

Learning about: Botanic laboratory

Growing seeds (germination)

There are two main types of seeds: *monocot* (e.g. corn) and *dicot* (e.g. bean). The monocot has one seed leaf inside while the other has two. Follow the next experiment to learn the importance of this distinction.

Discover:

- What are the differences between monocot and dicot seeds?
- How do these seeds germinate?

Level of Difficulty ★★★★★

Materials Needed:

- Engino® Botanic laboratory (STEM47).
- Bean seeds (any colour; brown, white etc).
- Corn seeds.
- Cotton, 2 transparent glasses and water.

Procedure:

1. Find the instructions in **pages 20-40** and build the **Greenhouse** model. Connect the covering sheets as well.
2. Note that the corn and bean seeds should be fresh, not dried, otherwise they will not grow. Compare the two types of seeds in **exercise 1**, including the distinction between **monocot** and **dicot** seeds mentioned above.
3. Fill the bottom of the two glasses with cotton. Place 10 corn seeds inside the first glass and 10 corn seeds inside the other, on top of the cotton (see picture).



4. Make the cotton wet by using water, but be careful not to use too much. Place both glasses inside the greenhouse and put it somewhere that there is plenty of sunshine, so it stays warm. Renew water every day.

5. Examine both glasses **every 2-3 days** and see how the seeds are growing. Complete the table in **exercise 2** for each stage.

6. Keep the resulting plants as you will need them for the **next two experiments**.

1. Observe the corn and the bean seeds. What differences and similarities do you observe? Which one is the monocot and which is one is the dicot?

corn seeds

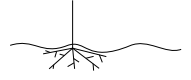
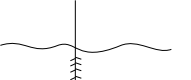

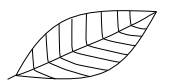


bean seeds



They are different in colour, shape and in size. The corn... seeds is of the monocot type, whereas bean seeds are of... the dicot. Corn has one seed leaf inside while bean seed... has two.

2. Complete the table according to your observations for each stage of germination. For example, how do the roots look like in each type?

Stages	Corn (monocot)	Bean (dicot)
1. root		
2. stem	same	same
3. leaves		



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