Mr.Hameedullah kakar
M.sc: scholar (botany)
university of Baluchistan
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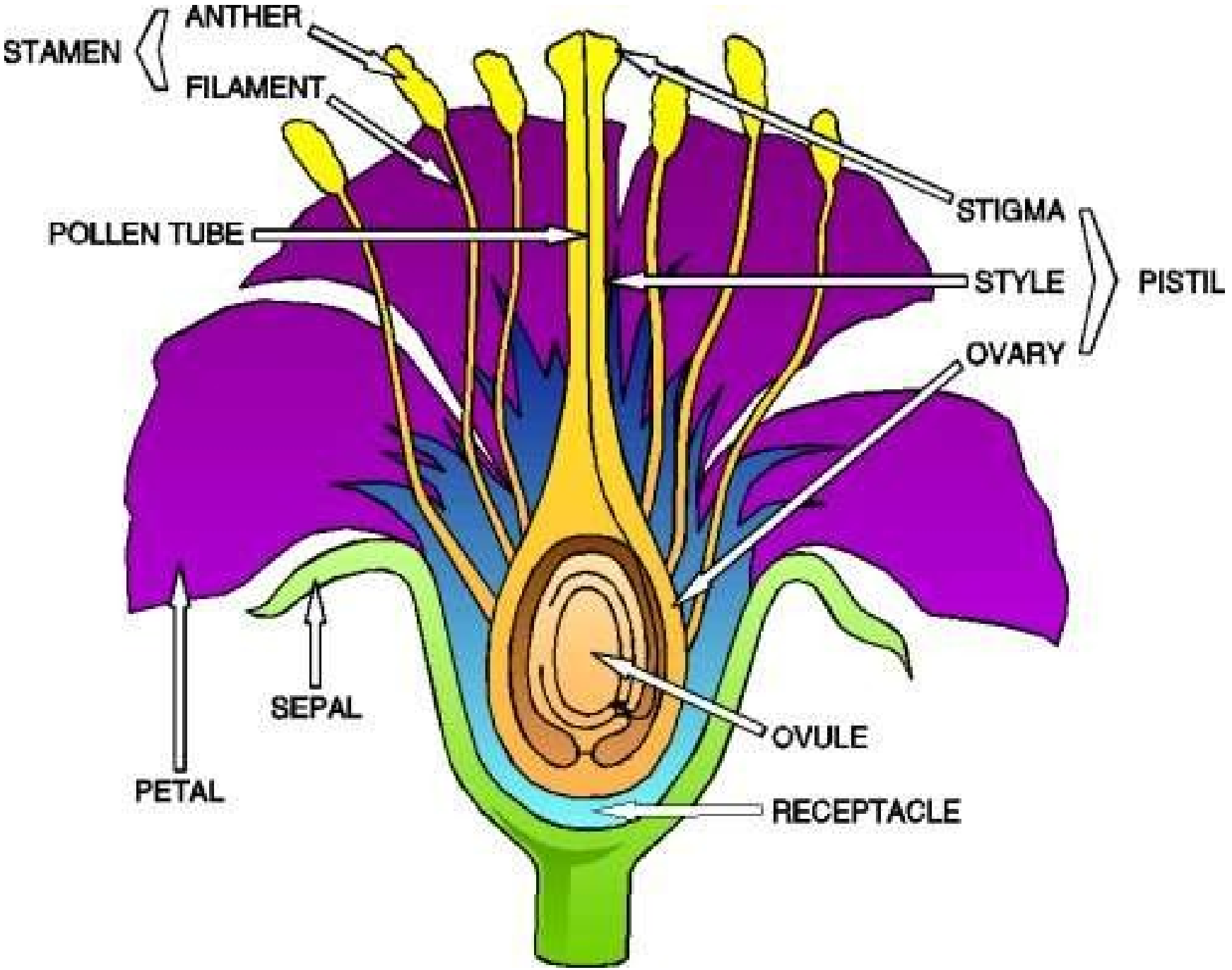
FLOWER DESCRIPTION

SOME IMPORTANT TERMS

Parts of Flowers

- The pistil has three parts: stigma, style, and ovary.
- The stigma is the sticky surface at the top of the pistil; it traps and holds the pollen.
- The style is the tube-like structure that holds up the stigma.
- The style leads down to the ovary that contains the ovules.


