L-5

Seeds And Seeds

MLP Notes

Seed : A seed is an embryonic plant enclosed in a protective outer covering.

Germination is usually the growth of a plant contained within a seed; it results in the formation of the seedling.

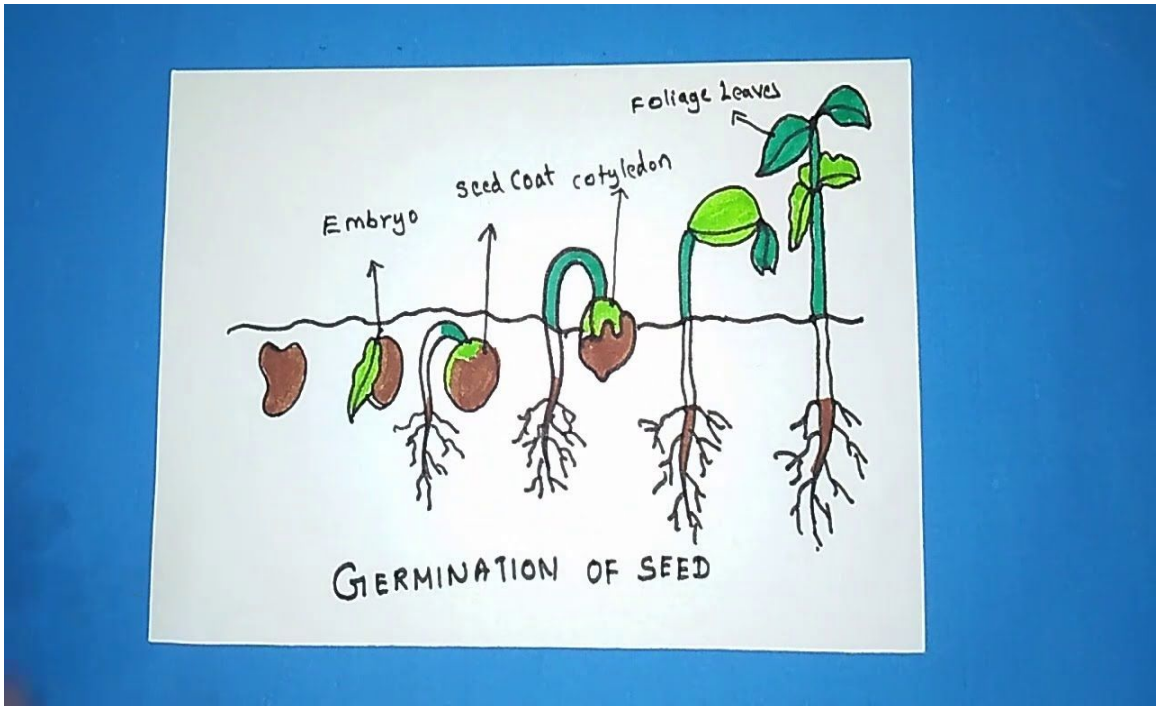
How does germination happen?

First the seed takes up water and gets swelled and

softened which triggers the Root growth to allow the seed to get more water.This part which grows downwards,under the ground is called Radicle. Then, the Shoots develop and grow towards the Sun above the ground. This part is called Plumule.

The Seed Germination Process :

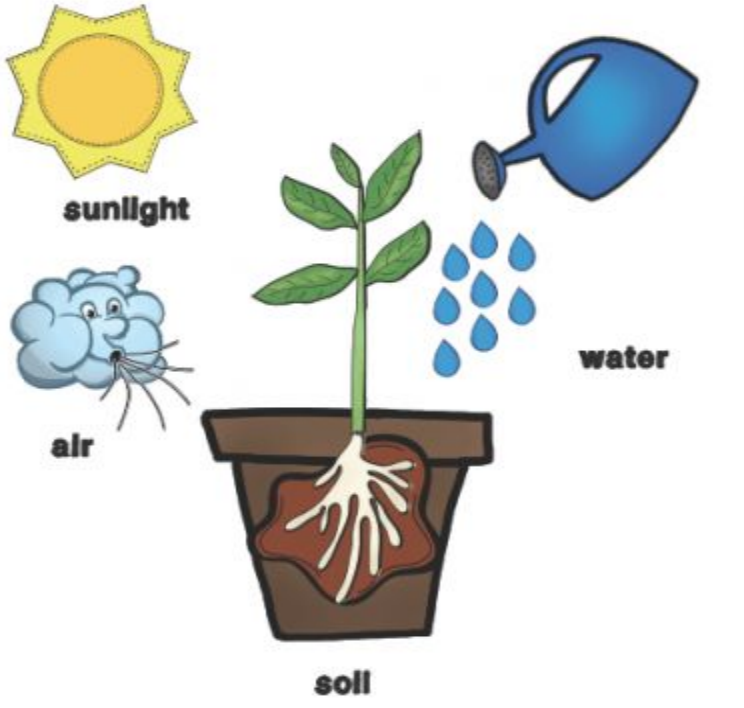
1)Water fills the seed.
2) The water activates enzymes that begin the plant's growth.
3) The seed grows a root to access water underground.
4) The seed grows shoots that grow towards the sun.
5) The shoots grow leaves and other parts and gradually turn into a fully grown plant.



