

Seed Versus Bulb, Indoors or Outdoors.

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Biology 141-003

Fall 2018

Materials

- Seeds of arugula
- Bulbs of crocus
- Pots
- Top soil
- Plastic boxes
- Tap water
- Ruler
- Beaker

Temperature:

- Inside: 72-74F mostly constant

Introduction:

Crocuses grow from bulbs and useful grow in early spring. The bulb is normally frozen through the winter. As the snow melts, the crocuses start to come up. Thus, it seems the crocus might be dead, yet the bulb is still alive that opens a possibility to see the blossom after a year. They take about six to eight weeks to come up from the ground and usually are found in groups of them. Crocuses are about three to five inches tall when they bloom their flowers. Their roots can go down until ten inches deep (Old Farmer's Almanac).

Arugulas are most common to grow and eat as a vegetable. They are also very fast in sprouting. Although arugula can be grown in a cool temperature, the most perfect day is a summer day that has good sunlight. The arugulas grow until one to two feet. Furthermore, when harvesting the arugulas, it is better to only pick their leaves out because the leaves can grow back (“How to Grow Arugula – Growing Arugula from Seed”).

Most vegetable can grow even though it snows, but the freezing temperature and the frost give more damage to the plants since the soil freezes and may kill the plants (Albert, Steve, and Bill).

In this lab, arugula seeds and crocus bulbs are planted in two different environments, which are indoors and outdoors and were compared.

Experimental Question:

What are the differences of the various plants that grew in two different environments-indoors and outdoors?

Experimental Design

About fifteen seeds of arugula are planted into each pots that have top soil. Three of the pots are placed outside where there is sunlight, and the other three are placed inside with less sunlight. Except for one twin bulb, two crocus bulbs are planted into each pots. Also, three of the pots are placed outside, and the other three are placed inside. All pots are watered (50-60 mL) with a beaker three times a week unless the soil is sunk with water because of random consequences. The height of the plants is measured and recorded once a week with a ruler.

Conclusion

As expected, arugulas sprouted within few days. The inside arugulas sprouted first and grew faster than the outside arugulas, but the inside arugulas' stems had less strength than the outside ones. Also, inside arugulas died faster than the outside ones. The inside ones didn't really get to grow the real leaves and died, but the outdoor ones had more real leaves although they were shorter. For the arugulas that were planted outdoors, at first the sprouts looked the same for inside and outside, but the outside sprouts slowly changed their colors. Their stems got red first then brown and the leaves also changed their color from green to brown. However, all the pots succeeded in sprouting ("How to Grow Arugula – Growing Arugula from Seed").

The one inside bulb sprouted first in three weeks. Then other bulbs slowly sprouted, but just like the arugulas, the indoors ones sprouted faster and more than outdoor ones. However, they didn't change colors.

Persistent Questions/Future Directions:

All the sprouts of the seeds died. Although the reason isn't clear, there are some theories and recommendations for the future to find the reason. There are two main suspicions for the death of sprouts. One is the amount of water, and the other is the temperature. There might have been too much water, or the temperature might have been too low. It most-likely seems like the inside ones died from the excessive amount of water and the outside ones died from the low temperature. In the future, I will have more pots that will have different amount of water to see if that affects how they grow. Also, I will plant the plants in spring or summer to see the effects of the temperature (Albert, Steve, and Bill). Also, I wonder what will happen to the crocus because they are just beginning to sprout.

Work Cited

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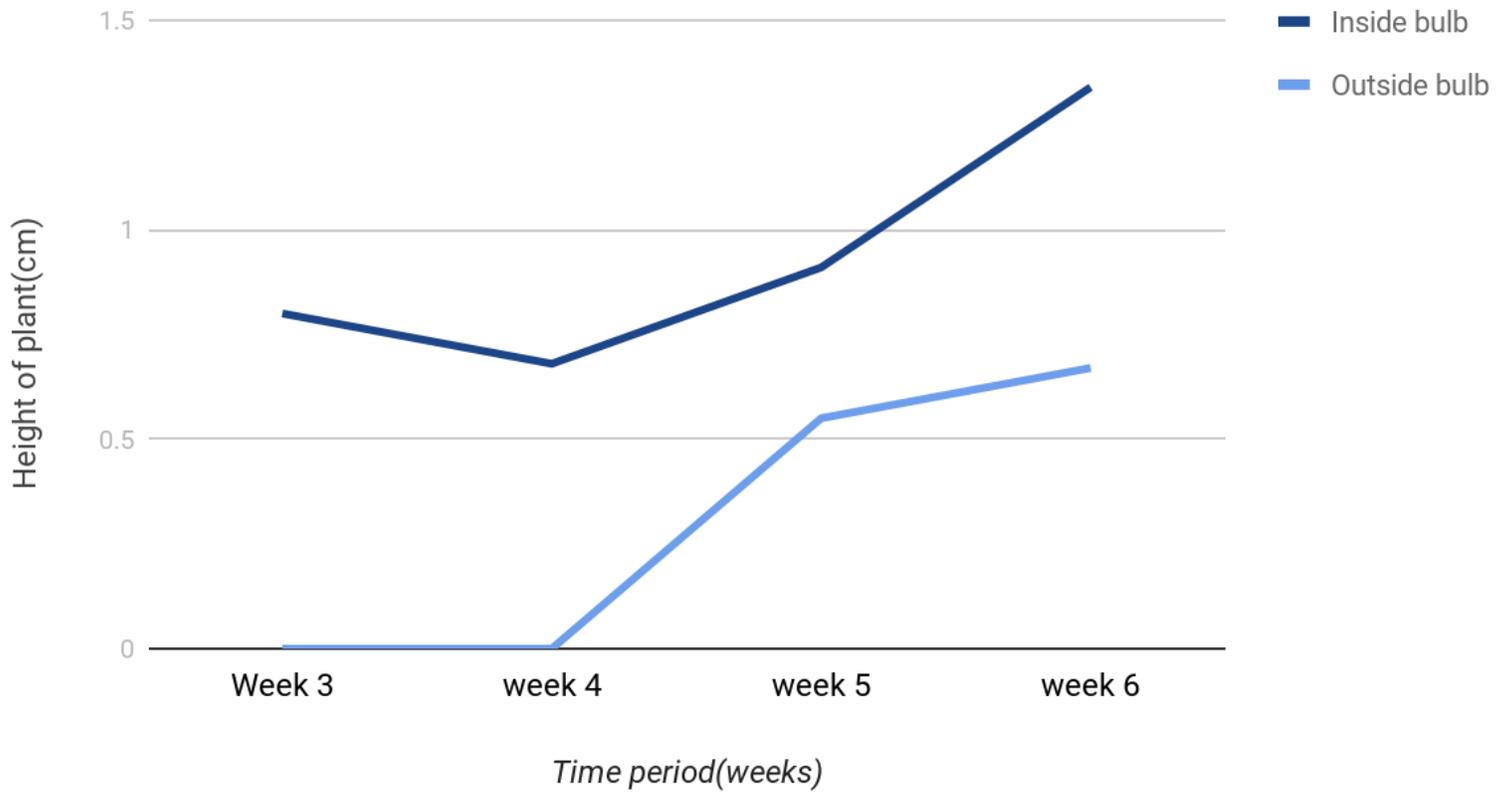
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Growth of Bulb



Growth of Seeds

