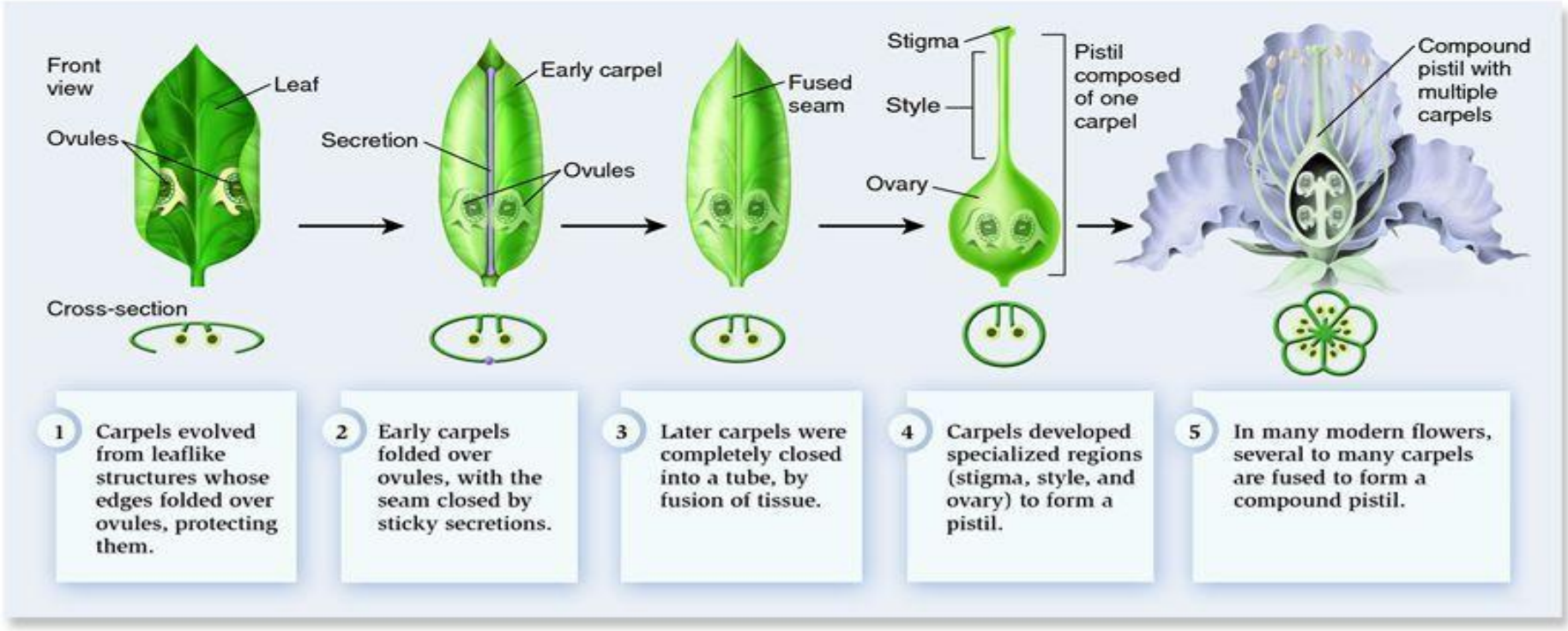



adaptations through mutations




(a) Stamen evolution




(b) Carpel evolution

•Androecium – filament & anther part

• filament is the petiole of leaf

• anther lobes – lamina folded to two sacs along the midrib

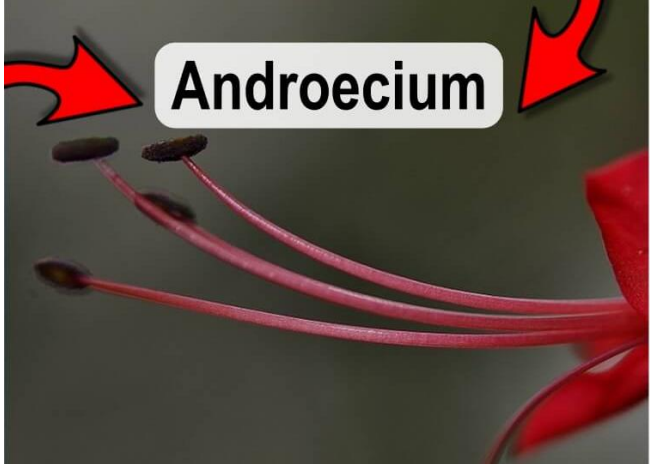
• Gynoecium –Ovary, style & stigma

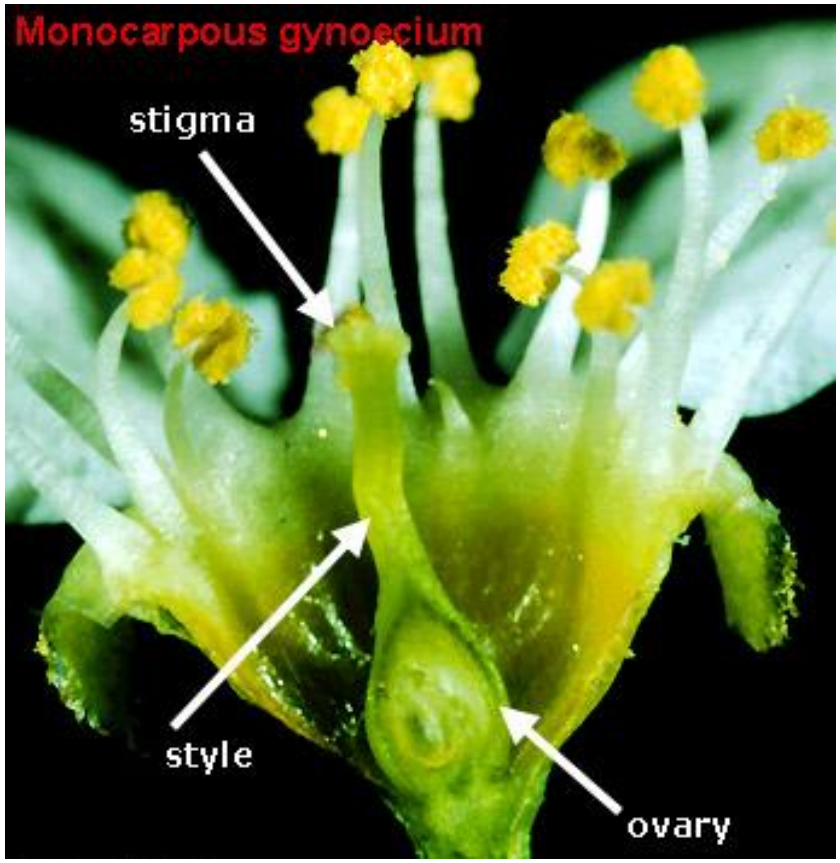
• developed from sessile leaf

• lower 1/3rd with leaf margin united forming sac like ovary

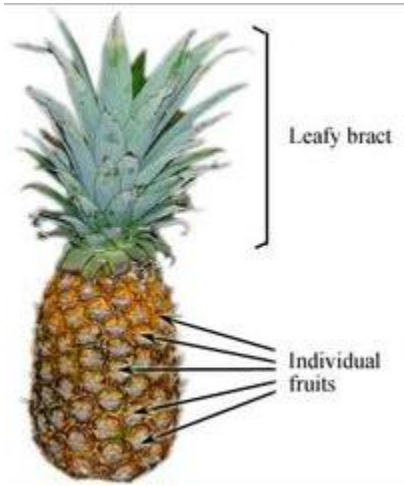
• middle 1/3rd form tubular style

• upper 1/3rd modified to shapes as stigma



Bracts – greenish leaf like on peduncle
From its axils, arise single flower/ floral branches- protect young flower bud
•smaller, greenish bracteoles seen at the base of pedicels – bracteoles
• flower with bract – bracteate
• flower without bract – ebracteate
• flower with bracteole – bracteolate
• flower without bracteole – ebracteolate
• bracts – empty/ sterile – no flower in axil (Ananas)
• bracts nongreen (Bougainvillaea) – attractive function
• bracts – leafy – large – Adathoda
• bracts – large – spathe –Cocos
• bracts – grasses – glumes
• bracts in a whorl – involucre (Helianthes)
• bracteoles in whorl – epicalyx (Hibiscus)





*peduncle nature & flower arrangement – 3types of infl.