STAMEN
ANTHER
FILAMENT
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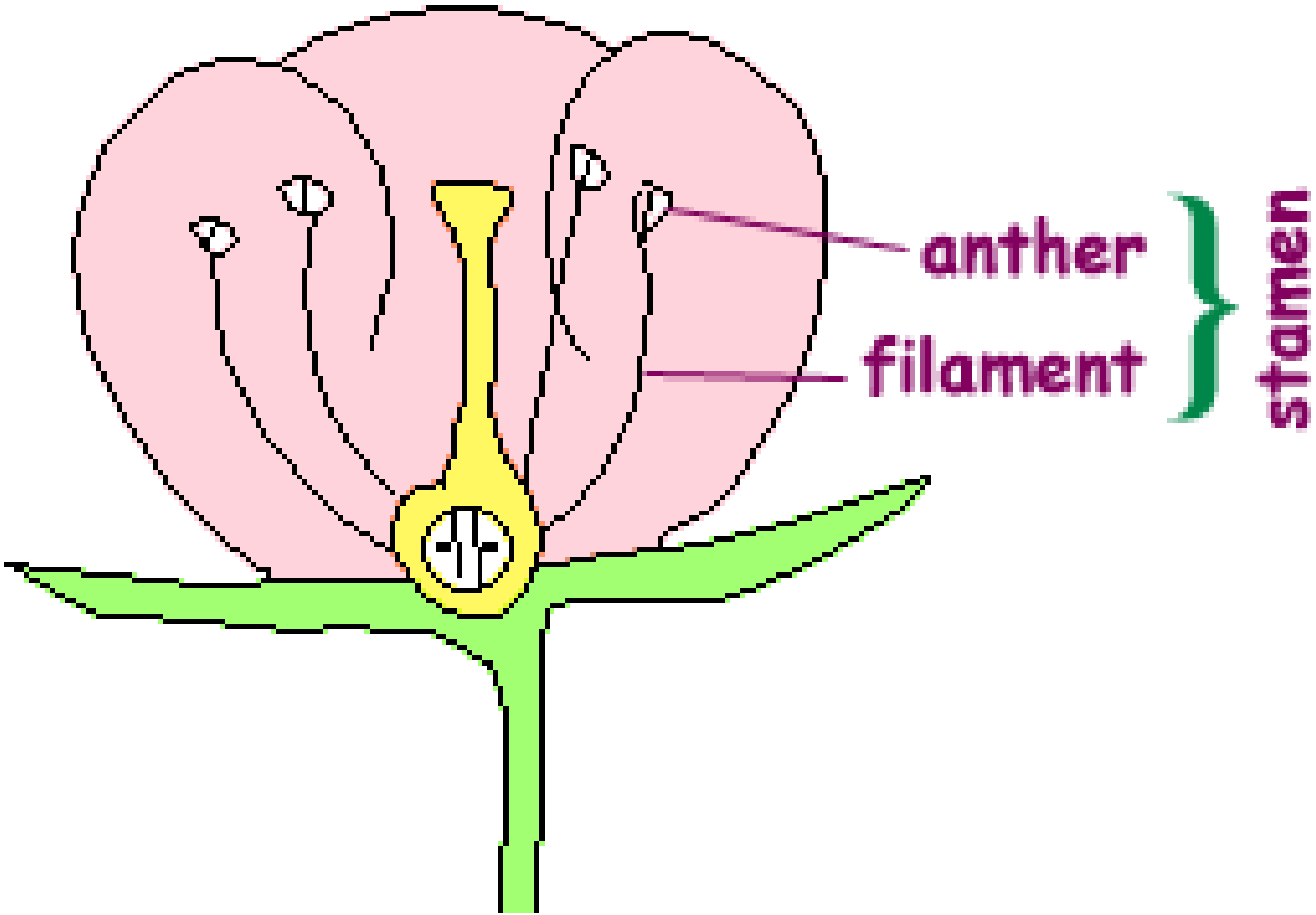
STYLE
PISTIL
OVARY
SEPAL
OVULE
PETAL
RECEPTACLE


anther
filament
stamen

Classification of FLOWERS:

- Complete: flowers possessing petals and sepals
- Incomplete: flowers possessing either petals or sepals
- Perfect: flowers containing both pistil and stamen
- Imperfect: flowers containing either the pistil or stamen

Parts of Flowers

- A complete flower has a stamen, a pistil, petals, and sepals.
- An incomplete flower is missing one of the four major parts of the flower, the stamen, pistil, petals, or sepals.

Parts of Flowers

- **Flowers can have either all male parts, all female parts, or a combination.**
- **Flowers with all male or all female parts are called imperfect (cucumbers, pumpkin and melons).**
- **Flowers that have both male and female parts are called perfect (roses, lilies, dandelion).**

Students are to illustrate the following:

- Complete/ Perfect Flower
- Incomplete/Perfect Flower
- Complete/ Imperfect Flower
- Incomplete/ Imperfect Flower

Types of Flowers:

- As previously mentioned, there are plants which bear only male flowers (staminate plants) or bear only female flowers (pistillate plants).
- Species in which the sexes are separated into staminate and pistillate plants are called **dioecious**.
- Most holly trees and pistachio trees are dioecious; therefore, to obtain berries, it is necessary to have female and male trees.

Types of Flowers:

- **Pistillate** (female) flowers are those which possess a functional pistil(s) but lack stamens.
- **Staminate** (male) flowers contain stamens but no pistils.
- Because cross-fertilization combines different genetic material and produces stronger seed, cross-pollinated plants are usually more successful than self-pollinated plants.
- Consequently, more plants reproduce by cross-pollination than self-pollination.

