Mary’s Planting Science Journal

Research Question:

We are going to have six different pots. Two of the pots are going to have normal planting soil, with four pea seeds in one pot, and five onion seeds in the other. In the next four pots, two will have cotton balls as soil, and the other two will have wood chips as soil. These pots will also have five onion seeds in one, and four pea seeds in the other. All of these plants will be cared for and treated the same way, the soil will just be different. We are going to see if these plants are able to grow successfully by first seeing if they sprout. If they do sprout, will they continue to grow? We will be measuring the plant's height, the amount of leaves it has (if any), and the overall size of the plant if it does grow in these certain materials as the replacement soil.

Materials:

- Cotton balls
- Planting soil
- Wood chips
- Water
- 15 Onion seeds
- 12 Pea seed
- 6 pots

Predictions:

We think that the cotton balls will be able to grow the plants, while the wood chips won't or won't as much. We think that because cotton is very absorbent and wood does not absorb a lot of water. We think that the cotton balls will most likely be able to at least sprout the plants because of how absorbent and how much they are able to decompose. We think it will be hard for the wood chips to sprout because it looks like the wood chips don't absorb water well at all.

Experimental Design:

Steps to the project:

1. Get six small pots.
2. Fill two of the pots with regular potting soil. (Make sure that the soil is almost to the top of the pot.)
3. Fill two of the pots with cotton balls. (Make sure it's not overflowing.)

4. Fill the last two pots with wood chips (Make sure the wood chips are similar to the amount of soil and cotton balls in the other four pots.)

5. After filling the pots with the contents, start planting your seeds.

6. Soil pots= one pot will have four pea seeds, the other will have five onion seeds. Dig small holes in the soil about one inch- two inches down in the soil. Space the seeds evenly in both pots. Drop one seed in each of the holes you made. Make sure to cover up the holes with potting soil.

7. Cotton ball pots= Separate the cotton balls in both pots to make small holes to plant your seeds in. Plant four pea seeds evenly spread out in one pot, and five onion seeds spread evenly in the other.

8. Repeat steps 6 and 7 except with wood chips as the soil.

9. Water all of the pots so that the contents of the pots are evenly moist. (The water does not have to be the same in each pot, just make sure the soil, cotton balls, and wood chips are moist.)

10. Place the pots in a sunny window, and let your plants grow!

Over time, monitor the seedlings in the pot. Make sure that the soil is always moist enough for the plants to grow, but not too wet. If the seedlings do start to sprout, record your observations and measure the size of the sprouts. Record the height of the plants, the amount of leaves (if any), and the overall size compared to each plant.

Observation Table

Date:	**Pea 1: Soil**	**Pea 1: Wood Chips**	**Pea 1: Cotton Balls**	**Onion 2: Soil**	**Onion 2: Wood Chips**	**Onion 2: Cotton Balls**
March 7:	Not Sprouted	Not Sprouted	Not Sprouted	Not Sprouted	Not Sprouted	Not Sprouted
March 8:	Sprouted: 3 heights-1cm, 0.5 cm, 1.3 cm **Average: 0.9**	Not Sprouted	Not Sprouted	Not Sprouted	Not Sprouted	Not Sprouted
March 11:	Sprouted: 4 heights-7cm, 14cm, 15.7cm, 17.6cm **Average: 13.5cm**	Sprouted: 1 heights- 4cm **Average: 4cm**	Sprouted: 3 heights-9cm, 10.3cm, 11.5cm **Average: 10.3cm**	Sprouted: 2 heights-0.5cm, 0.2cm **Average: 0.35cm**	Not Sprouted	Sprouted: 2 (One has fallen to the bottom of the pot) heights-1.1cm **Average: 1.1 cm**
March 13:	Sprouted: 4 heights-11.7cm, 17cm, 19.1cm, 20.2cm **Average: 17cm**	Sprouted: 1 heights-7.7cm **Average: 7.7cm**	Sprouted: 3 heights-15cm, 15.5cm, 14.5cm **Average: 15cm**	Sprouted: 4 heights-1.3cm, 1.1cm, 0.5cm, 0.5 cm **Average: 0.85**	Not Sprouted	Sprouted: 2 (We can no longer see the other sprout) heights-1.3cm **Average: 1.3cm**