•Racemose, cymose, Mixed (Special)

RACEMOSE – Indefinite/ indeterminate

•Main axis not terminate in flower

• flowers in acropetal succession

• growth is from periphery to centre (Centripetal)

• divided to

• i) raceme

• ii) Panicle

• iii) Corymb

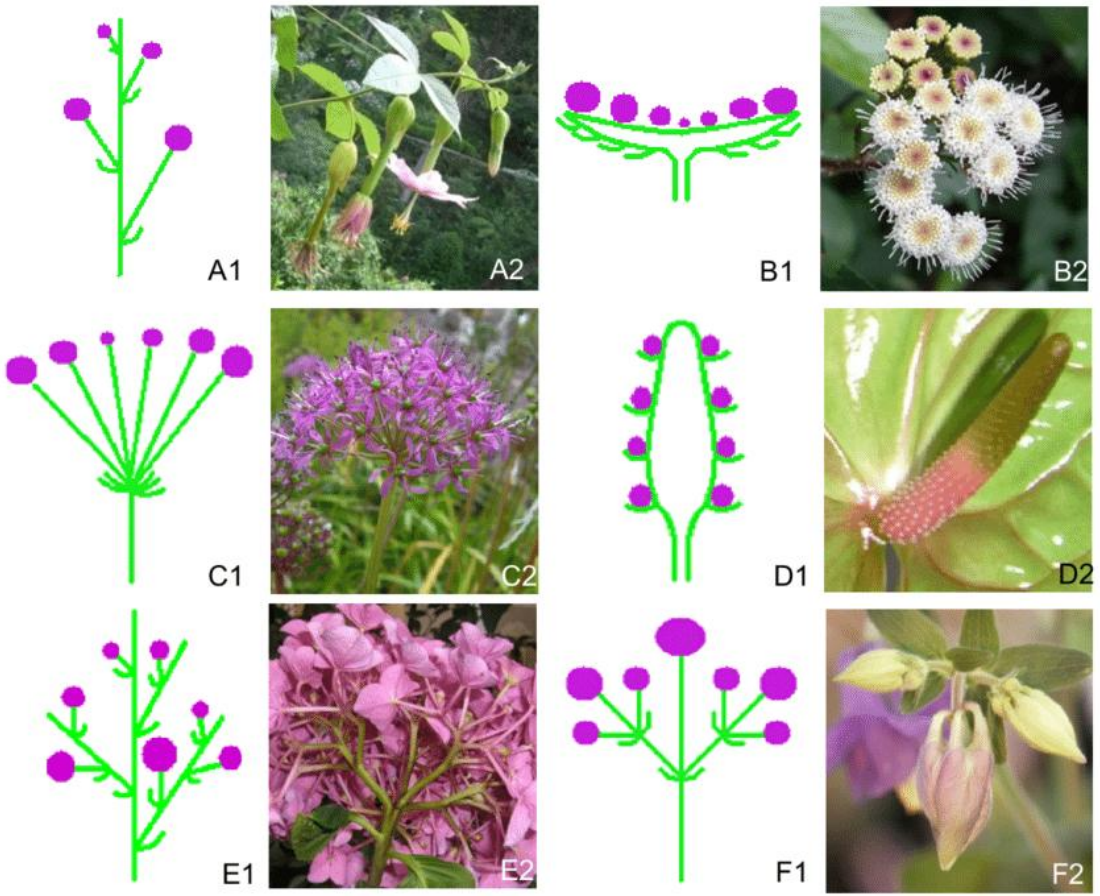
• iv) Spike

• v) Catkin

• vi) Spadix

• vii) umbel

• viii) Capitulum



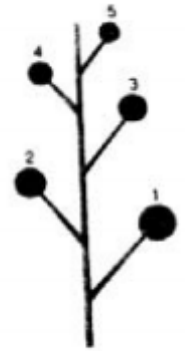
❖RACEME – (Glyricidia, Crotalaria)

* simplest type

•Main peduncle

• flowers stalked on acropetal succession

• growth centripetal



Raceme

❖ PANICLE –(Mangifera, Tectona)