Types of Flowers:

- **Monoecious** plants are those which have separate male and female flowers on the same plant. Corn plants and pecan trees are examples.
- Some plants bear only male flowers at the beginning of the growing season, but later develop flowers of both sexes; examples are cucumbers and squash.

Floral Formulas

- A floral formula consists of five symbols indicating from left to right:
- Floral Symmetry
- Number of Sepals
- Number of Petals
- Number of Stamens
- Number of Carpels

Types of Inflorescences:

- Some plants bear only one flower per stem and are called solitary flowers.
- Other plants produce an **inflorescence**, a term which refers to a cluster of flowers and how they are arranged on a floral stem.
- Most inflorescences may be classified into two groups, racemes and cymes.

Floral Formulas

- Floral formulas are useful tools for remembering characteristics of the various angiosperm families. Their construction requires careful observation of individual flowers and of variation among the flowers of the same or different individuals.

Floral Formula Symbol 1

- The first symbol in a floral formula describes the symmetry of a flower.

  - **(*) Radial symmetry** – Divisible into equal halves by two or more planes of symmetry.
  - **(x) Bilateral symmetry** – Divisible into equal halves by only one plane of symmetry.
  - **($) Asymmetrical** – Flower lacking a plane of symmetry, neither radial or bilateral.

Floral Formula Symbol 2

- The second major symbol in the floral formula is the number of sepals, with “K” representing “calyx”. Thus, K5 would mean a calyx of five sepals.

Floral Formula Symbol 3

- The third symbol is the number of petals, with “C” representing “corolla”. Thus, C5 means a corolla of 5 petals.

Floral Formula Symbol 4

- The fourth symbol in the floral formula is the number of stamens (androecial items), with “A” representing “androecium”. **A∞** (the symbol for infinity) indicates numerous stamens and is used when stamens number **more than twelve** in a flower. **A10** would indicate 10 stamens.

Floral Formula Symbol 5

- The fifth symbol in a floral formula indicates the number of carpels, with “G” representing “gynoecium”. Thus, G10 would describe a gynoecium of ten carpels.

Basic Floral Formula

- *, K5, C5, A∞, G10

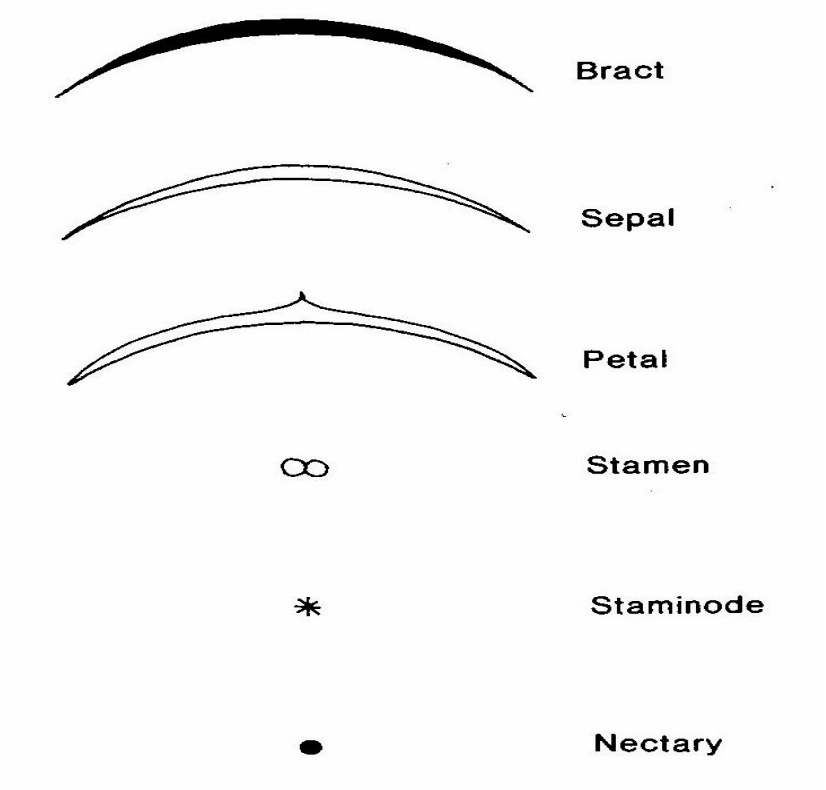
- Radial symmetry (*),
- 5 sepals in the calyx (K5)
- 5 petals in the corolla (C5)
- Numerous (12 or more) stamens (A∞)
- 10 carpels (G10)

Floral Formulas

- At the end of the floral formula, the fruit type is often listed.

- **<u>Example</u>**:
- *, K5, C5, A∞, G10, **capsule**

Floral Diagram Symbols I



Types of Inflorescences:

- In the **racemose** group, the florets, which are individual flowers in an inflorescence, bloom from the bottom of the stem and progress toward the top.
- Some examples of racemose inflorescence include spike, raceme, corymb, umbel, and head.

