
EMPACTS Project: PH levels of water in relation to plant growth

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Overview

How do plants grow? What is the importance of photosynthesis?

Photosynthesis

Photosynthesis is defined as “the process by which green plants and some other organisms use sunlight to synthesize foods from carbon dioxide and water.

Photosynthesis in plants generally involves the green pigment chlorophyll and generates oxygen as a byproduct”.

Photosynthesis can be regarded as the basic life process of almost all plants and animals. It provides an energy source that powers all your metabolic functions and the oxygen needed for breathing.

Why I choose what to manipulate:

Independent Variable

What I chose to manipulate in my project was the PH of the water that was used to hydrate the plants. For my experimental group, I used Alkaline water with a PH of 8.8. For my control group, I used sink water that had a PH of 7 . Both plants got 4 mL of water a day.

Hypothesis

Hypothesis

My hypothesis was that the PH of the water would affect the plant growth.

Methods and Materials

Manipulated vs Constant Variables

Manipulated Variable

- The PH of the water was the only variable that was manipulated

Constant Variables

- Amount of sunlight
 - Amount of water
 - Temperature
 - Direction towards the sun
 - Each measurement was taken at the same time every week
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Material Used:



- (Left) Water used to hydrate the manipulated plants

Material

- Graduated cylinder in order to measure how much water was being given to plants
 - pH 8.8 alkaline water
 - pH 7 tap water
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Picture of the Plant that was held constant



Picture of the Plant that was not held constant



Date	Control Measurement (in inches)	Date	Manipulated Measurement
10/20/2021	3.89	10/20/2021	2.16
10/27/2021	4.1	10/27/2021	2.45
11/03/2021	4.46	11/03/2021	3.16
11/10/2021	4.78	11/10/2021	3.78
11/17/2021	5.23	11/17/2021	4.1
11/24/2021	5.52	11/24/2021	4.58

Results of the Project

Results

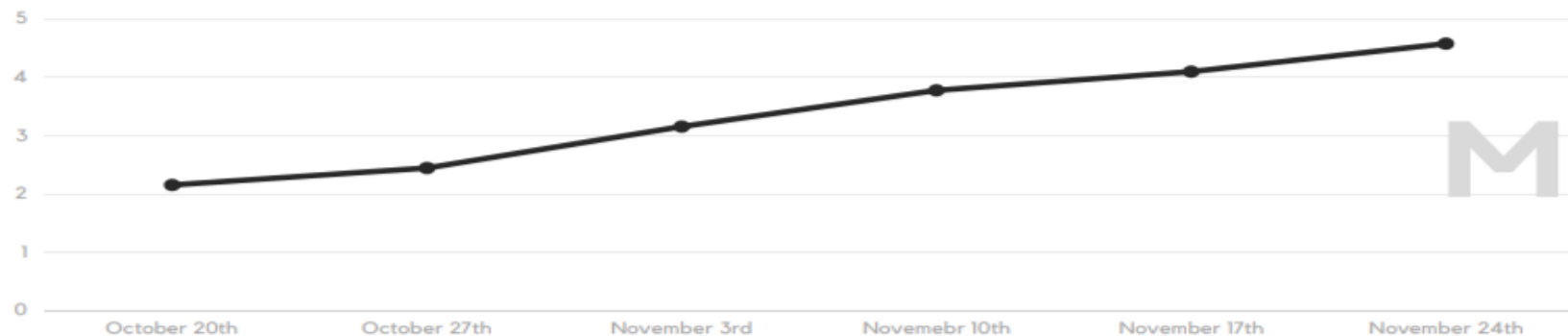
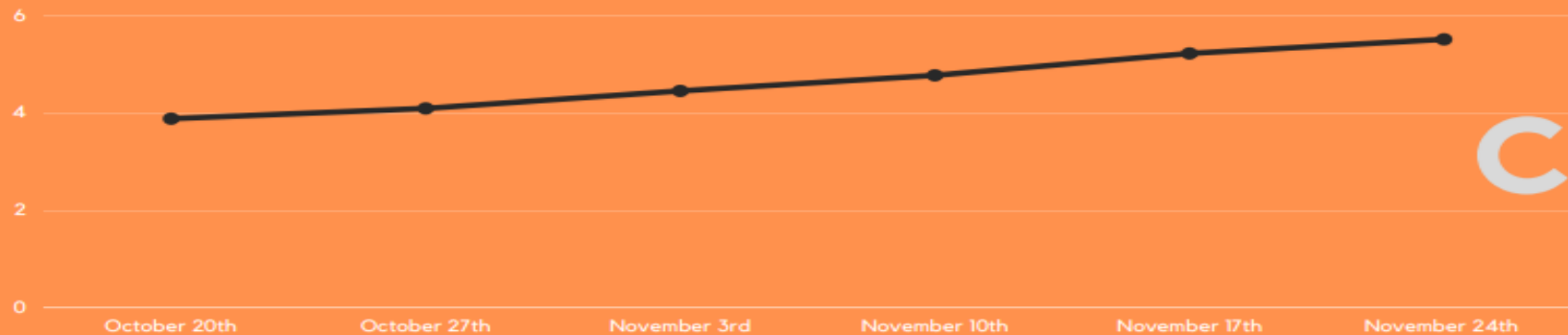
Controlled

- The difference between the initial and the final measurement was 1.63 inches.

Manipulated

- The difference between the initial and final measure was 2.42 inches. Therefore, making the amount of growth larger with the use of alkaline water.
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PLANT GROWTH OVER 6 WEEKS



Conclusion

Conclusion

Photosynthesis is a very important process that allows our planet to be habitable by humans. I understood that the pH of certain soils would affect the growth of the plants but I did not know that water could affect the plant growth in the same way.

Importance of my findings

You can infer from the measurements taken that the results of this experiment did not support my hypothesis, It shows that the pH 8.8 alkaline water actually allowed the plant to grow larger, this shows that a new hypothesis can be formed that slightly alkaline water will increase plant growth.