• branched raceme

• main peduncle- sec. & tertiary peduncle

• flowers develop on sec. & ter. Peduncle in acropetal succession

• growth is centripetal

Panicle

❖ CORYMB – (Caesalpinia)

•Short peduncle

• pedicellate flowers

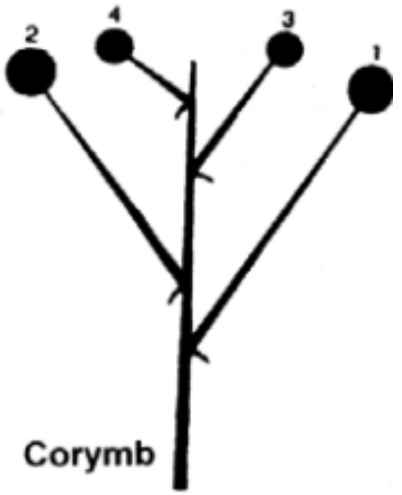
• pedicels of diffferent lengths

• basal flowers with long pedicels

• younger flowers with short pedicels

• all flowers at same level

• pollination easy




❖ SPIKE – (Achyranthes, Celosia)

•Raceme type but with sessile flowers

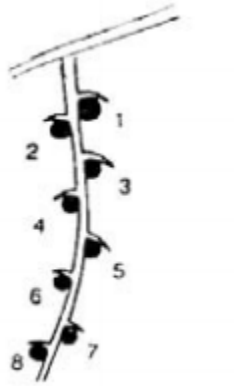
• main axis branched – Compound spike (Aerva)

• Grass- small spikes - spikelets



❖ CATKIN/ AMENTUM – (Acalypha, Morus, Artocarpus)

- Pendulous spike
- sessile & unisexual flowers
- thin & slender axis
- remain pendant mostly/ erect



Catkin

❖ SPADIX – (monocots- Colocasia, Amorphophallus)

•thick, fleshy, coloured peduncle

• flowers small, unisexual, sessile

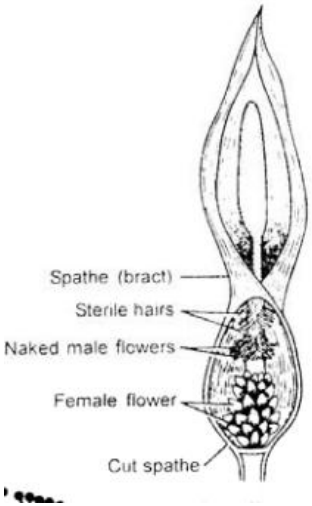
• sink to depressions in peduncle

• inflorescence covered by large bract

• spathe – bract

• Female basal & male terminal

• branched spike with leathery bracts – Compound Spike (Cocos, Areca)




❖ Umbel – ( Biophytum)

•Main peduncle short

• involucre of bracts

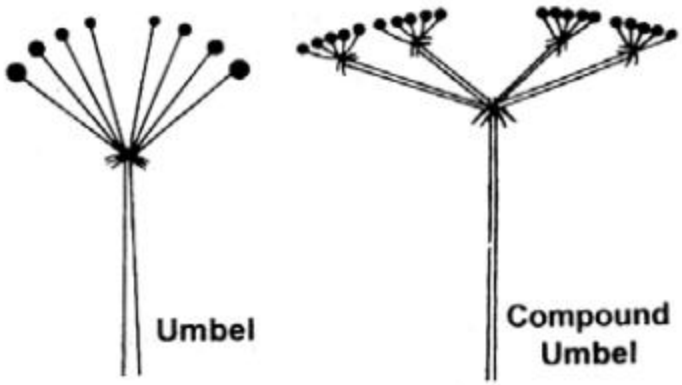
• from each bract axil, develops pedicellate flower

• centripetal succession

• flowers at same level

• pedicel equal length & arranged at tip of peduncle

• compound umbel – Allium



❖ CAPITULUM/ HEAD – (Asteraceae)