Types of Inflorescences:

- A spike is an inflorescence in which many stemless florets are attached to an elongated flower stem or peduncle, an example being gladiolus.
- A raceme is similar to a spike except the florets are borne on small stems attached to the peduncle.

Types of Inflorescence (Flowers)

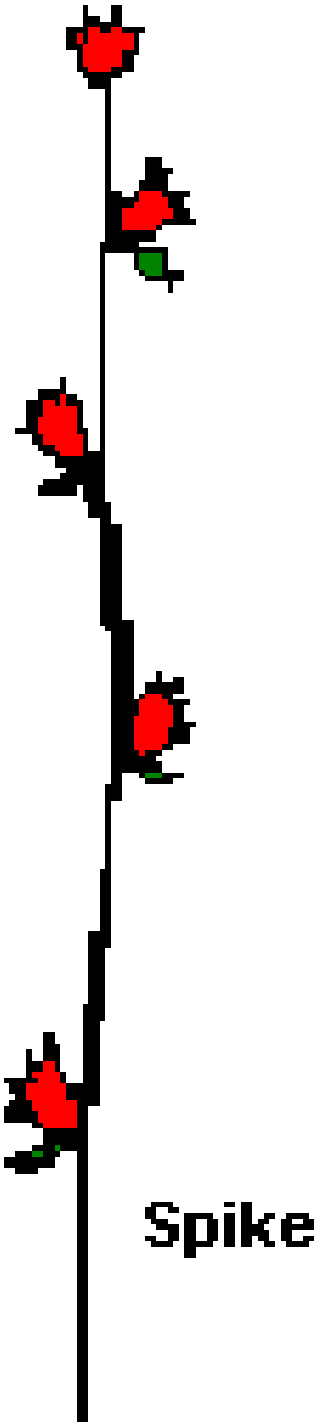
- **Raceme** – inflorescence with the flowers single on pedicels (stems) arranged along an elongated stem (rachis – this is the stem that is between the flowers) – alternate – oldest are at the bottom and the youngest are at the top. Ex: snapdragon, foxglove

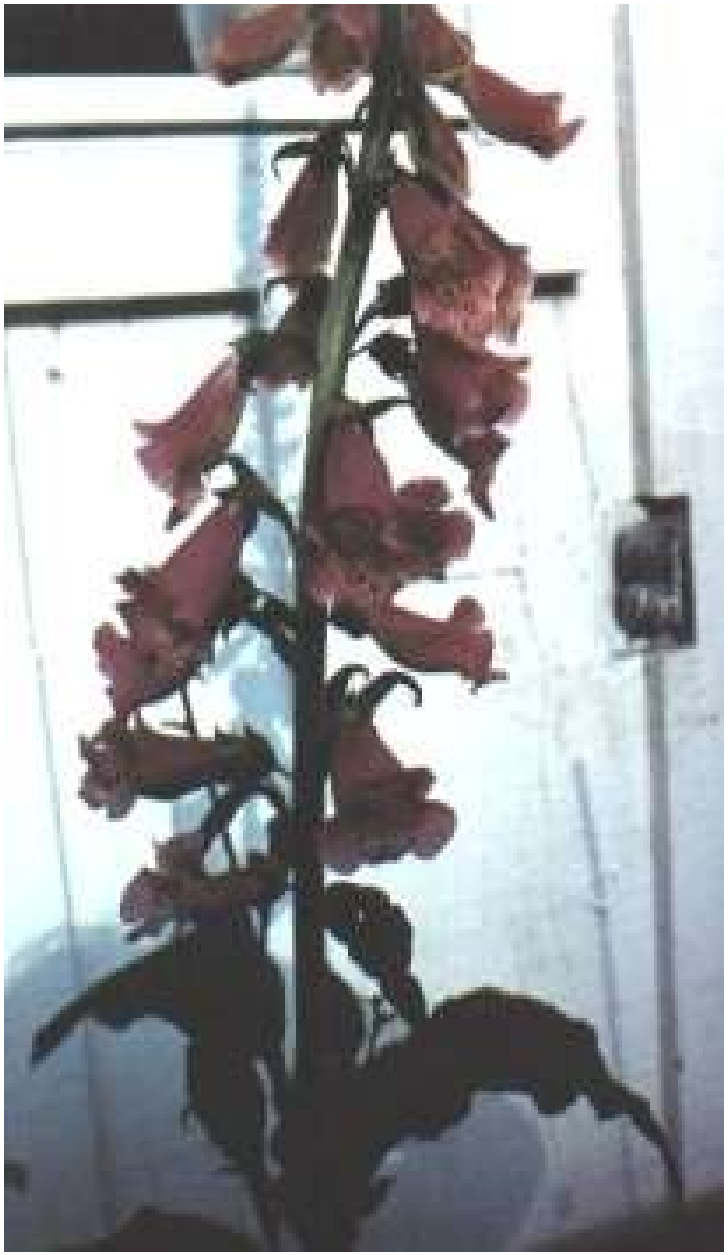
Types of Inflorescence (Flowers)