CONDITIONS OF GERMINATION

All Seeds need water, oxygen and proper temperature in order to germinate. Seed germination depends on both internal and external conditions. Some seeds require proper light also whereas some can grow in darkness too.

Plant Needs



Definitions:

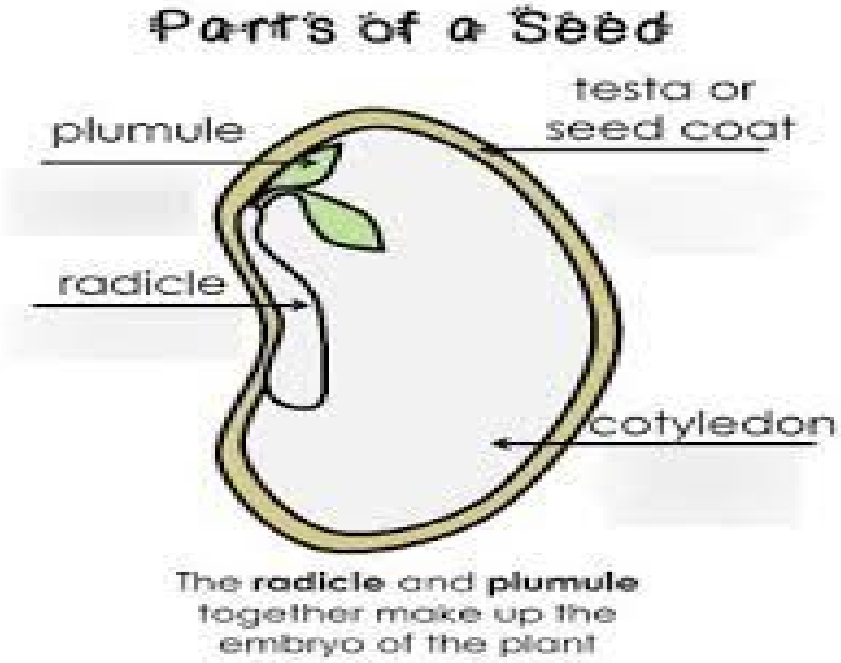
1) Seedling - It is a young plant developing out of plant embryo. It consists of three main parts: The radical(embryonic root),the plumule(embryonic shoot), and the cotyledons(seed leaves).
2) Embryo: It is the part of the seed that contains the earliest form of the plant's roots, stem and leaves.It is a young developing plant inside the seed.
3) Sprouts are seeds that have germinated and become very young plants.

Benefits of sprouted seeds

- Digestibility and availability of nutrients increases.
- Vitamin-C is synthesized during germination.
- It improves taste and texture.
- It reduces cooking time.
- Germinated seeds provide variety to diet.

Structure of a Seed

A seed is an important part of a flowering plant. They give rise to a new plant. They may be of different shapes, colours and sizes. They may be round, wrinkled, winged or hairy. They are in a dormant condition until they receive adequate sunlight, water, and soil. The growth of the plant from a seed is known as germination. A seed has three parts:



1)Seed Coat
2)Cotyledon
3)Embryo

Functions of seed:

The seeds perform the following functions:

- They help in germination of the new plant.
- The seeds contain food reservoirs in the form of cotyledons and endosperm(Endosperm is a structure of a seed that stores nutrients. Nutrients may be stored in the form of starch, proteins or oils. These nutrients are used by the seed during germination to develop an embryo..
- The seed coat is protective in nature which protects the embryo inside.

