

The flowering plants:

The dominant plants of the earth today are the flowering plants. **Flowering plants are called Angiosperms (Angio=covered seed), plants that have seeds enclosed in a fruit that develops from an ovary ' there are two classes of seeds are dicots and monocots.**

Origin of cultivated plants:

The first necessity of human beings is food. The primitive man obtained his food from wild plants. But with the advancement of civilization, the man started cultivation of plants to meet the requirements of his food. Cultivation of useful crops was perhaps first started on the lower slopes of Zagros Mountains and the fertile crescent of the Tigris and Euphrates valleys in northern Iraq and in the Tehuacan valley of Mexico, as these regions had a large number of ancient settlements.

Plant classification:

A- Economic plants :

- 1- Field crops.
- 2- Vegetables.
- 3- Fruits.
- 4- Oil crops.
- 5- Ornamental plants.
- 6- Medicinal plants.

B- Habit (morphological description) :

- 1- Herbs.
- 2- Shrubs.
- 3- Trees.

C- Life cycles (duration) :

- 1- Annuals.
- 2- Biennials.
- 3- Perennials.

Annuals - Plants that perform their entire life cycle from seed to flower to seed within a single growing season. All roots, stems and leaves of the plant die annually. (E.g. wheat, rice, corn, peas)

Biennials - Plants which require two years to complete their life cycle. First season growth results in a small rosette of leaves near the soil surface. During the second season's growth stem elongation, flowering and seed formation occur followed by the entire plant's death (e.g. carrot, onion)

Perennials - Plants that persist for many growing seasons. Generally the top portion of the plant dies back each winter and regrows the following spring from the same root system (e.g. Purple Coneflower, Bermuda grass, and Alfalfa).

(Annuals, grow, flower, pollinate then die all in one season.)

Biennials, grow, flower, pollinate then die in two years.

Perennials, grow, flower, pollinate all in a season but repeat the process every year.)

D- Types :

- 1- Cultivated plants (cultivation plants).
- 2- Wild plants
- 3- Weed plants.

E- Systematic (Botanical classification) :

- **Kingdom:** Plant kingdom (Plantae)

- **Division:** Spermatophyta

-**Sub-division:** Angiospermae

-**Class:** Dicotyledons or Monocotyledon

-**Order:**

-**Family:**

-**Genus:**

-**Species:** Genus + species

-**Variety:** Genus + species +var.

Classification of crop plants:

Crop plants may be classified on the basis of a morphological similarity of plant parts. From the basis of use, but some crops have several different uses.

Agronomic classification:

1- Cereal or grain crops :

Include wheat, barley, rice and maize.

2- Legume crops (Pulses):

Include peanuts, beans, cow peas, soybeans, chickpeas, broad beans and lentils.

3- Forage crops :

Forage refers to vegetable matter, fresh or preserved, utilized as feed for animals. Include grasses, legumes, crucifers and other crops cultivated and used for hay, pasture fodder, silage.

4- Root crops :

Include sugar beet, carrot.

5- Fiber crops :

Include cotton, flax.

6- Tuber crops :

Include potato, tuber is not a root it is a short thickened underground stem.

7- Sugar crops :

Include sugar beet and sugarcane.

8- Drug crops :

Include tobacco and castor oil.

9- Oil crops :

Include flax, soybean, peanuts, sunflower, safflower, sesame, Castor bean, also cotton seed (is an important source of oil and fiber) and corn.

10- Rubber crops: guayule.

11- Vegetable crops: potatoes, carrots.

Seeds:

Seed is developed from an ovule and derived sexual function (fertilization), consists of three main parts are: 1- embryo (Zygote) 2- food storage tissue (endosperm), 3- covered by a protective seed coat (testa).