- **Spike** – type of inflorescence with the flowers sessile (without a stalk) along the rachis. Ex: gladiolus
- **Head** – a dense cluster of sessile or nearly sessile (no stalk) flowers on a very short rachis. Ex: sunflower, clover

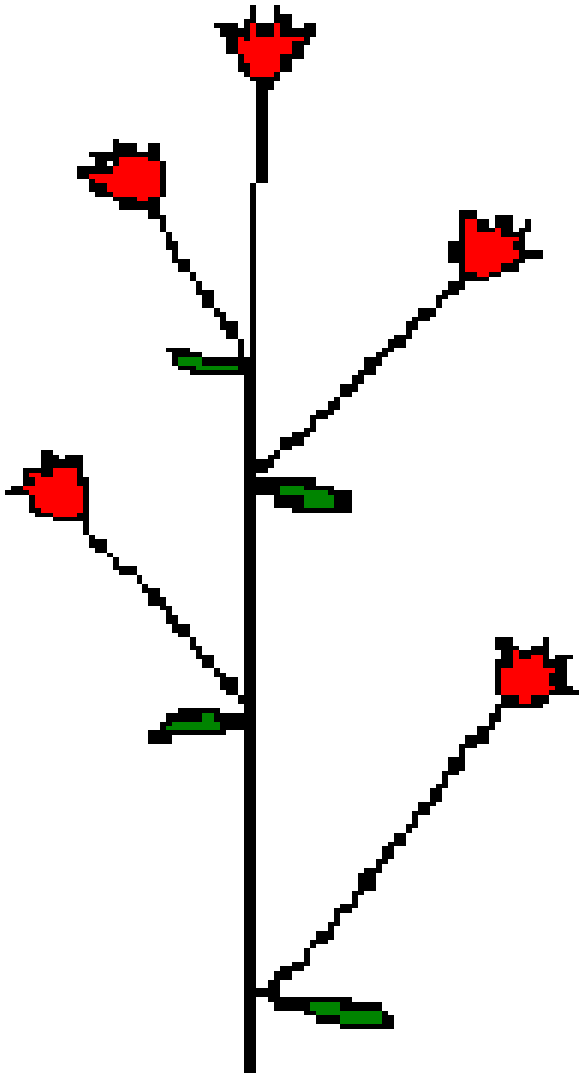
Spike

Gladiolus



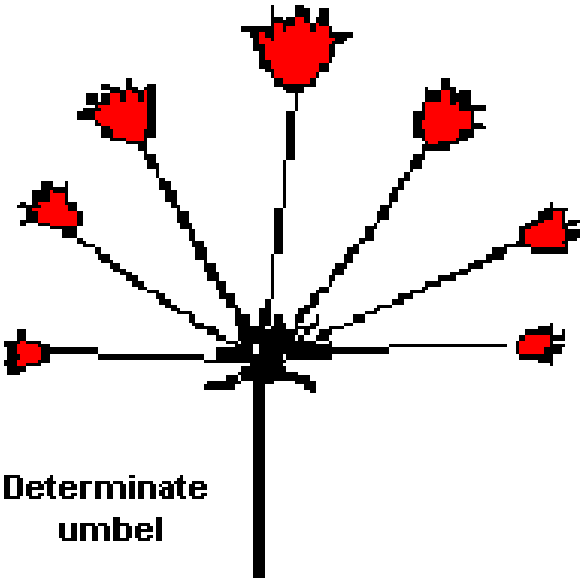


Foxglove

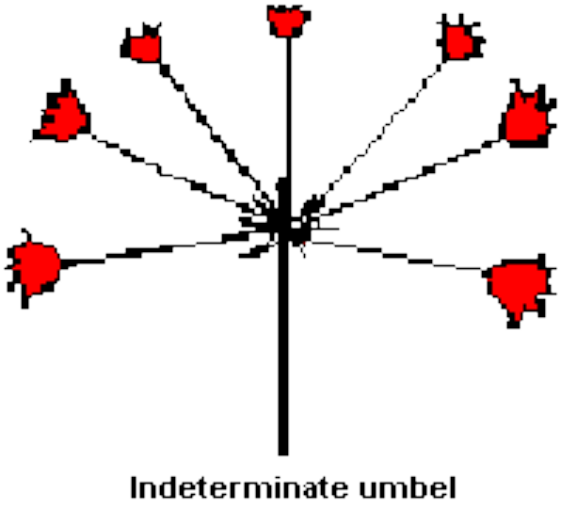


Raceme

Snapdragon



Dill



Umbel

Clover

Sunflower

Head

Types of Inflorescence (Flowers)

- **Panicle** – inflorescence with two or more flowers on each branch which are attached to a rachis (elongated stem). Ex: wild oats, downy brome
- **Corymb** – is made up of florets whose stalks and pedicles are arranged at random along the stalk in such a way that the florets create a flat, round top. Ex: yarrow

Types of Inflorescences:

