

## P n°2. Seeds germination

### INTRODUCTION

Germination is a physiological stage that corresponds to the transition from the dormant life stage of the dry seed to the developmental stage of the seedling. Strictly speaking, germination is the period between the hydration of the seed and the start of radicle growth. Germination is divided into three phases : **Seed imbibition - Seed activation and the start of radicle elongation.**

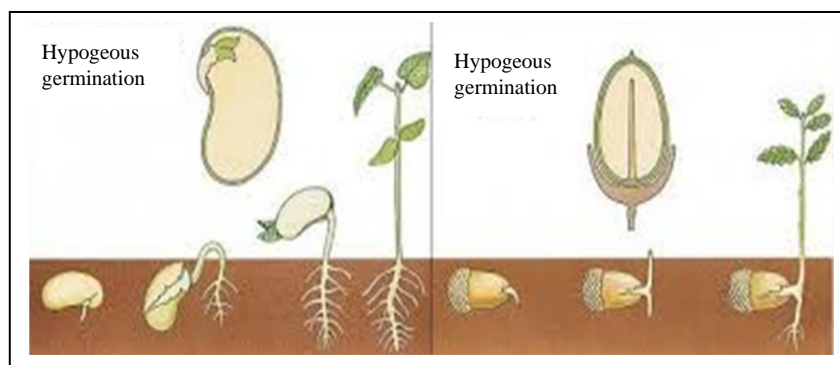
The imbibed seed absorbs water from the external environment, its volume changes and can become three times larger than when dry, and sometimes the seed coat can be ruptured.

- Soaking can last from a few minutes to three hours, depending on the structure and permeability of the tegument. As soon as the radicle begins to elongate, it penetrates the seed albumen and/or the seed coat, at which point germination in the strict sense is complete (this stage varies from species to species).
- Soon after the radicle emerges, the seedling begins to grow. The stem of the future plant develops by elongation.

There are 2 types of germination :

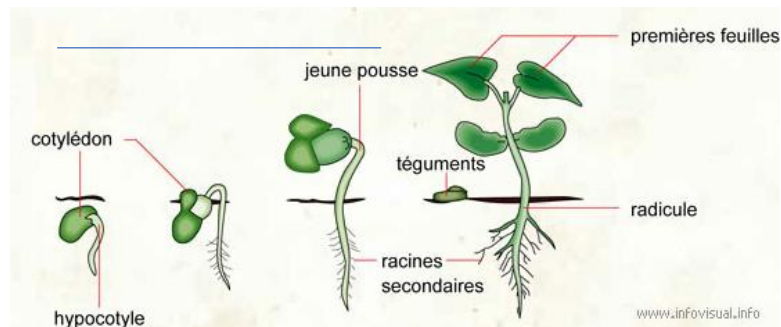
- Epigeal (cotyledons raised above the soil surface)
- Hypogeal (cotyledons below the soil surface)

During germination, the seedling feeds on the seed's reserves (starch, lipids, etc.). When these reserves are exhausted, the young plant, which has both root and aerial systems, is able to carry out photosynthesis.



**Figure 1.** Types of epigeal and hypogeal germination.

### Seed germination



**Figure 2.** An example of the germination of a bean seed

## 2. Objectives

- Measurement of the height development a young lentil root ;
- Learn how to collect data.

## 3. Materials and methodes

### a. Materials

- Lentil seeds ;
- Bleach and distilled water;
- Petri dishes ;
- Cotton soaked or absorbant filter paper;
- Millimetre paper.

### b. Methodology

- Wash the seeds in water containing droplets of commercial bleach to remove any bacteria. Then rinse with distilled water (3 times) ;
- Cover the bottom of the Petri dish with damp cotton wool;
- In each Petri dish, place 5 seeds on the soaked cotton wool;
- Place the Petri dishes in a room at temperature 25°C (exposed to sunlight).

## 4. Required works

- Measure the length of the radicle and the tigelle every 2 days and record your observations in a table.
- Plot the growth of the radicle and the tigelle as a function of time (days);
- Calculate the growth parameters for the germinated plants (growth rate and speed).