March 15:	Sprouted: 4 heights-23.5cm, 16.4cm, 22cm, 27cm **Average: 22.2cm**	Sprouted: 2 heights-17cm, 3cm **Average: 10cm**	Sprouted: 3 heights-20.5cm, 25.6cm, 20.3cm **Average: 22.1cm**	Sprouted: 4 heights-2.2cm, 2.5cm, 2cm, 0.2cm **Average: 1.7cm**	Sprouted: 1 heights-2.2cm **Average: 2.2cm**	Sprouted: 1 heights-4.4cm **Average: 4.4cm**
March 18:	Sprouted: 4 heights-24cm, 19cm, 16.1cm, 19cm **Average: 19.5cm**	Sprouted: 2 heights-13.3cm, 28.7cm **Average: 21cm**	Sprouted: 3 heights-27.1cm, 19.3cm, 20.4cm **Average: 22.2**	Sprouted: 3 heights-2.3cm, 3cm, 3.4cm **Average: 2.4cm**	Sprouted: 1 heights-2.3cm **Average: 2.3cm**	Sprouted: 1 heights-6cm **Average: 6cm**
March 19:	Sprouted: 4 heights-22cm, 24cm, 16cm, 16cm **Average: 19.5cm**	Sprouted: 3 heights-24cm, 16cm, 3cm **Average: 16cm**	Sprouted: 3 heights-21.2cm, 31cm, 19.6cm **Average: 23.9cm**	Sprouted: 3 heights-1.5cm, 1.5cm, 2cm **Average: 1.7cm**	Sprouted: 1 heights-2.3cm **Average: 2.3cm**	Sprouted: 1 heights-5.5cm **Average: 5.5cm**
March: 22	Sprouted: 4 heights-19.6cm, 18.7cm, 22.4cm, 24.5cm **Average: 18.8cm**	Sprouted: 4 Heights-20.3cm, 8.7cm, 4.9cm, 40.4cm **Average: 16.3cm**	Sprouted: 3 heights-22.3cm, 21.2cm, 22.3cm **Average: 21.9cm**	Sprouted: 2 heights-0.1cm, 0.1cmcm **Average: 0.1cm**	Sprouted: 1 heights-0.4cm, 0.2cm **Average: 0.3cm**	Sprouted: 1 heights-4cm **Average: 4cm**

Mar 4, 2024

Entry #1:

Today we're are going start planting our seeds. We have two different bins labeled 1 and 2. Bin number 1 has three different pots, each having 4 pea seeds planted in them. 1 pot has normal potting soil, one has dampened cotton balls, and the last one has wet wood chips. We made sure each of the pots are moist enough for the seeds to hopefully germinate. Bin number 2 is the same thing except each pot has 5 onion seeds instead of 4 pea seeds. We have six pots in total. All of the plants should get a similar amount of light, and the water will be different depending on how much we need to keep it moist. We are excited to see if our plants sprout, and we are going to let them grow.

Mar 7, 2024

Entry #2:

Today we checked on our plants. We saw one of the pea seeds wasn't entirely covered, and it started to sprout. This was in group one, pea seeds, the soil pot. The 2

wood chip pots were very dried out, and we watered them. The 2 soil pots were also a little bit dry, so we gave them a small amount of water. Both of the cotton ball pots were very wet still, so we didn't end up giving them water. We think that the pea seeds in the soil pot are starting to sprout because of the one pea seed that was uncovered. We saw that the pea seed's outer layer started to crack open, and a small whitish-green sprout was emerging from the inside of the seed. So far, no seeds have sprouted or broken through the soil. We are going to continue to let them grow.

Mar 8, 2024

Entry #3:

Today, one of our pots sprouted. Pea 1, soil, has three small seedlings. The heights consist of 1cm, 0.5 cm, and 1.3 cm. None of the other pots have sprouted. We watered all of our pots. The wood chips pots were very dry, and needed the most amount of water. The soil pots just needed a little bit of water because they were getting a little bit dry at the top. The cotton ball pots were also slightly dried out, and we gave them a small amount of water to keep them moist. We recorded our data in our data tables, and we are going to continue to let our plants grow over the weekend.