•Peduncle flattened – receptacle

• small & sessile flowers in acropetal succession called florets

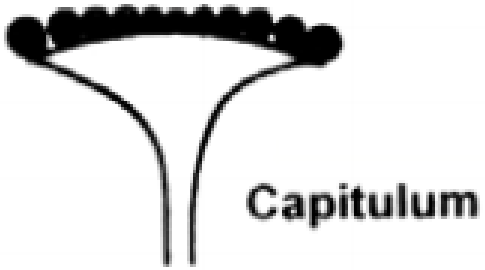
• involucre of bracts

• 2 types of florets – Ray & Disc

• along periphery – ray florets (Zygomorphic & Female)

•Florets at centre – Disc florets (Actinomorphic & Bisexual)

• globose head – Mimosa, Gomphrena



# CYMOSE (determinate)

- Sympodial branching
- peduncle limited growth
- terminal flower
- younger flowers form axils of bracteoles of old flower
- form bracteoles of young flowers, next group of flowers arise (contary to raceme)
- flowers in basipetal succession (basal flowers young & tip flowers old)
- growth centrifugal (from centre to periphery)

- five types
- i) Solitary
- ii) Simple cyme
- iii) Monochasial (Uniparous cyme)
- iv) Dichasial ( Biparous cyme)
- v) polychasial (Multiparous cyme)

❖ SOLITARY CYME – (Hibiscus, Datura, Gossypium)

•Simplest type of cymose

• Single flower

• axillary – Axillary solitary cyme (Gossypium)

• Terminal - Terminal Solitary cyme (Hibiscus)

❖ SIMPLE CYME/ CYMULE – (Jasminum)

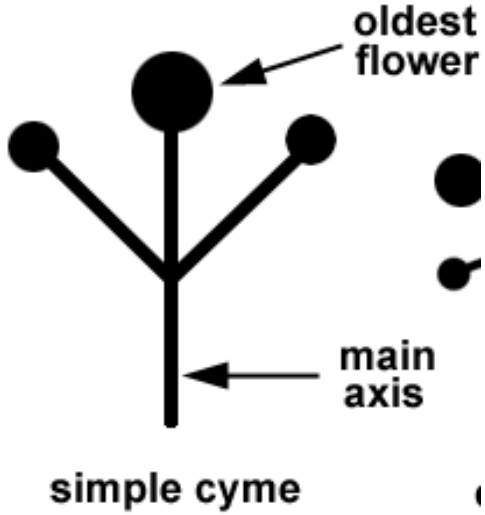
•Cluster of three ( 1 terminal & 2 lateral)

• main axis ends in flower

• 2 bracteoles give rise to 2 flowers

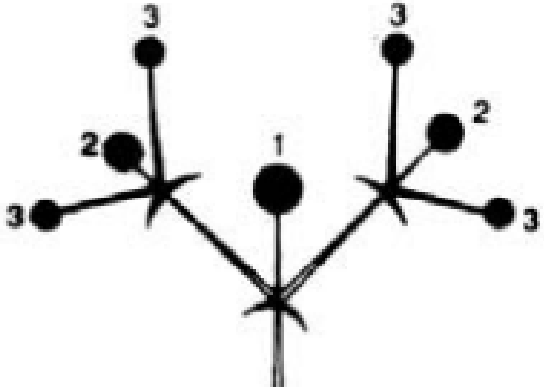
• centrifugal development

• basipetal succession




❖ DICHASIAL / BIPAROUS CYME - (Clerodendron)

•Main axis ends in flower
• 2 bracteoles
• one flower each develops
• each has 2 bracteoles
• from these, arise 2 flowers each
• cluster of symmetrical flowers
• bracteoles of older flower form bracts of younger
• basipetal succession
• centrifugal growth




❖MONOCHASIAL/ UNIPAROUS CYME

•Main axis in single flower

• gives rise to single secondary peduncle

• secondary peduncle to tertiary peduncle

• out of two bracteoles, only one developed

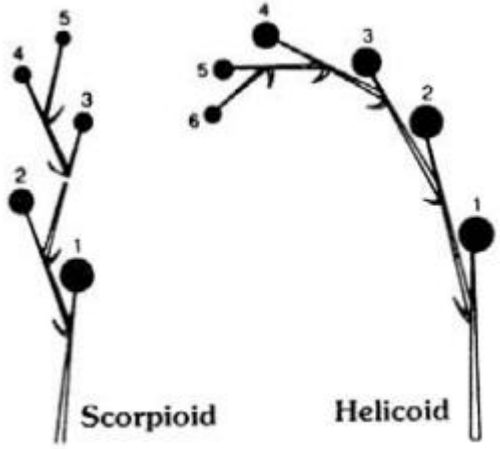
• second bracteole suppressed

• lateral branches develop only on one side – monochasial helicoid cyme (Hamelia)

