PlantingScience Journal

Data Table

2/22/24

Research Question: Does the amount of soil affect how quickly a plant, starting at a seed, can grow? We came up with this question because we know soil is necessary for plants to grow, so we wanted to see how much soil affects how quickly a plant can grow.

Predictions: We think when the radishes are exposed to less soil it will take longer for it to sprout and it would look different and be a different size then the typical radish would.

Experimental Design: We would like to experiment what would happen when we decreased the regulated amount of soil by half and then that by half. We would like to perform this with three of each soil amount. So, we will be putting six seeds in each pot. This will help to support our claim more strongly with more evidence. We are conducting our experiment on radishes. We think that this will be the best possible plant because radishes have to grow in the ground and we are excited to see what will happen with less soil. We would give it 20 ml of water every other day in a week measured with a granulated cylinder and give it the same amount of sunlight just with less soil. We are planning to conduct our experiment over 5-6 weeks. We will water it every week. We are hoping that doing this will help us see if the growing process can be sped up and if plants can truly sprout and grow with less soil. We are planning on using six seeds per pot.

03/04/2024

Today we will start the planting process by planting six seeds in each of our nine pots. We are using an inch of water or 16ml measured from a granulated cylinder to water the seeds in each plant every five days. We successfully planted six seeds 9 times into ½ cup, ¼ cup, and ⅛ cup of soil. We did this three separate times to ensure we have more data that is more strongly supported by more information. We first measured the amount of soil needed to plant them when we decreased it by half every time. We ended up using ½, ¼, and ⅛ of a cup of soil three times in 9 total pots. Next, we counted out 54 seeds and planted six in each of the 9 pots. After, we wet the soil in each of the 9 pots. Then, we measured out 16ml to water it for the first time. We plan to do this every week because it needs 1 inch of water each week. Finally, we planted six seeds in each pot and took photos to upload to our planting science website and journal. That is all we did for today.

3/07/2024

Today we watered each of our plants with 16 ml of water measured with a granulated cylinder. We have decided to change our watering process to 16 ml each day instead of each week because we realized they needed more water because they were extremely dry. We also made sure to put the seeds into the right spot in the planter because when they were planted they got shaken up quite a bit. We are hoping this will speed up and help the growing process.

3/08/2024

Today we examined each of our plants. We discovered there are signs of growth in all of them. We have also made a decision to water them every other day to prevent drowning the plants. We are also noticing that the ones with more soil are sprouting faster than the ones with less soil. However we are still seeing signs of growth even in the one with less soil. Today we are going to put out radishes in the sun for around an hour so they can at least get a little sun. We are not going to be able to put them in the sun for the whole day but we are hoping to give it up to 2 hours a day. This is because there is limited sunlight space for all of the plants but we are still going to be able to give them some. In fact even without the sun one of our plants grew a whole inch in just one day. It was quite incredible. Although our other plants did not grow as big they are still sprouting at around a half of an centimeters. I am hoping with our added sunlight and adjusted watering schedule that they will make even more progress.

3/11/2024

Today we observed our plants to find that some made some amazing progress. In the ½ 1 of a cup we had average heights of 6.04 cm, ½ 2 6.375, and ½ 3 4.8 cm. We watered them each 16 ml of water measured from a granulated cylinder and we made sure to spread out the water evenly so to help produce the most growth. The pot that made the most growth was certainly the ½ of a cup (control pot). Although the plants in the other two cups are starting to break, the seed shell grows. We were able to put our plants in the sun for all of today. We are hoping the added sunlight will increase their growth so they have the best chance of progress.

3/13/2024

Today we observed our plants and noticed that all of them showed signs of growth. I do think that having the extra sunlight helped. We watered them with 16 ml of water measured out of a granulated

cylinder. our plants have all gone up in average height, although the plants with less soil are sprouting but not enough to measure yet. we did notice however that our plants had started to fall to the ground and become very limp. we are not quite sure what happened but we are thinking it is because they are still very fragile and the soil was pretty dry so we hope that the water will help. our plants are also lighter today and the leaves are a little bigger but not by much. I do think this color is from the amount of sunlight it is or isn't getting. we will not have time to put our plants in the sunlight today but we hopefully will do it tomorrow. The averages were ½ 1 7.1 cm, ½ 6.875, ½ 3 5.4 cm, and 0 cm for the rest of the ¼ and ⅛ cups but they did break the shell covering so we hope to see growth soon.

