

Plant Parts and Terminology

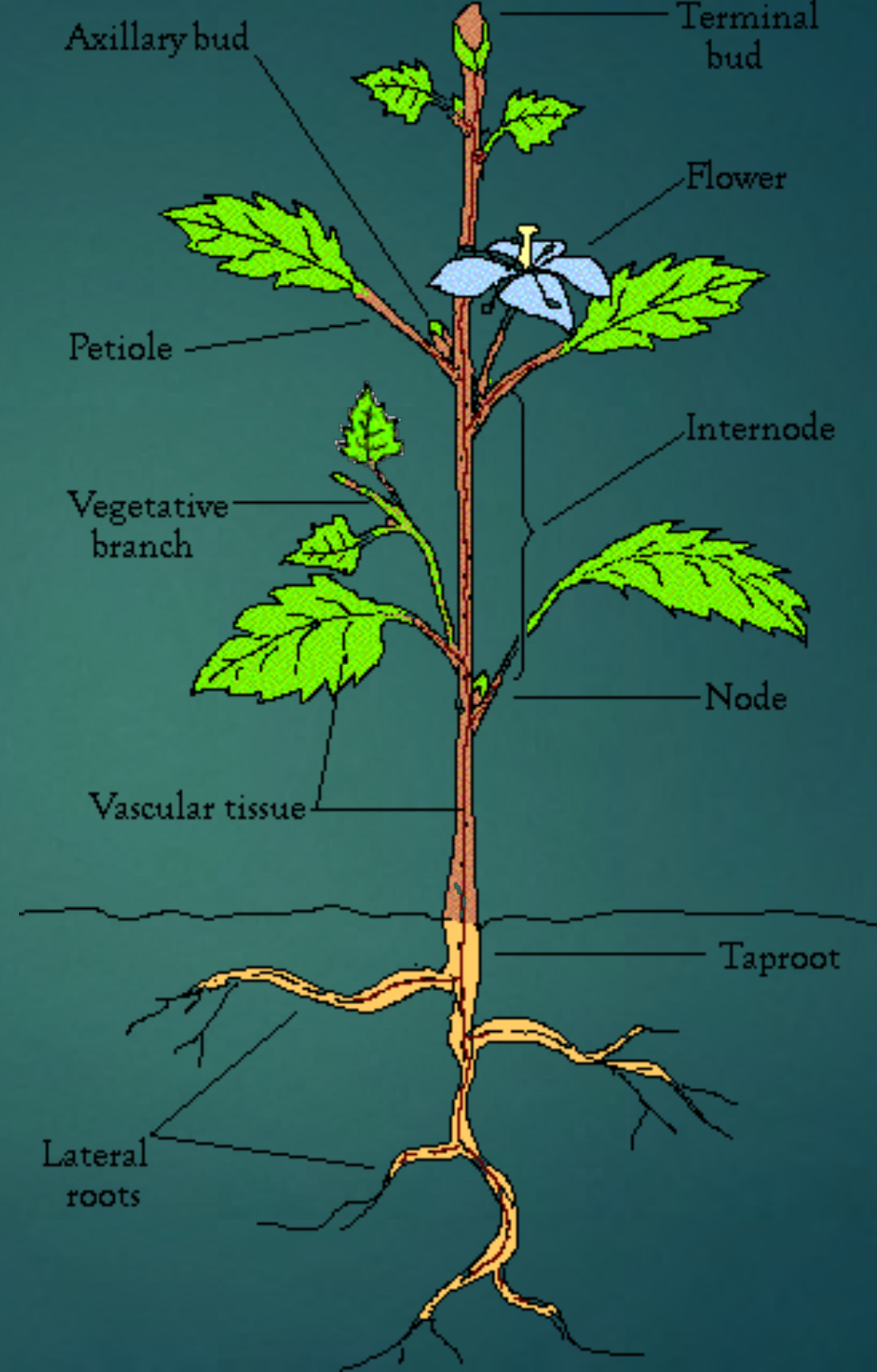
ANCESTRAL LANDS JULY 2019

Plant Life Cycles

- ▶ Annual: plants that complete their entire life cycle in one year
le: *Bromus tectorum*, *Cryptantha spp*, *Helianthus annua*
- ▶ Biennial: plants that complete their life cycle in all or part of two years, typically first year being a basal rosette and fruiting the next
le: *Centaurea diffusa*, *Onopordum acanthium*
- ▶ Perennial: plants that live longer than two years
 - ▶ Herbaceous perennials will have fleshy stems that die back
le: *Penstemon palmerii*, *Quercus spp*