• all flowers on same side of axis

• lateral branches develop on alternate sides – monochasial scorpiod cyme (Heliotropium)

• Flowers on alternate sides


POLYCHASIAL/ MULTIPAROUS CYME

•More than two secondary & tertiary peduncles

• terminal flower with bracteoles

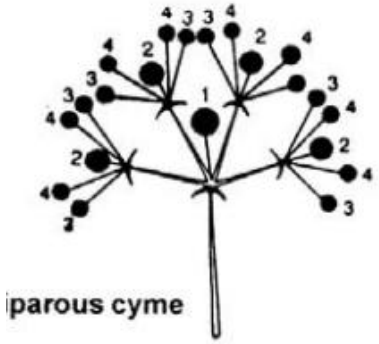
• from these, secondary peduncle

• give rise to more than two flowers

• each flower with bracteoles

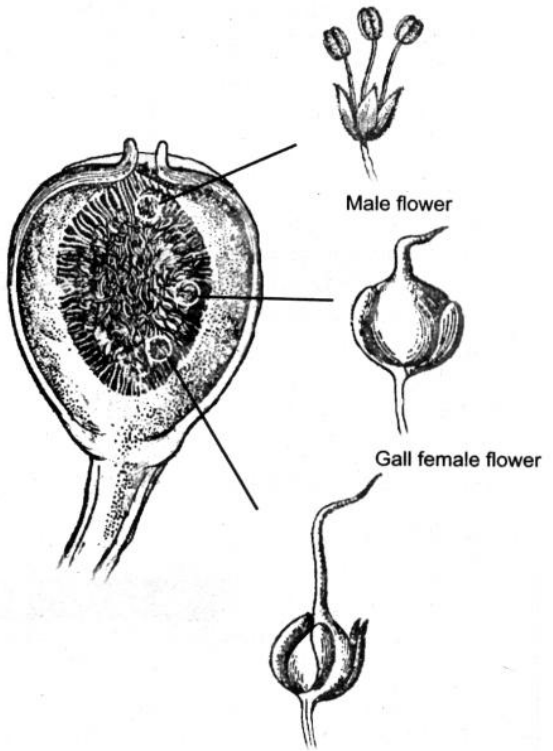
• give rise to tertiary peduncle

• from these, arise more than two flowers each (Calotropis)




| COMPARISON – | RACEMOSE | CYMOSE |
|---|---|---|
| i) Peduncle - | unlimited growth | Limited growth |
| ii) Tip of peduncle – | No flower | ends with flower |
| iii) Succession - | Acropetal | Basipetal |
| iv) Growth - | Centripetal | Centrifugal |

# SPECIAL (MIXED)




- Neither Racemose/ Cymose
- modified forms

❖ HYPANTHODIUM/ SYCONUS/ SYCONIUM

- Condensed cymose
- Seen in Ficus
- pduncle forms fleshy, hollow flask shaped receptacle
- terminal opening – ostiole
- pollinators enter
- ostiole with small hairs
- small, sessile unisexual flowers
- male flowers near ostiole
- sterile flowers middle
- female flowers at base

❖ VERTICILLASTER – (Leucas)

•Compound inflorescence

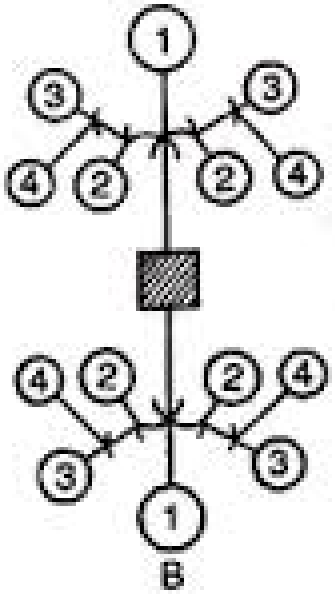
• two axillary opposite cymose

• in plants with opposite leaves ( lamiaceae)

