

how does the level of solutes (salt) in water affect plant growth over twenty five days?

By Beatrice Clarke

Hypothesis


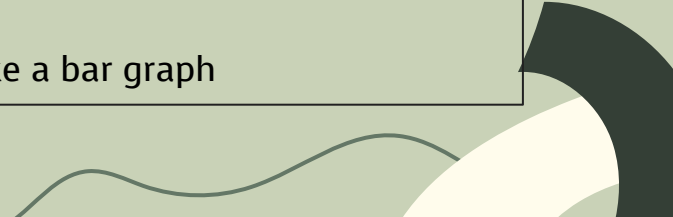
I predict that the plant with the lowest quantity of salt in the water will grow the fastest and tallest due to the fact that when roots are exposed to a high sodium amount it can stunt the plant's growth and take up some of the plant's water, which also can affect plant growth. I chose this experiment because I was curious about how putting salt on the sidewalks to get rid of ice in the winter can affect plant growth as well as during a hurricane how does the level of salt in the ocean affect plants.

Materials

- 8 pea plants
- 8 separate pots or paper cups (all identical)
- Potting soil
- Water
- Measuring tape
- Tablespoon
- A measuring for a smidgen ($1/32$ teaspoon), pinch ($1/16$ teaspoon), and dash ($1/8$ teaspoon)

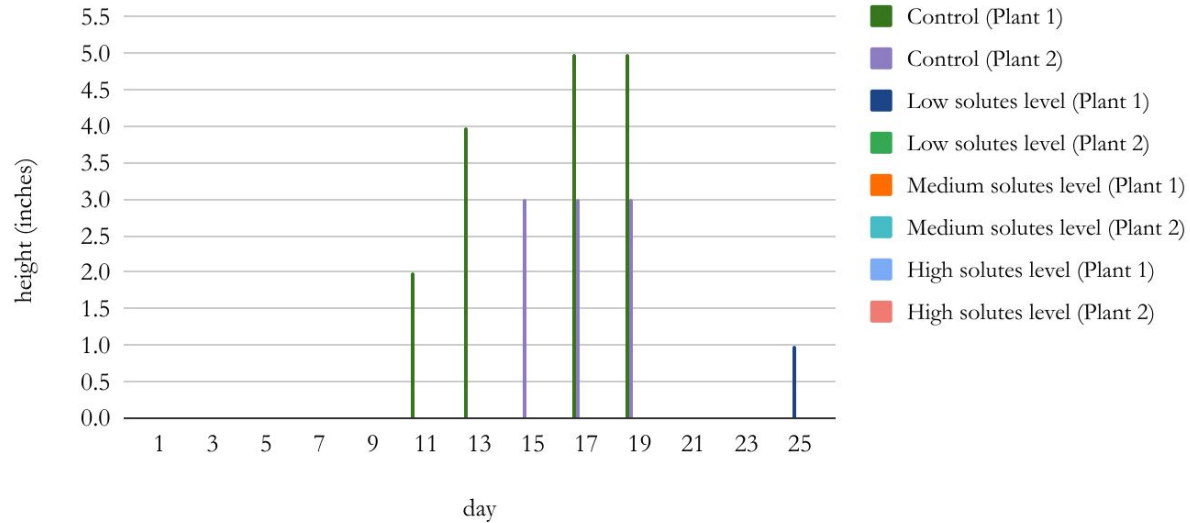


Instructions

1. Use eight paper cups and fill each pot with soil all the way to the top of the cup
 2. Add one seed of the pea plant to each cup (dig one inch down to place the seed and then cover the seed with dirt)
 3. Put all eight cups into an area that gets sunlight almost all day long
 4. Put two tablespoons of tap water in two of the cups and label them control cup #1 and #2
 5. Put a smidgen ($1/32$ teaspoon) of salt into one of the tablespoons of water and pour it into two of the other cups and label the cups Cup #3 and Cup #4
 6. Put a pinch ($1/16$ teaspoon) salt into one of the tablespoons of water and pour it into two more cups and label the cups Cup #5 and Cup #6
 7. Put a dash ($1/8$ teaspoon) of salt into one of the tablespoons of water and pour it into the last two cups and label the cups Cup #7 and Cup #8
 8. Repeat this every other day and stop if plant looks like it's wilting
 9. When you see growth in one of the cups and then start measuring with a ruler how much the pea plants grow per day
 10. After 25 days has passed stop and collect your data and make a bar graph
- 
- 

Data

how does the level of solutes (salt) in water affect plant growth over twenty five days?