Mar 11, 2024

Entry #4:

A lot of our seeds have sprouted. All of the pea pots have sprouted. The soil has 4 sprouts ranging from 7cm, 14cm, 15.7cm, and 17.6cm. The cotton balls have sprouted too. They have 3 sprouts with all similar heights consisting of 9cm, 10.3cm, and 11.5 cm. The woodchip pot for the peas has one sprout with a height of 4cm. Some of the onion seeds have sprouted too. The soil pot for the onions has 2 very small sprouts. Their heights consist of 0.5cm, and 0.2cm. The cotton ball pot also has 2 small sprouts. One is located at the bottom of the pot, and we were unable to measure it without disturbing the other seeds growing. The sprout we did measure has a height of 1.1cm. The wood chip pot with the onion seeds is the only one we did not find any sprouts. All of the pea sprouts have a light, lime-green coloring with few leaves. So far, the onion seeds are a very short and thin, lightish green-brown sprout. The average number of leaves per pea sprout is around 3.5 (rough guess). We watered all of our plants, and are going to put them in a sunny window for the day.

Mar 13, 2024

Entry #5:

Today we noticed that the sprouts grew even more. The pea seeds don't seem too much taller than they were 2 days ago, but there are definitely more leaves and they are getting bigger. The soil pot with the onion seeds has 4 sprouts now instead of 2. We watered all of our plants today, and the wood chips are already drying up. (We learned that they don't absorb water very well). The wood chip pot with the onion seeds still hasn't sprouted any seeds. We are worried that the seeds got washed away through the holes in the bottom of the pot when we watered them. The wood chips don't do a very good job of keeping the seeds in one place. All of the measurements can be found in the table above. We are going to make sure to rotate our plants to face away from the sunlight so they will start to grow straight again. We put our plants back to their spot, and we'll check on them tomorrow.

Mar 15, 2024

Entry #6:

All of our pots have at least one sprout. We watered all of them again today, making sure the contents of the pot is moist enough for them to keep growing. The color of the pea sprouts seem to be getting slightly darker green than they were before. The number of leaves are also increasing. The leaves are getting slightly bigger as they grow too. The pea sprouts seem to be drooping over, and are unable to stand up on their own. The onion sprouts are still very small and fragile, but seem to be growing at a good rate. So far, they have no leaves and are very thin little sprouts. We measured all of our plants and put the measurements in the data table. We also averaged all of our plant heights and put those in the table too. After we finished our observations, measurements, and watering, we put them back in their spot to grow over the weekend.

Mar 18, 2024

Entry #7:

Some of our plants seemed to have gotten a little bit shorter over the weekend (specifically the pea sprouts in the soil pot). It might be because of the lack of space in the pots, or the fact that they weren't watered over the weekend. I think that if they had a bigger pot to grow in, they would continue to grow at a steady rate. The other plants also seem to be growing slower than they have been. The onion sprouts seem to keep growing at a slow rate. The one onion sprout in the cotton ball pot has the tallest height out of the onion sprouts at 6cm. We got some small wooden skewers today for

our pea sprouts. We stuck one or two in all three of the pea pots, and lightly coaxed the sprouts around them. We then took a short piece of string and loosely tied them around the sprouts and the skewers to keep them upright. We then watered all of our pots, and put them back in their spot. Those were the only changes we made today.

Mar 19, 2024

Entry #8:

Our pea sprouts seem to be a little droopy today. Some of the leaves seem to be almost wilted in a dark green color, hinting that we may have over-watered them. Other than that, their heights seem to be slowly increasing. I think that the skewers are already improving their growth. The onion sprouts are slowly and steadily growing at the same pace as they have been. No new onion sprouts have emerged out of any of the three pots. Our plants have been growing at a slower rate recently, and we think that this is because they need more sunlight. We plan on putting them in a sunny window today to see if it affects the growth. Other than that, we watered each pot, recorded our data and observations, and we will check on them tomorrow.

Mar 22, 2024

Entry #9:

Our plants haven't been watered in a few days, and it definitely shows. A lot of the pea leaves seem to be dry, shriveled, and crackly. They are also drooping over significantly. The pea seeds definitely needed to be watered, and we made sure to water them all. The onion seeds also seem to have shriveled up, and stopped growing. Considering they haven't been watered in such a long time, this makes total sense. The onion seeds are completely flattened and we're almost unable to measure them. We made sure to water all of the onion pots too. It doesn't help that they were in direct sunlight for the whole time. We thought this would end up helping them, but we would have needed to water them at that time along with them being in the sunlight. We recorded our measurements in the table. We are only going to be continuing this experiment for the next week or so, and we will continue to update our journals.