3/15/2024

Today we observed plants and recorded their growth in our data chart. The control plants made lots of progress and the other seedlings did but not as much. Although they are still sprouting which is a huge accomplishment. we also watered the plants with 16 ml of water from a granulated cylinder. we were hoping to give it some time in the sun but it is not sunny out today so we might not find a lot of growth with the sun. Although some sunis better than no sun so at least they will get a little bit of sunlight for about 30-45 minutes. our ½ cup 1 is 8.5 cm, our ½ cup 2 is 10.17, our ½ cup 3 7.6, and our 1/4 cup and 1/8 cup did not sprout yet but they are starting to and I think within the next week we will see some growth. The plants are all pale green and white with darker green leaves. our plants have made amazing growth and are hoping to see even more over the next week or so.

3/18/2024

Today we observed our plants and found that they have all grown. Although some are smaller than others it is still a huge step. we did notice that it made the most progress when it was in the sun so we are hoping to get it in the sun as much as possible. our plants are all looking healthy with white steps and dark green leaves. Some of the plants still have their seed coverings on them but are still sprouting. I will day that with the cups with ⅛ cups of soil that one of them had a small amount of mold. I think that this was caused by the amount of water it had when it was inside of the seed shell. Some of the plants were also droopy but we are going to put stakes to help them grow more straight and hopefully become strong enough to stand on their own. Today ½ cup 1 9.4 cm, ½ cup 2 10.6 cm, ½ cup 3 7.8 cm, ¼ cup 1 4 cm, ¼ cup 2 0 cm, ¼ cup 3 0 cm, ⅛ cup 1 .875, ⅛ cup 2 0 cm, and ⅛ cup 3 0 cm.

3/19/2024

Today we observed our plants and were a little surprised to see them supper dry and mostly dead. we are thinking about the excessive time in the sun and not enough water. Due to this we are planning on watering it 20 ml every other day to help ensure that this doesn't happen again. we did however put in 24 ml just for today to help it catch up to what we are planning to water it. we are also not going to put them in the sun today so they do not cook again but if they have made better progress tomorrow we will try to put them back in the sun. we are also taking out a few of the stacks to see if that helps with the dryness. our plants did not grow but they did not shrink which is good. They look a little darker and much skinnier. Although they might not look good now, we think that tomorrow will bring better progress.

3/22/2024

Today we decided to un-stake our plants because we didn't want our plants to become bruised. we also watered them 20 ml with yesterday and 5 extra ml today to help get them through the weekend. Unfortunately when we took the stakes out, some of the plants that were with the stakes came out due to how dry and crispy they were. When we were taking measurements I noticed that some of our plants had shrunk which is not ideal. Although some of our plants grew, which is good. The measurements for our plants today was ½ cup 1 6.3 cm, ½ cup 2 10 cm, ½ cup 3 6.5 cm, ¼ cup 4 cm, ¼ cup 2 .05, ¼ cup 3 0 cm, ⅛ cup 1 1.2 cm, ⅛ cup 2 0 cm, and ⅛ cup 3 .10 cm. we are hoping that our plants will make a recovery over the weekend.

3/25/2024

Today we observed our plants and found that they had not grown and they are shriveled and dead again. I think this was due to not enough water and too much sunlight. we watered them today with 20 ml of water and are not going to give them that much sunlight because they were in the sun for the whole weekend and we need to give the other plants time in the sun. we will not be measuring them today because our teacher thought it would be best that we try to touch them as little as possible so that is what we are going to do. The plants however look shriveled with pale stems and leaves with little color and very limp. we are recording a data table and will put all of the information in there.

4/1/24

Today we observed our plants to see that they had all dried up and dead. Even though they are dried up we are hoping with some water and sunlight they will make a recovery. we watered them with 20 ml of water measured from a granulated cylinder. we also measured and only one plant was still standing and it was in ½ cup 3. These two small plants shrunk and their average height is 2.68 cm.

They are very dry and brittle. we are also noticing that they do not have a lot of coloring in them and the soil was very dry. Our plants got like this because our school was having some building repairs and we were out of school for a week and so our plants did not have any sunlight. This also means there was no heat and the temperature was very low so that also probably did not help the situation. we are hoping that this water will help and the plants will be in the sunlight for 24 hours so we hope that will help.

Conclusion:

The control plants (the plants that had the correct amount of soil) grew the strongest, fastest, and healthiest. The first possible explanation of our results is that the more soil a plant has, the more water it can hold. Therefore, the plants don't get dried up as easily. The second possible explanation is that due to being out of school for multiple periods of time, we were unable to water and care for our plants. So, the plants started to shrink and dry out. Sadly, because of this, none of the plants survived. However, our data still supports our claim. Our original prediction was that the pots with less soil would take longer to grow, be smaller, and be weaker than the pots with more soil. The data collected supports our original prediction by showing that the plants with more soil grew faster, taller, and stronger than the plants with less soil. Some future experiments that could be done to expand on the results of this experiment consist of seeing if doing this experiment long term would affect the outcome and what would happen if we had a better routine for caring for the plants. The fastest, strongest, and healthiest plants were the plants with the largest amount of soil (or the control plants).