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Research Project

1. Introduction

The Mimosa plant, which is also known as the sensitive plant, closes when touched. This could be an automatic response as a defense mechanism in which the plant closes during an attack from a predator. The plant itself, when touched enough, will actually collapse toward the ground when touched enough times with sufficient force. My interest involved how hard would one have to touch the plant in order for it to close. Would it close if it was lightly touched? I was also curious if the plant would close when exposed to rain. Does the plant close when also it's rained upon? I believed that it would close to both rain and light touch.

2. Materials and Methods

Materials:

- Mimosa plant – enough to conduct the experiment, I used 10 for touch and 10 for water
- Pencil with lead – to take down observations
- Notebook – for storing observations
- Water – to use in the eyedropper for rain simulation
- Eyedropper – for applying water to the plant to simulate rain, I also used the tip of the eyedropper with no water for the light touch

Methods:

1. Find a location near the lodge with Mimosa plants. (I found two good spots around the lodge. One near the outdoor showers/bathrooms/sinks in the grass near the road, and the other was in the grass surrounding the front sidewalk.)
2. Set up a little area around which you intend to conduct the experiment. This is to prevent others from disturbing the plants by walking on them.
3. Decide whether to begin with touch first, or water. Order may change due to choice.
4. Touch 10 plants in the same location on each plant to get some results. Record results in notebook.
5. Repeat Step 4 with a different location on plant in as many locations as desired.
6. Obtain water from sink connected to outdoor shower/bathroom and an eyedropper.
7. Use the Eyedropper to simulate rain on the 10 plants. Record observations.

3. Results

Touch:

I found that with a light enough touch on the petals, the plant would not close at all. Also, I found that when the bottom of the petal is touched, even with enough force to close the plant when touching the top, the plant remains open no matter how many times it is touched. When the plant is touched closer to the stem, or on the stem between the petals, it is less likely to close than when being touched toward the center of the petal and toward the edge of the petal. Touching 3 or more petals simultaneously caused the entire plant to close. Also, when the plant was touched at the back where it is closer to the origin of the stem, the whole plant closes from the front to the back petal by petal. I also noticed that the number of petals that close at the same time is related to how closely the petals are located to each other. Some plants had petals that were touching, whereas others that weren't very close together. The closer that the petals are located, the more petals that close together.

Water:

I noticed nothing would happen when only one droplet was placed on the plant. The first drop placed on the plant would usually run down the stem of the plant between the petals and cause nothing to occur. When the droplets were placed toward the front of the plant, 3 of 10 times the plant closed entirely with 2 drops. When the drops were placed near the middle and at the back of the plant, it took 3-5 drops to close entirely. One of the plants closed partially with 5 drops, but would not entirely close.

4. Conclusion

I would conclude that my hypothesis was partially correct. If the plant was touched lightly enough, it wouldn't close at all; however, I thought that it would close. Obviously the magnitude of the force applied to the petal can affect whether the plant closes or not. I was partially correct, however, because I thought that the plant would close when being rained upon. When it rains, it typically rains more than a few drops in a certain area, so my results that 2 or more drops is sufficient works out.

Some ideas that others could continue with my research would be, to examine if the amount of force applied is connect with how long the plant stays closed. Likewise, they could test how long the plant stays closed when ripping off a petal or a few petals. They could also test if the plant closes due to wind by using a fan, so that the amount of force is constant.

5. Sources

- <http://www.columbia.edu/cu/biology/ug/research/paper.html>
- http://www.unc.edu/depts/wcweb/handouts/lab_report_complete.html
- <http://www.nmas.org/JAhowto.html>

- <http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html>
- <http://www.ruf.rice.edu/~bioslabs/tools/report/reportform.html>

This picture is to show how I labeled the plant, not how others would label the plant. It is just for reference when I describe the front, back, middle, and stem.

