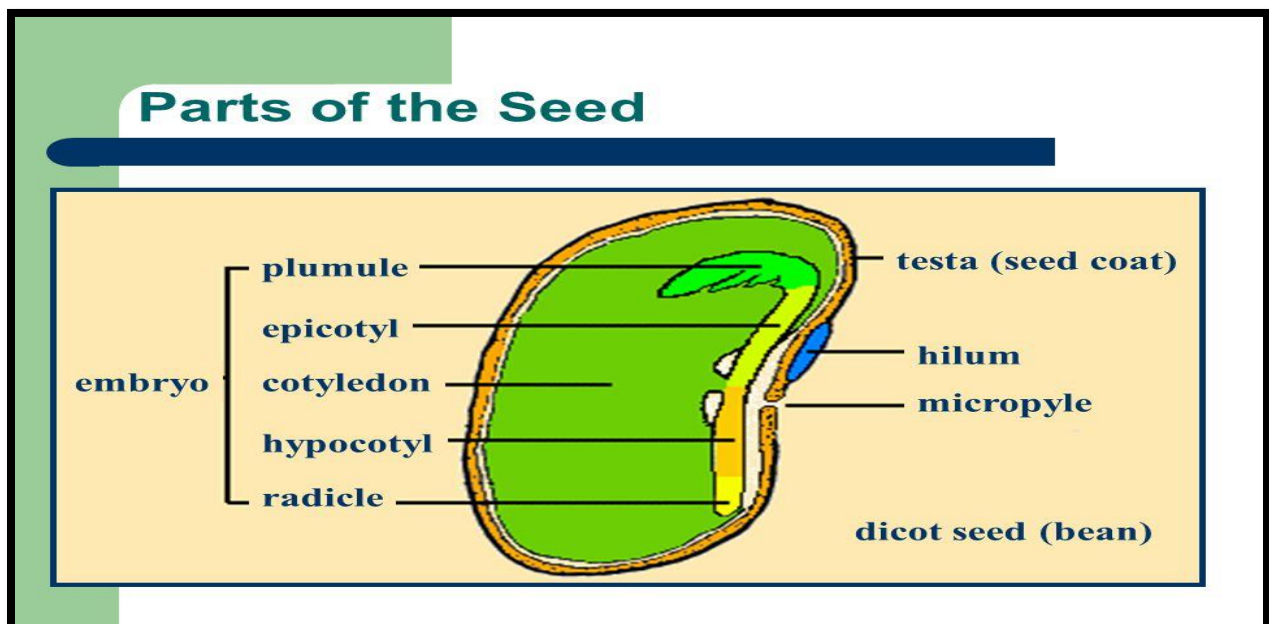


Seed structure : is a mature ovule that includes a seed coat (testa), food supply (endosperm) and embryo.

a- Bean seed (Dicote) :-

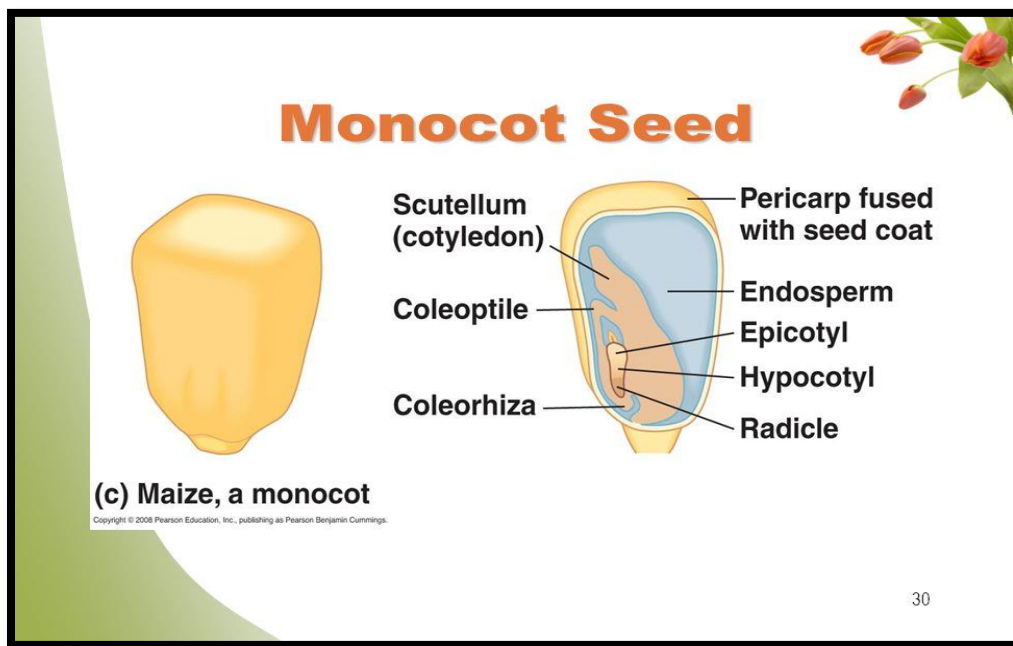
- 1- Obtain some beans that have been soaked in water for 24 h.
- 2- Remove the seed coat with your fingernail , and separate the two cotyledons .
- 3- Part of dicote seed consist of :
 - ❖ **Micropyle** : a small opening on the surface through which the pollen tube grew .
 - ❖ **Hilum** : the elliptical area at which the ovule was attached to the ovarian wall .
 - ❖ **Cotyledon** : Food storage organs for the embryo .
 - ❖ **Embryo** : develops into the new sporophyte and contained :-
 - **Epicotyle** : the small portion of the embryo located above the attachment of the cotyledons to develop first true leaves (plumules) .
 - **Hypocotyle** : the small portion of the embryo located below the attachment of the cotyledons to develop lower end (radical) .