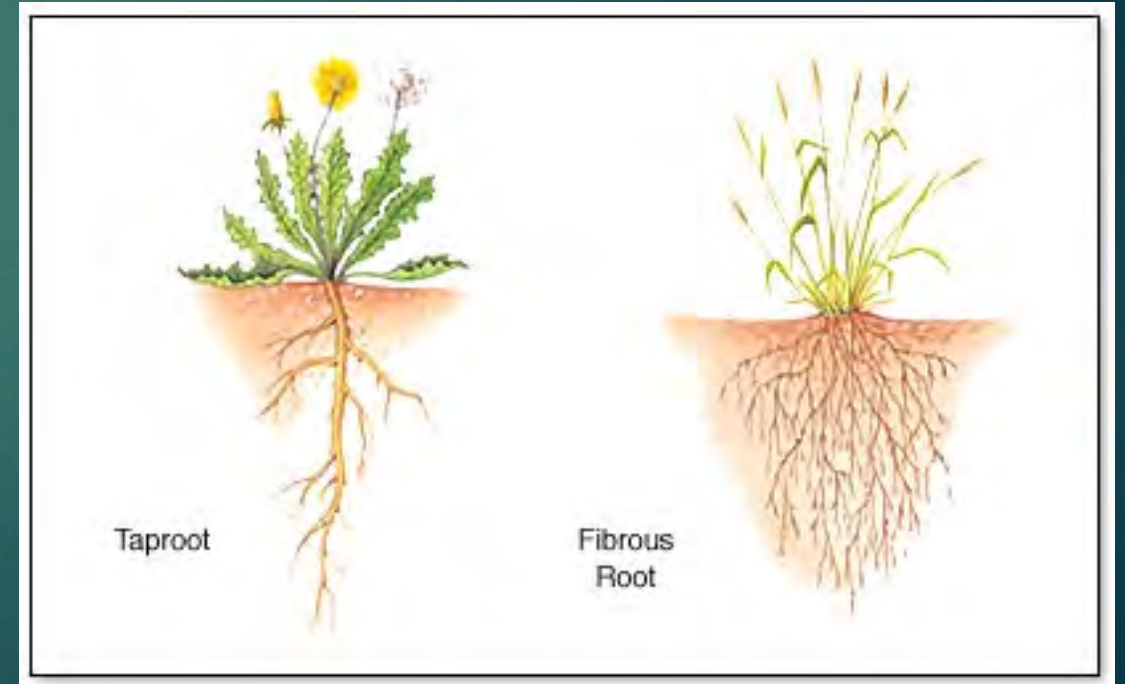