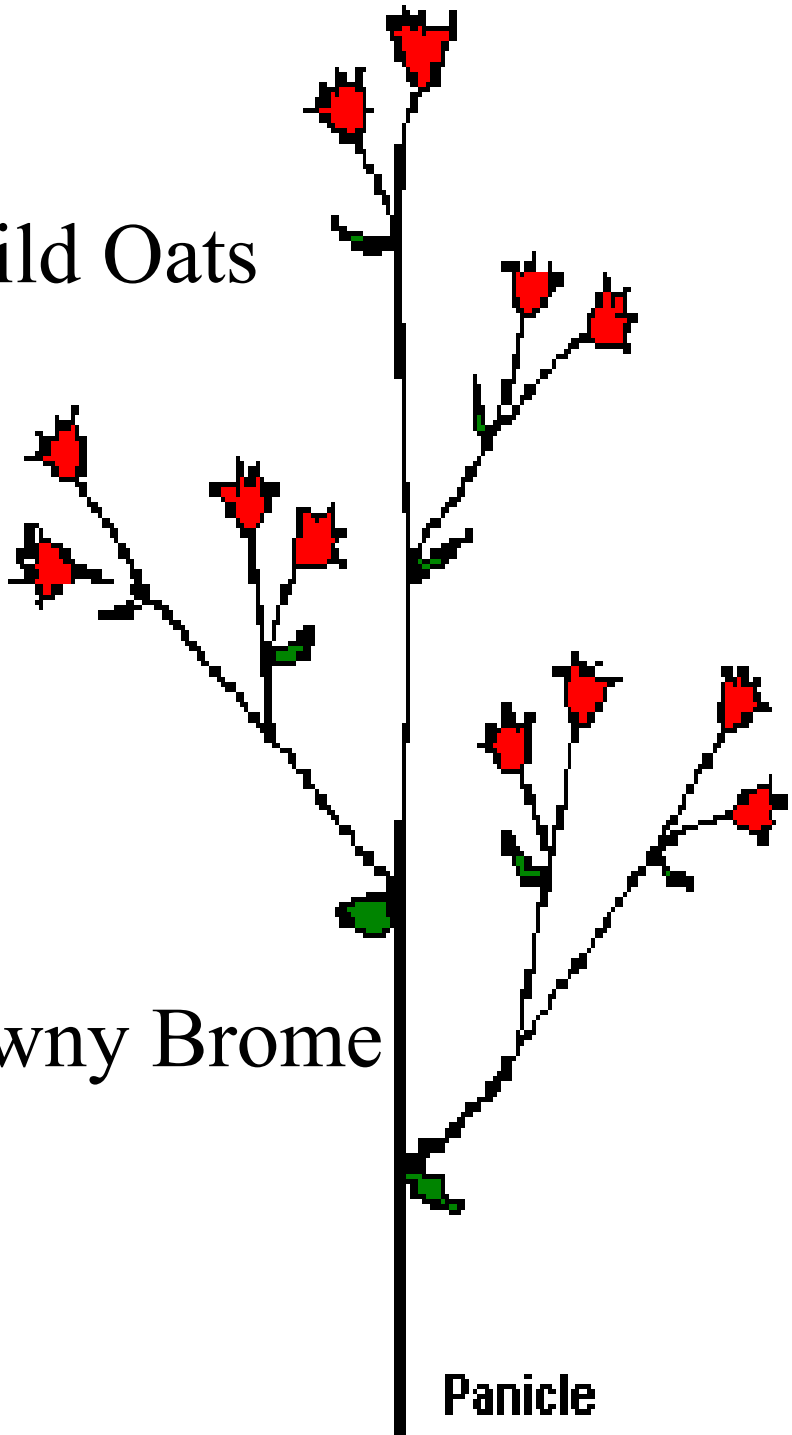
- A corymb is made up of flowers that appear to be at the same level.the younger ones placed towards the center,
- As in mustard
- Yarrow has a corymb inflorescence.
- An umbel is similar except that the pedicels all arise from one point on the peduncle.

Types of Inflorescences:

- Dill has an umbel inflorescence.
- A head or composite inflorescence is made up of numerous stemless florets which is characteristic of daisy inflorescence.
- In the **cyme** group, the top floret opens first and blooms downward along the peduncle.

Wild Oats

Downy Brome



Panicle

Corymb

CYMOSE INFLORESCENCE

- In the **cyme** group, the top floret opens first and blooms downward along the peduncle.
- OR A flower cluster in which the central flowers open first.

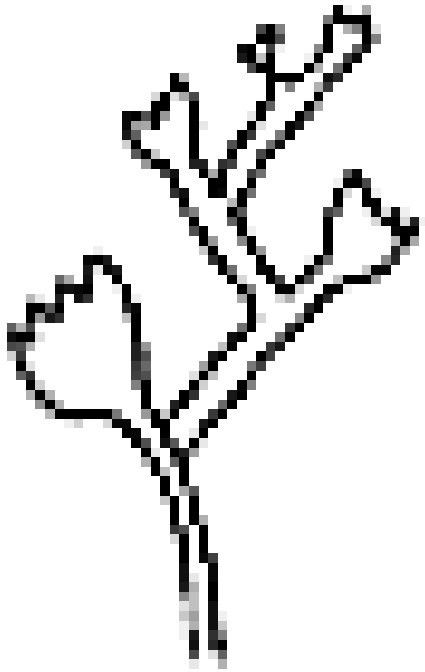
Types of Inflorescences:

- A dischasium cyme has florets opposite each other along the peduncle.