(figure 1-6) Part of dicote Bean seed

b- Corn seed (monocote)

- 1- Obtain some Corn that have been soaked in water for 24 h.
- 2- Use a razor blade to longitudinally split .
- 3- Part of monocote seed consist of :
 - ❖ **Cotyledon ,plumule** and **radical** in addition:
 - ❖ **Endosperm** : stored food for the embryo .
 - ❖ **Coleorhizae** : sheath enclosing embryonic root of grass embryo .
 - ❖ **Coleoptile** : a sheath the covers the emerging leaves .



(figure 2-6) Part of monocote Maize seed

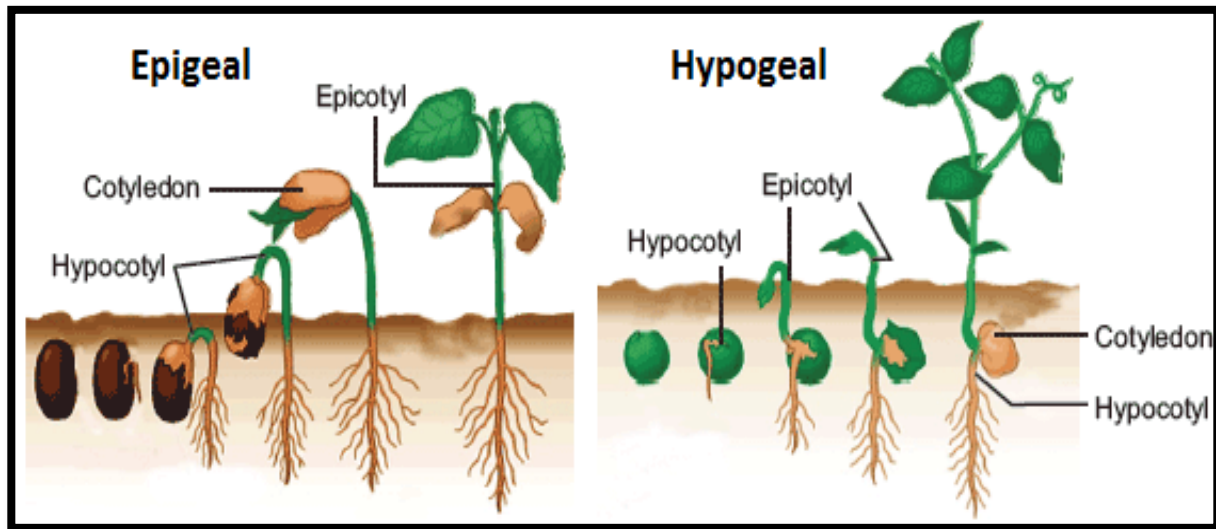
Seed Germination :

Is a programmed developmental process during which the embryo breaks dormancy and continues its development . this operation only occurs when sufficient conditions like moisture ,temperature and oxygen .

mature seeds are dry ,and for germination to begin the dry tissue must take up water in a process called imbibitions . after water has been imbibed ,enzymes break down, the food source into molecules that can provide energy be used as building blocks until the seedling is ready to photosynthesize .

Germination classified two types :

- 1- **Epigeal** : growth hypocotyl more epicotyls and move cotyledons to up and change to green color to photosynthesis like Bean seed .
- 2- **Hypogeal** : growth epicotyls more hypocotyl therefore cotyledons remind in soil to provide food storage from embryo like corn seed .



(Figure 3-6) types of seeds Germination