Analysis

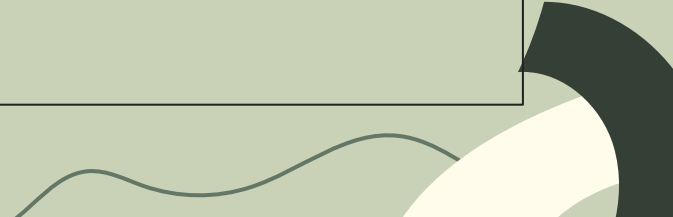
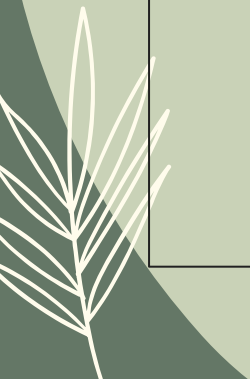
- Control Plant #1 grew the tallest over the twenty five days at 6.5 inches
- Control Plant #2 grew the second tallest at 3.5 inches
- The third tallest plant was 1 inch tall
- All of the other plants growth was stunted by the salt and did not grow above the surface





Summary

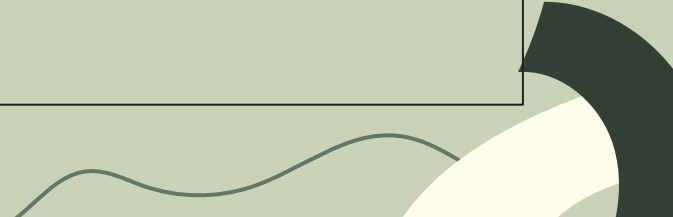

The results of my experiment show that my hypothesis was correct and salt does delay the growth of pea plants and that the pea plant with the lowest amount of salt, or in this case no salt, would grow the fastest and the tallest. This was proven when the control plants in my experiment sprouted first and grew the tallest out of all of the plants.





Future Work

In the future if I were to do this experiment again I would have begun growing the plants earlier than I did so the plants could have more time to grow so I could see the difference of growth more clearly. And I also would have put less salt in each of the plants' water because I feel as though the salt greatly stunted the growth of each plant, especially the ones with the highest levels of salt in their water.



Quad chart

Purpose

The purpose was to see how plant growth is affected by the amount of salt that goes on the sidewalk during the winter to thaw ice. I chose this because I figured that plants must somehow be affected by salt on sidewalks in the winter and I wanted to know if we should find an alternative to using salt on the sidewalks because it could harm the plants life around it.

Procedures

First take each up and fill them with potting soil, next put a seed in each one. Then put two teaspoons of water into each cups, but for two cups put in a smidgen amount of salt, the next two cups with a pinch of salt, and the last two cups with a dash of salt. Measure the plants with a ruler as soon as they begin to grow. Repeat this every other day for twenty five days and then collect your data.

Results

The results of this experiment is that the control plants grew the most and the quickest, while the others didn't grow very much at all. This proved that the salt did stunt the growth of the pea plants and my hypothesis was correct. Control Plant #1 was tallest and Control Plant #2 was the second tallest, again proving my hypothesis that salt does affect plant growth.

Analysis

The plants that had grown tallest were the control plants, and the third tallest was the one with the lowest amount of salt. If I were to redo this experiment I would have given the plants a longer growing time. I also would have given each plant a bit less salt so that I could see the change in the growth more. I would have also used plants that were more durable to salt water.