- A helicoid cyme is one in which the lower florets are all on the same side of the peduncle, examples being freesia and statice inflorescences.

- Scorpoid Cyme: A determinate inflorescence with the lateral flowers born alternately on opposite sides

Helicoid cyme

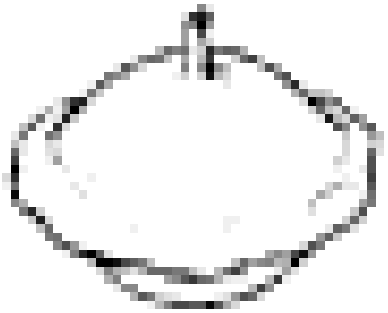


Scorpioid cyme

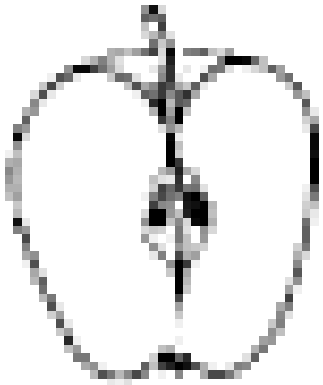
Types of Fruit

- Fruits can be classified as simple fruits, aggregate fruits or multiple fruits.
- Simple fruits are those which develop from a single ovary.
- These include cherries and peaches (drupe), pears and apples (pome), and tomatoes (berries).

Berry
of tomato

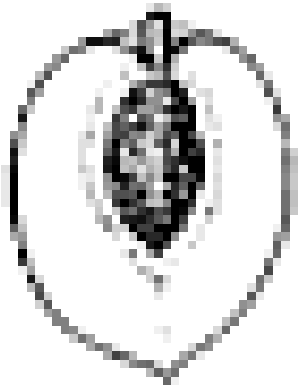


Pepo
of squash



Pome
of apple

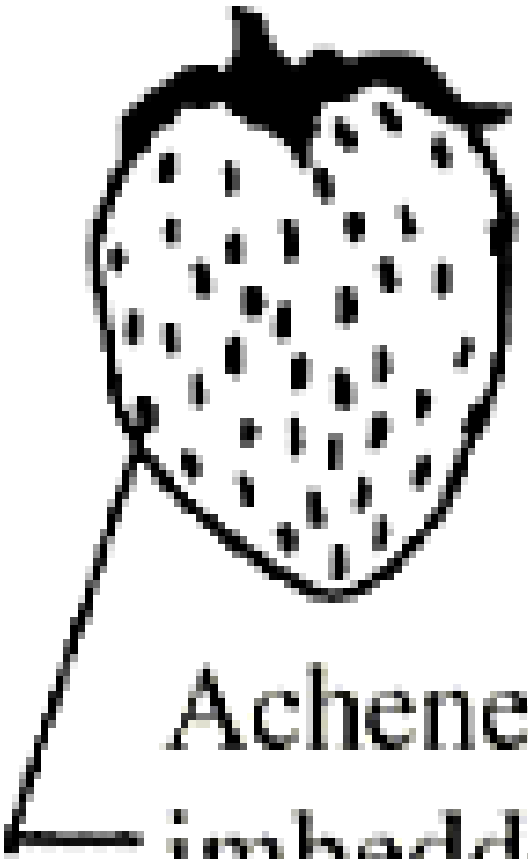
Hesperidium
of orange



Stone or drupe
of peach

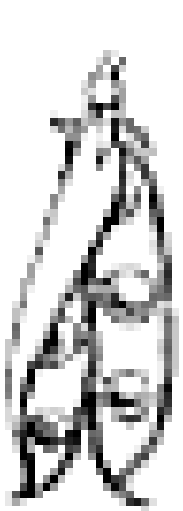
Aggregate Fruit

Strawberry

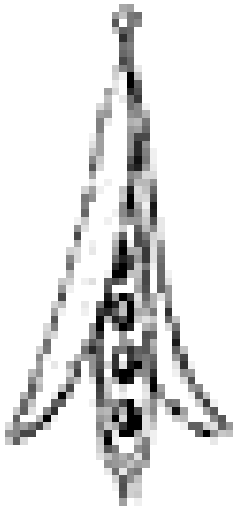


Types of Fruit

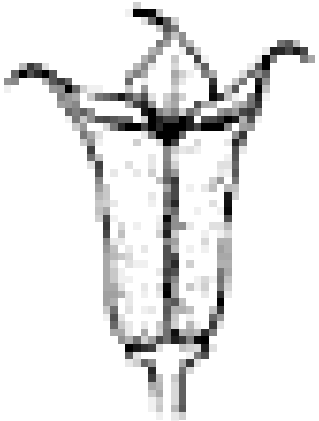
- Tomatoes are a botanical fruit since they develop from the flower, as do squash, cucumbers, and eggplant.
- All of these fruits develop from a single ovary.
- Other types of simple fruit are dry.
- The fruit wall becomes papery or leathery and hard.
- Examples are peanut (legumes), poppy (capsule), maple (samara), and walnut (nut).