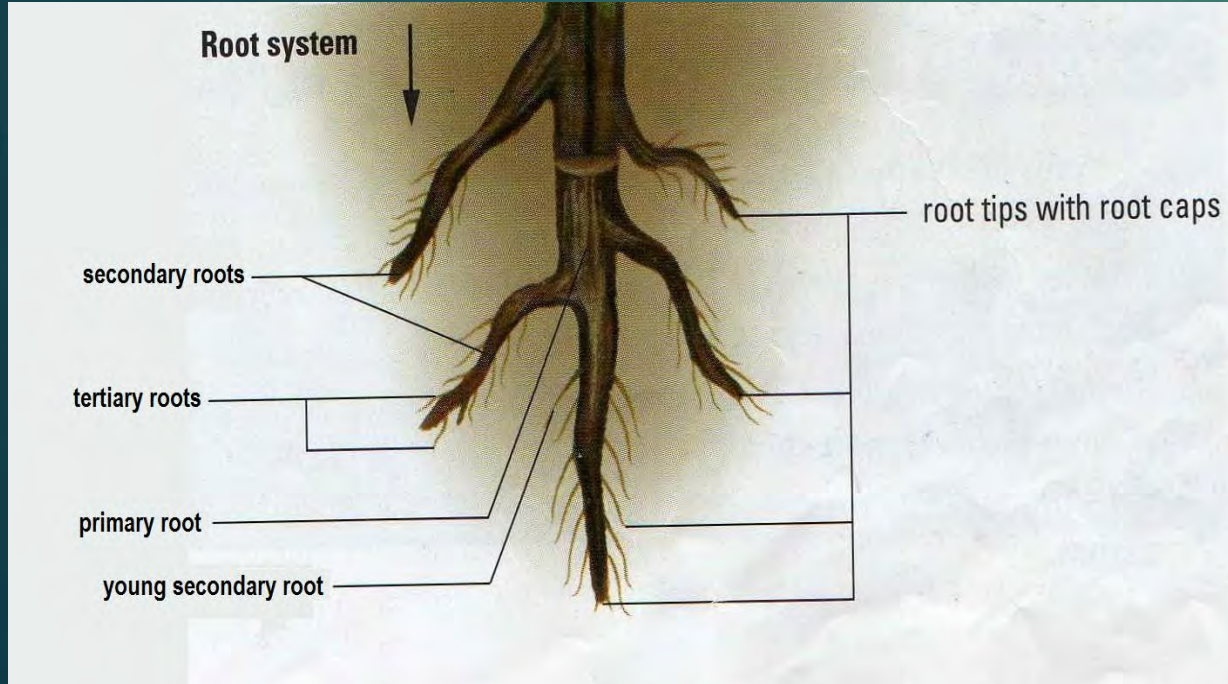
Plant Structure