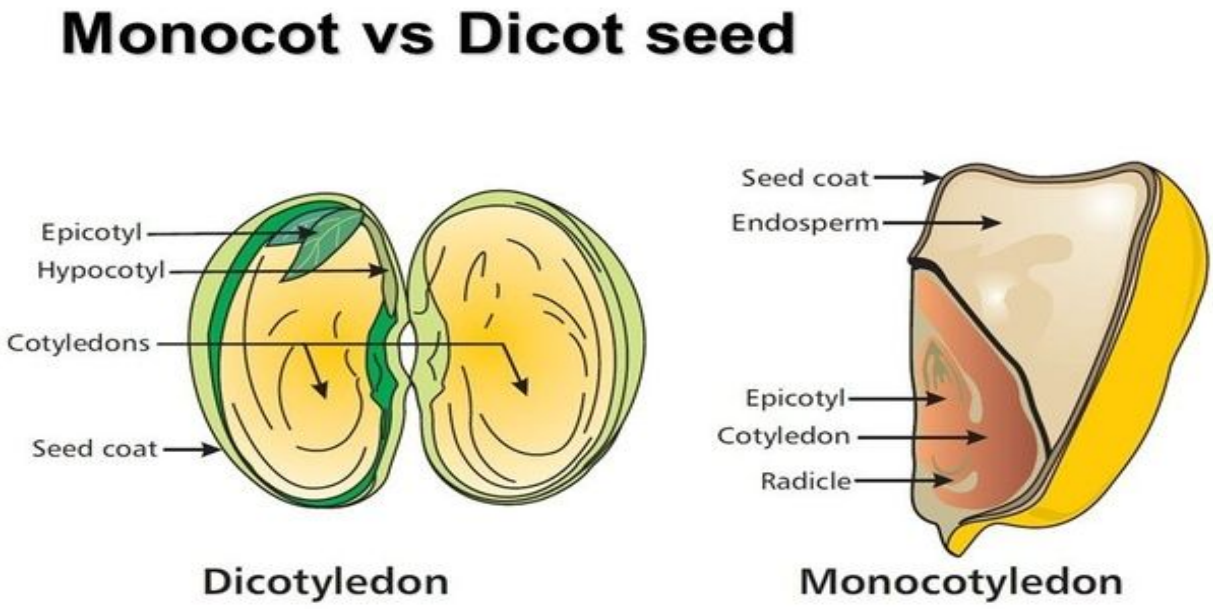
Types of Seeds

There are two types of seeds:

- Monocotyledonous seeds
- Dicotyledonous seeds

Monocotyledonous Seeds: These comprise of a single cotyledon emerging from the seeds on germination. For e.g., rice, wheat,corn, bamboo, barley, lilies, etc.

Dicotyledonous Seeds: These comprise of two cotyledons emerging from the seeds on germination. For eg.,peas, peanuts ,beans, mango, etc.



Dispersal of seeds: Seed dispersal is the spread or movement of seeds away from the parent plant via a

variety of dispersal vectors like wind ,water,animals,birds,humans etc.

The different methods of seed dispersal are:

Animal dispersal:

- Some seeds are eaten in fruits and dispersed as

animals move around
- 'Hitchhiking'
  - Attaching to animal fur /skin/clothing can help to disperse seeds
- Ex: apple seeds, burs

Water dispersal

- Rain may cause seeds to fall out of a fruit or cone
- Rivers/oceans may carry seeds to new locations
  - Some seeds float
    - Ex: Coconut palm seed

Dispersal by explosion: Some fruits scatter their seeds by exploding the seedpods. When the seeds are ripe and the pods have dried, it bursts open and then the seeds are scattered. For example pods of squirting cucumber spread their seeds by explosion.

Wind Dispersal

- Some seeds have special structures that allowed them to be carried by winds
- If seeds are very small they may be carried far in the wind
- Ex: Dandelion seeds

The Pitcher plant:

Plants which trap and eat frogs, insects and even mice are called Pitcher plants. It has a pitcher- like shape and the mouth is covered by a leaf. It has a spectacle smell which attracts insects towards it. When an insect lands on the mouth of the plant, it gets trapped and cannot get out.

Plants growing without seeds:

Through spores:

These seedless plants include mosses, liverworts, club mosses, ferns, and horsetails. They reproduce by forming spores. Spores are often kept in small, bumpy cases on these plants' leaves or stems.

Through other parts of the body(Vegetative propagation)

- New plants from root: Sweet potato, dahlia and asparagus.
- New plants from underground stem: Potato, ginger and onion.
- New plants from leaves: Bryophyllum.

New plants from stem: rose, hibiscus, sugarcane and cotton.