• clusters of sessile flowers as dichasium

• further as monochasial scorpiod cyme

• cluster of sessile flowers surrounding stem



❖ CYATHIUM – (Euphorbia)

•Condensed Cymose

• involucral cup by fusion of bracts

• highly reduced peduncle

• single female flower

• five scorpiod cymes of male flowers

• female long, stalked, naked

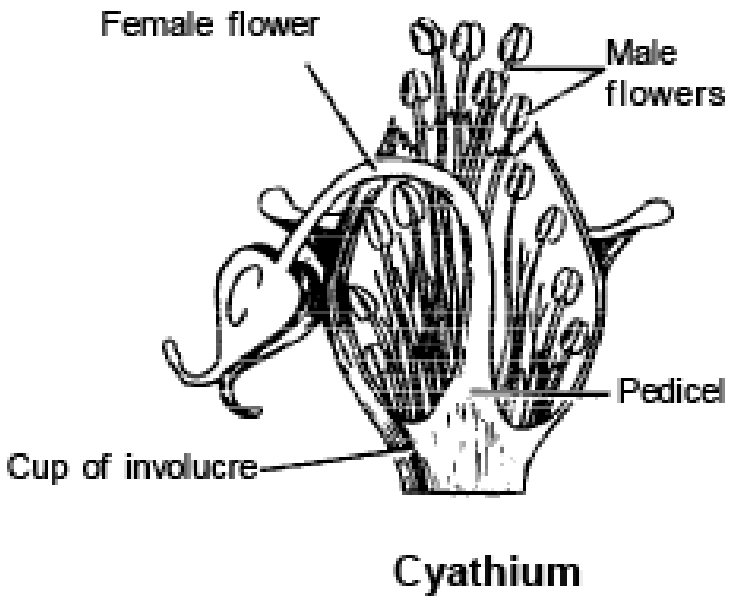
• male short , stalked & naked

• Cyme of cymes

• several inflorescence in cymes

• inside each, again cymose arrangement

• typical of family Euphorbiaceae




Cyathium

❖ THYRSUS –(Ocimum)

•Mixed of cymose & racemose

• main peduncle racemose in nature

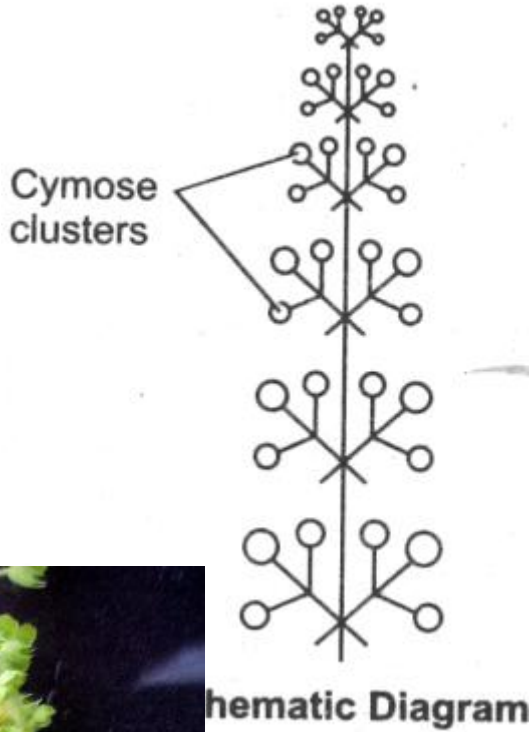
• secondary peduncle as simple cyme

• sec. ped. With 3 flowers each

• indeterminate growth of primary peduncle

• sec. ped determinate- ends in flower

• develops 2 flowers from axil of bracts




hematic Diagram

❖ COENANTHIUM –(Dorstenia)

•Peduncle ends in fleshy flat irrengular receptacle

- numerous flowers
- irregular arrangement
- sessile unisexual flowers
- dispersed in the receptacle