- ▶ Roots
- ▶ Stems
- ▶ Leaves
- ▶ Flowers



Roots

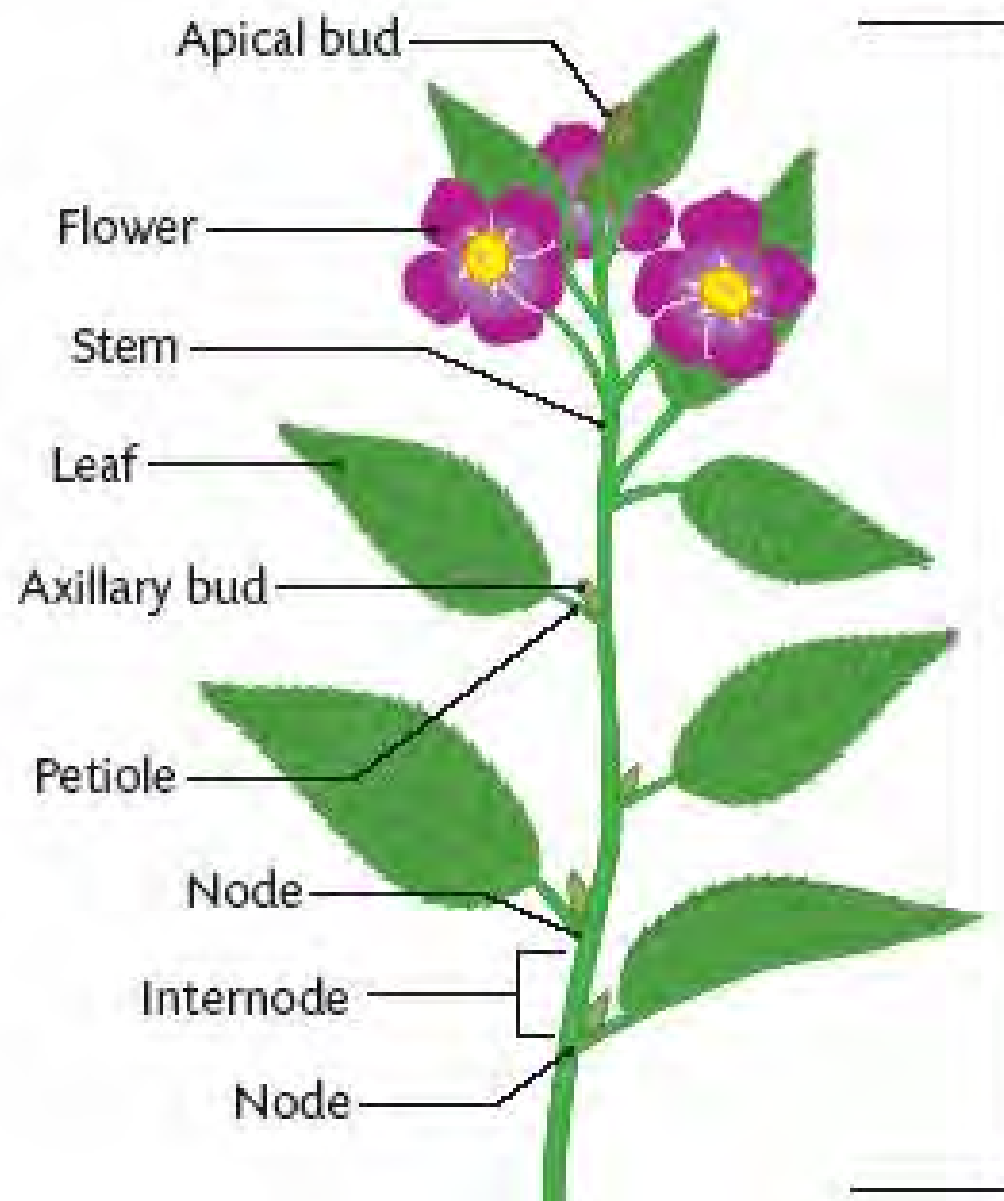
- ▶ Functions:
 - ▶ To absorb water and minerals
 - ▶ To anchor the plant and provide support for stem
 - ▶ To store products of photosynthesis



Stems

- ▶ Functions:
 - ▶ Gives plants their upright form
 - ▶ Supports buds and leaves
 - ▶ Moves water, nutrients and sugars from leaves to roots and vice versa





Modified Stems



Bulb-A thick storage organ, usually underground, consisting of a stem and leaf bases