1- Embryo (zygote):

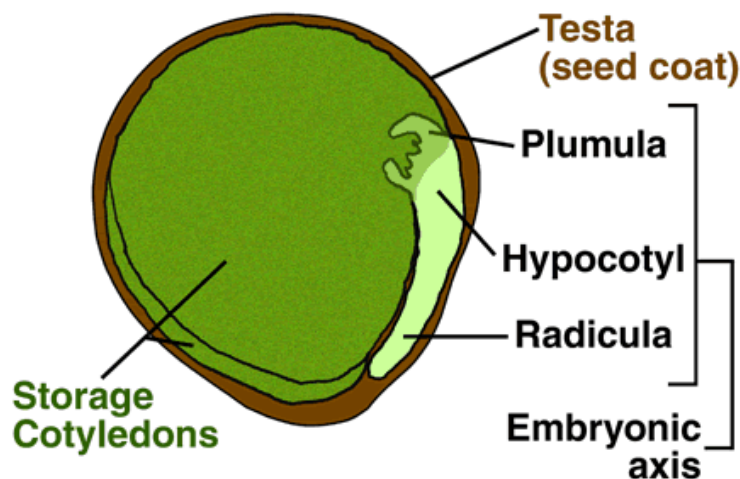
The fertilized egg cell or zygote is develops into an embryo which consists at first exclusively of cells that are embryonic tissue capable of division.

2- food storage :

Food storage tissue (endosperm) sustains that germinating embryo until root and leaves are functionally developed. Endosperm cells contain mostly starch with lesser amounts of proteins, oils and fats.

3- The seed coat (testa):

Is the outer protective covering of seed, which made up of the ovules, usually the seed coat is very thick and may be colored.



Pisum sativum

- Monocot seed :

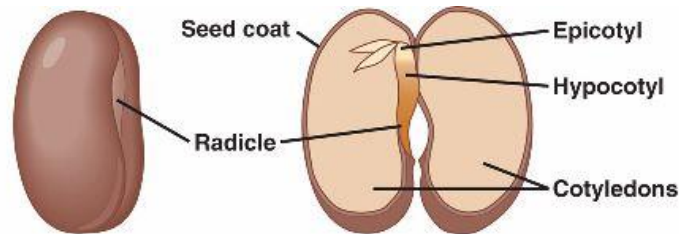
Usually monocot seeds have one seed leaf (cotyledon). A grain fruit (caryopsis) is used as a monocot example. The embryo includes one cotyledon which encloses young leaves over the shoot apical meristem and a protective cap over the root apex, e.g. wheat, barley and corn.

- Dicot seed :

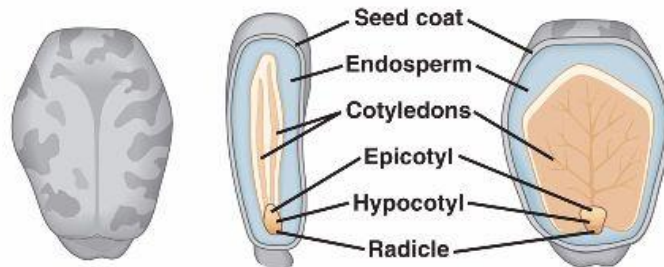
The embryo usually has two seed leaves (cotyledons). As the bean seed is split in half, only one cotyledon is shown. In the bean and pea seedlings two cotyledons can be seen. Between the cotyledons is the hypocotyls axis with the shoot meristem (epicotyls) at one end, root meristem at the other end, e.g. Legume crop seeds.

Seed endosperm type:

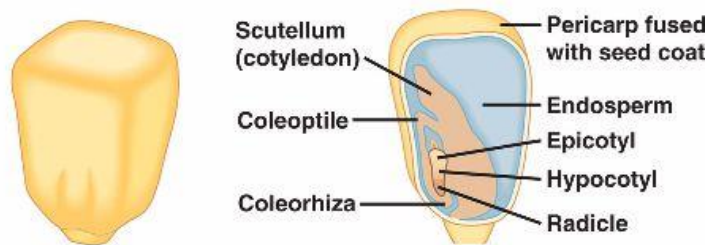
The typical angiosperm seed is **albuminose** or **endospermous**, having endosperm as the food reserve in mature seeds, e.g. wheat, barley and castor bean. In some angiosperms endosperm develops but very little to none is deposited in mature seeds, as in broad bean, chick pea, sesame and sunflower.



(a) Common garden bean, a eudicot with thick cotyledons



(b) Castor bean, a eudicot with thin cotyledons



(c) Maize, a monocot