

CMG GardenNotes #137

## Plant Structures: Seeds

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A seed (mature ovule) is a miniature plant with a protective cover in a suspended state of development. Most seeds contain a built-in food supply called endosperm (orchid is an exception). The endosperm can be made up of proteins, carbohydrates, or fats.

### Function

- Propagation
- Feed
- Horticultural uses
  - o Feed, food and oil

### Structure and Emergence

Seeds of monocots and dicots differ in structure and method of emergence.

#### Monocot Seeds

**Seed coat** – From the wall of the embryo sack (mother tissue)

**Endosperm** – Food supply containing 3 sets of chromosomes (2 from the mother and 1 from the father)

**Embryo** – Immature plant

**Cotyledon** – Seed leaf

**Plumule** – Shoot

**Radicle** – Root

Figure 1. Cross section of monocot seed (corn).

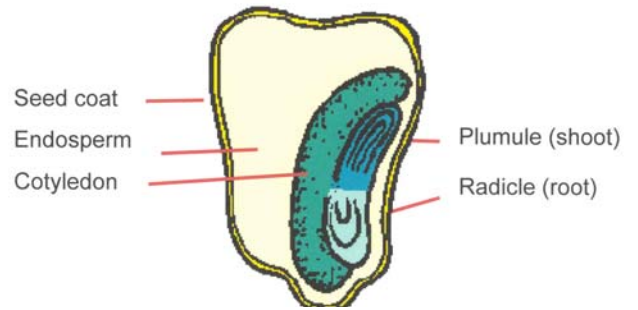
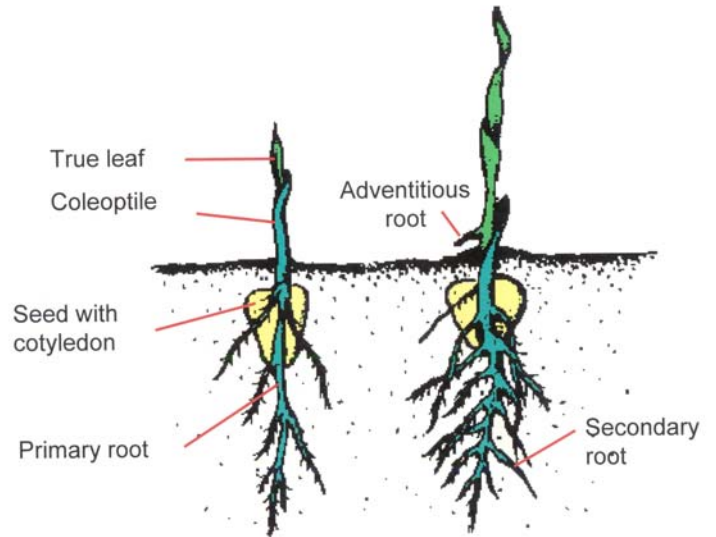


Figure 2. Emergence of corn plant.



## Dicot Seeds

**Seed coat** – From embryo sack wall and endosperm tissue (During development, the endosperm stops dividing and is absorbed into the embryonic tissues.)

**Embryo** – Immature plant

**Cotyledon** – Food storing seed leaf

**Plumule** – Shoot

**Hypocotyl** – Stem

**Radicle** – Root

Figure 3. Cross section of dicot seed (bean).

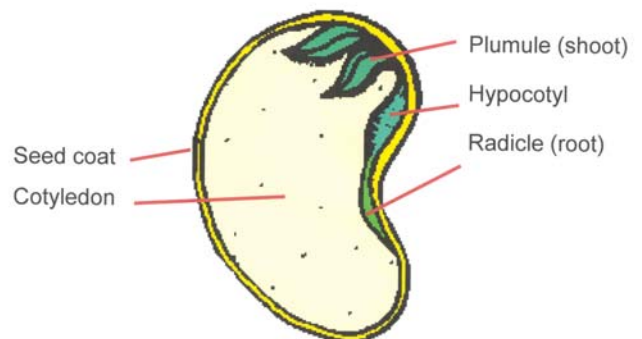


Figure 4. Emergence of bean plant.

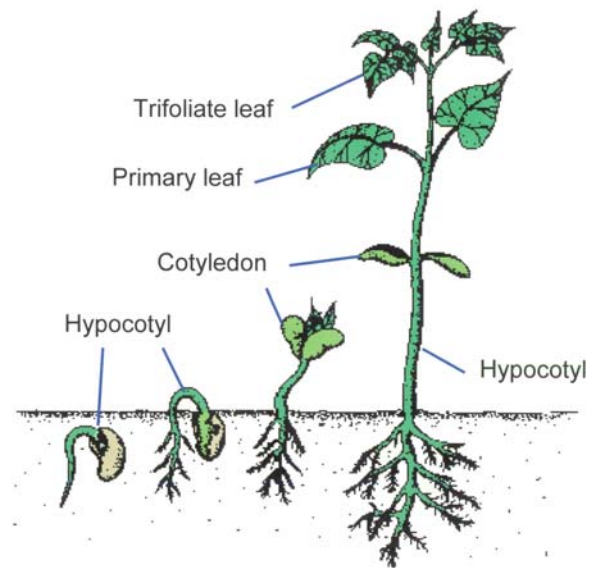
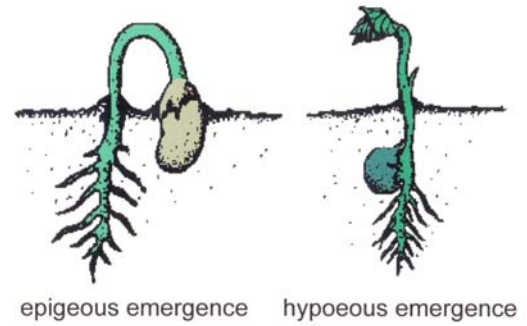


Figure 5. Dicot seed emergence.



## Seed Growth and Development Terms

**Dormancy** – State of suspended growth to survive adverse conditions and aid in dispersion. Adapting plants to a variety of hostile environments, Mother Nature programs a variety of germination blocks. The following are common types.

**Seed coat dormancy** – When the seed coat is impermeable to water, and gases (oxygen). It requires action by weathering, microorganisms, passage through an animal's digestive track, or fire to soften the seed coat.

**Embryo dormancy** – Due to physiological conditions or germination blocks in the embryo itself. It requires a specific period of cold (or heat) with available moisture and oxygen. Embryo dormancy is common in woody plants.

**Double dormancy** – Condition of both seed coat and embryo dormancy.

**Rudimentary embryo dormancy** – Situation where the embryo is immature and requires a growth period before it can germinate

**Chemical inhibitor dormancy** – Seed contains some type of chemical that blocks germination. Many desert plants contain chemical germination inhibitors that are leached out in a soaking rain.

**Stratification** – Techniques used by a horticulturist to overcome dormancy.

**For details on dormancy, stratification and germination of any specific plant, refer to a book on plant propagation.**

**Additional Information** – *CMG GardenNotes* on How Plants Grow (Botany):

#121	Horticulture Classification Terms	#136	Plant Structures: Fruit
#122	Taxonomic Classification	#137	Plant Structures: Seeds
#131	Plant Structures: Cells, Tissues, and Structures	#141	Plant Growth Factors: Photosynthesis, Respiration and Transpiration
#132	Plant Structures: Roots	#142	Plant Growth Factors: Light
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