le: Allium



Crown

le: Fragaria



Stolon- a prostrate or horizontal stem

le: Bermuda grass



Rhizome- a below
ground horizontal stem

le: Bamboo

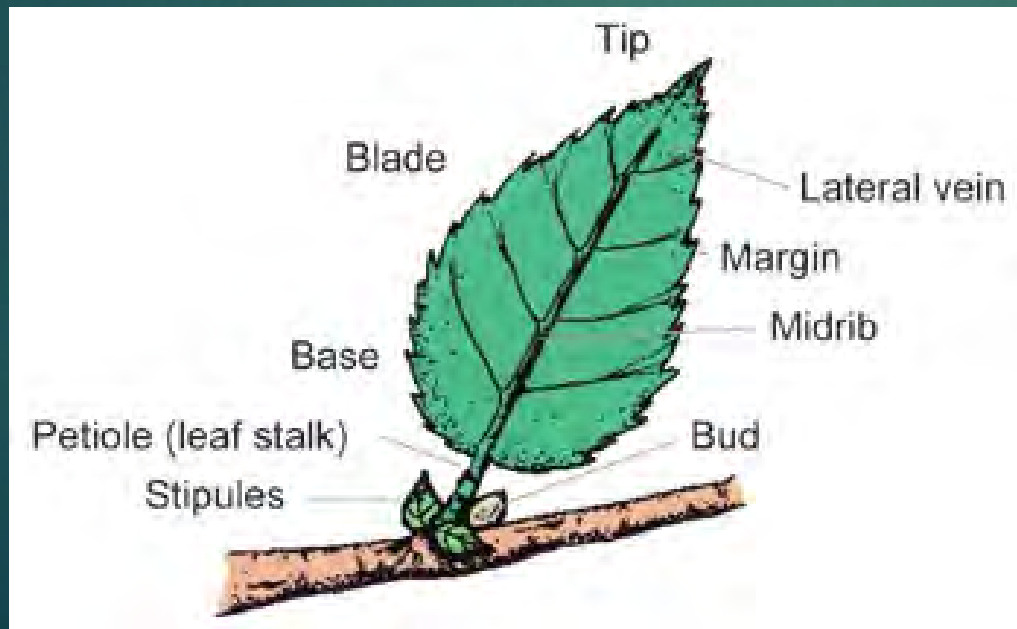


Twining

le: Vitis

Leaves

- ▶ Functions:
 - ▶ Capture and conserve light energy through the process of photosynthesis
 - ▶ Take up CO₂ for photosynthesis and release oxygen for use in cellular respiration
 - ▶ Control water use and leaf temperature through transpiration



Leaf arrangement on stem



Alternate



Opposite



Whorled- borne at the same level on an axis



Rosette- a basal cluster of leaves

Leaf arrangement on the petiole



Simple- undivided
or unsegmented



Pinnately Compound- a compound leaf
with leaflets arranged on each side of a
common petiole or axis



Palmately Compound- radiating out from a central point resembling spread out fingers pointing away from the palm



Bipinnately Compound- doubly pinnate



Trifoliate- divided into 3 leaflets

Leaf Shapes



Oval



Linear- very narrow
in relation to its
length, with the
sides mostly parallel



Cordate- heart
shaped



Deltoid-
resembling the
shape of an
equilateral
triangle



Obovate- having
the widest
segment above
the center



Lanceolate- spear
head shaped



Perfoliate- with its base wrapped around the stem



Sagittate- narrow and pointed but gradually enlarged at the base into two straight lobes directed downwards



Rotund



Elliptic- ellipse shaped



Falcate- curved like the blade of a scythe



Hastate- the basal lobes pointing outwards

Leaf apices/bases



Acuminate- tapering to a point



Obtuse- blunt or rounded



Emarginate- notched at the apex



Cuneate- wedge-shaped, with straight sides converging at base



Truncate- cut off squarely



Cordate- heart shaped

Leaf Margins



Entire- not divided



Lobed- incisions, usually rounded



Serrate- toothed with assymetrical teeth



Undulate- wavy



Crenate- blunt or rounded teeth



Pinnatifid- pinnately divided, but not all the way down to the central axis

Leaf Surfaces



Glaucus: covered with a whitish powdery/waxy coating



Farinose: covered with a meal-like powder or minute particles



Glabrous: without pubescence of any kind



Punctate: dotted
with small glands or
pits



Pappilose: with
minute
protuberances



Pubescent: with a
hairy surface

Common types of Pubescence



Villous: covered with long soft straight hairs



Tomentose: covered in short, dense matted hairs



Strigose: covered in appressed, short, straight hairs



Scabrous: covered in short stiff protrusions, rough to the touch



Pilose: covered in long soft hairs



Stellate: covered in star shaped hairs

Leaf Venation



Parallel (Monocots)



Net Veined/Reticulated
(Dicots)