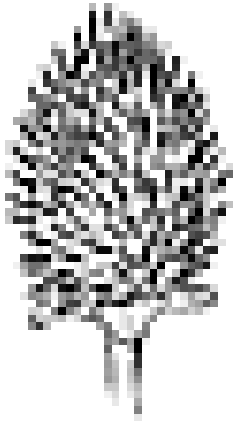
Pod
of pea



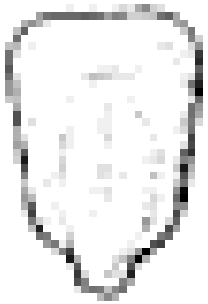
Silique
of crucifer



Follicle
of larkspur



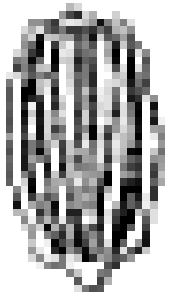
Capsule of
jimson weed



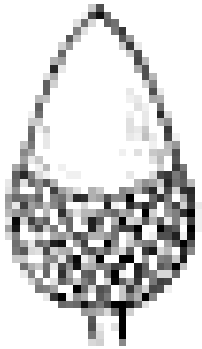
Caryopsis
of corn

Achene
of sunflowe

Samara
of maple



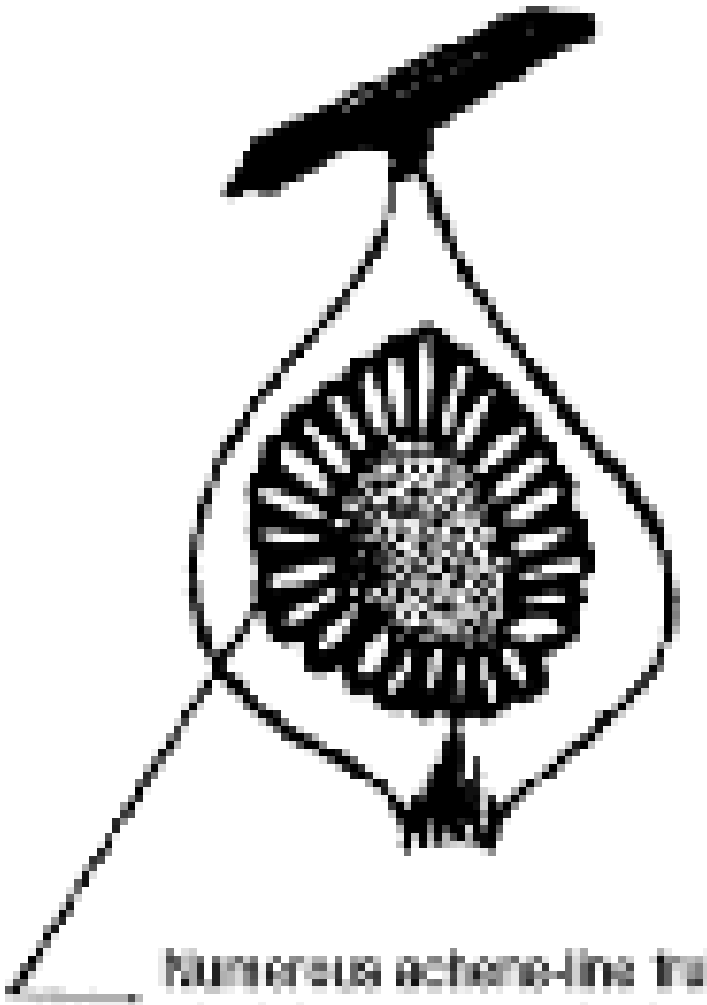
Schizocarp
of carrot



Nut
of oak

Multiple Fruit

Fig



Numerous achene-like fruits develop from flowers which bloom within fleshy covering

PLACENTATION IN PLANTS

- In flowering plants, placentation occurs where the ovules are attached inside the ovary. The ovules inside a flower's ovary (which later become the seeds inside a fruit) are attached via funiculi, the plant equivalent of an umbilical cord. The part of the ovary where the funiculus attaches is referred to as placenta

TYPES OF PLACENTATION

- In botany, the term placentation most commonly refers to the arrangement of placentas inside a flower or fruit. Plant placentation types include:
- **Basal placentation**: The placenta is at the base (bottom) of the ovary.
- **Apical placentation**: The placenta is at the apex (top) of the ovary.
- **Parietal placentation**: The placentas are in the ovary wall within a non-sectioned ovary.
- **Axile placentation**: The ovary is sectioned by radial spokes with placentas in separate locules.
- **Free central placentation**: The placentas are in a central column within a non-sectioned ovary.