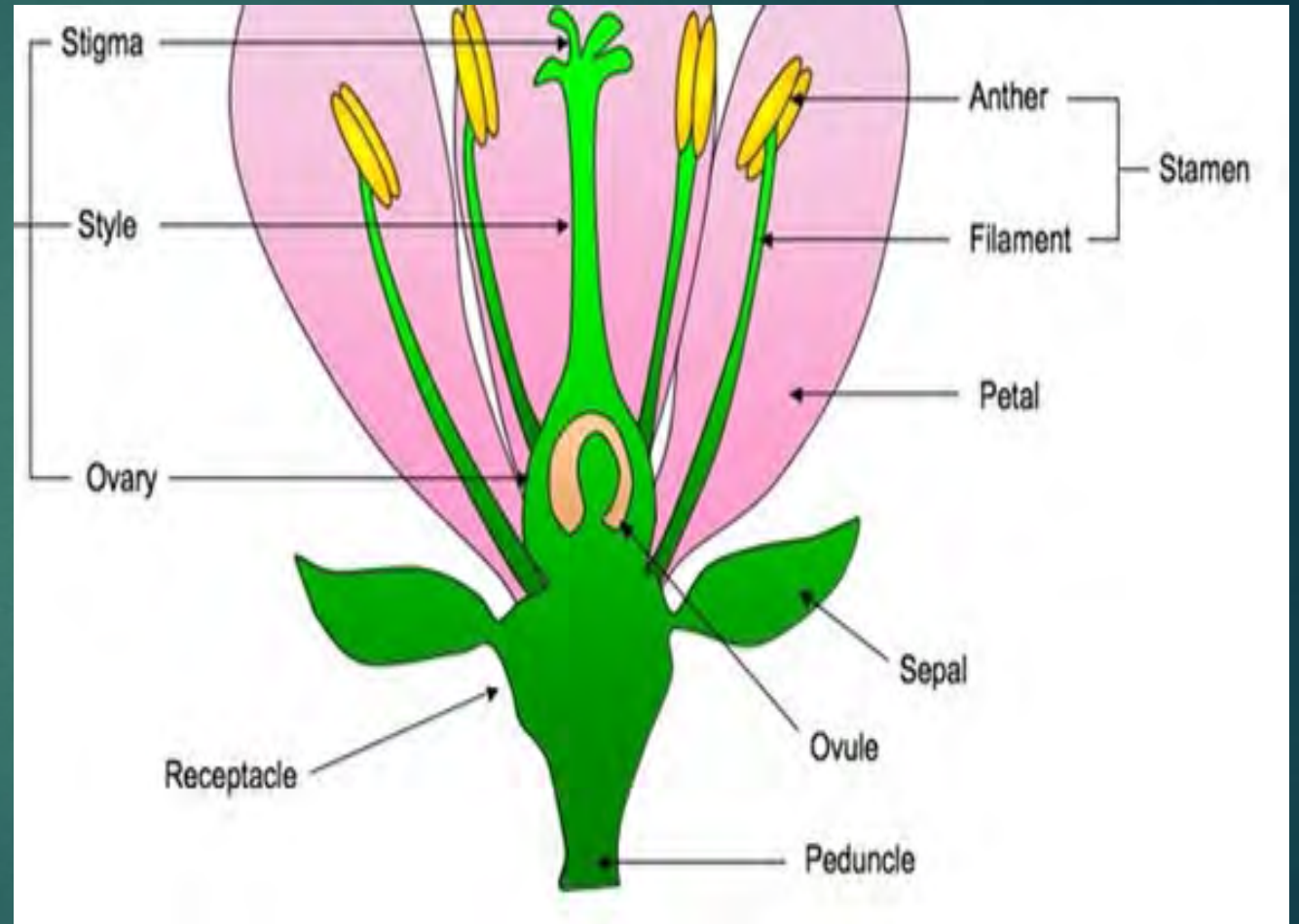
Flowers

- ▶ Functions:
 - ▶ Reproductive organs of the plant
 - ▶ Attract pollinators (fragrance, color)



Flower Parts

- Pistil: Central female organ of the flower
- Stamen: Male flower organ
- Petal: colorful structures composing the "flower", collectively called the corolla
- Sepal: Protective leaf like structures protecting the flower bud, collectively called the calyx
- Receptacle: base of the flower
- Peduncle/Pedicel: stalk of a solitary flower or inflorescence



Terms for Flowers

- ▶ Complete : Flower containing sepals, petals, stamens, and pistil
- ▶ Incomplete: Flower lacking sepals, petals, stamens, and/or pistils
- ▶ Perfect: Flowers containing male AND female parts
- ▶ Imperfect: Flowers that lack male OR female parts
- ▶ Pistillate: Flowers containing only female parts
- ▶ Staminate: Flowers containing only male parts

Referring to the entire plant:

- ▶ Monoecious: Plants with separate male flowers and female flowers on the same plant
- ▶ Dioecious: Plants with male flowers and female flowers on separate plants

Common Types of Inflorescences

Inflorescence: how flower(s) are arranged on a stem



Spike- unbranched, flowers without stalks



Raceme- the main axis produces a series of flowers on lateral stalks, the oldest at the base and the youngest at the top



Panicle- flowers are borne on branches of the main axis or on further branches of these



Umbel- individual flower stalks arise in a cluster at the top of the peduncle and are of about equal length



Cyme- the main axis and all lateral branches end in a flower

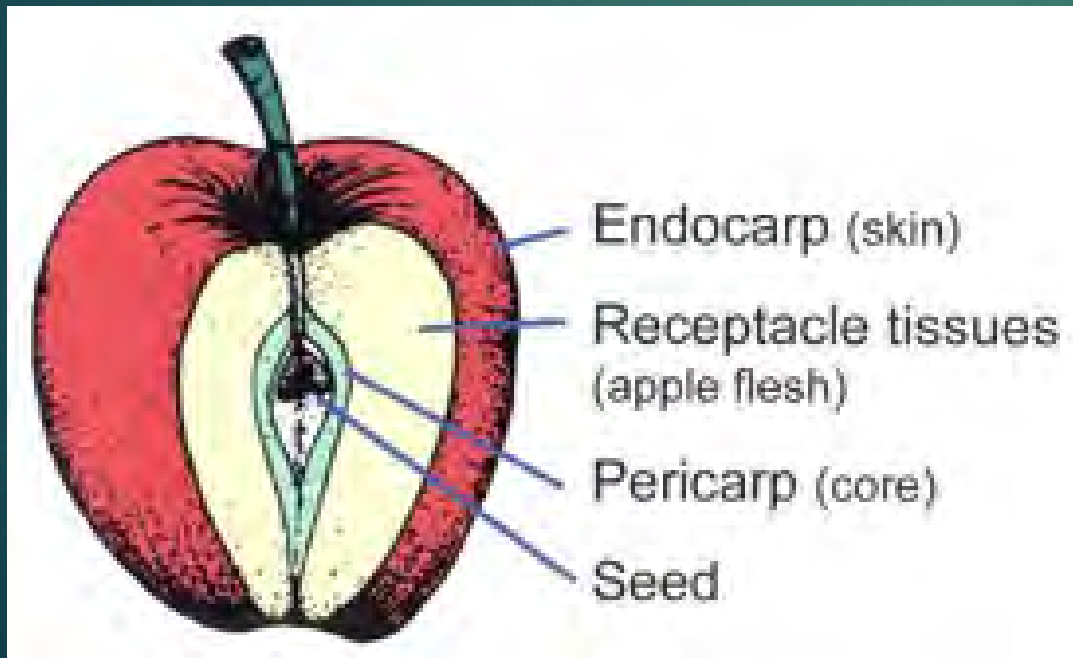


Head- dense cluster of sessile, or almost sessile, flowers or florets

Fruit

Fruit evolves from the maturing ovary following pollination and fertilization. Fruits contain one or more seeds.

Fruit consists of carpels where the ovules (seeds) develop and the ovary wall or pericarp, which may be fleshy (as in apples) or dry and hard (as in an acorn)



Common Fruit Types



Drupe: Fruit with a single seed enclosed in a hard pit



Achene: Simple, one-seeded, thin-wall fruit with seed loosely attached to ovary wall



Nut: One-seeded fruit with hard stony shell surrounding the seed



Silique/Silicle: Fruits from two carpels with a central partition to which the seeds are attached. Splits to expose seeds along central membrane





Follicle: Fruit from a single carpel that splits along one suture only



Legume: Fruit from a single carpel usually splits along two sutures. Found in members of the pea family.



Capsule: Fruit from two or more carpels, each with many seeds, splitting along or between carpel lines



Berry: Fruit develops from the ovary only. Pulp fruit from one or more carpels that develops few to many seeds, inner and outer walls fleshy