Caffeinated Plant Project

[redacted]

Background Research

Source: Google Images

When growing a plant you need to take very good care of it in order for it to grow. How to grow a plant is by using the correct soil, fertilizer, nutrients, water, and giving the plant enough sunlight this is when photosynthesis is important. Photosynthesis is a process that is used by the plants algae and bacteria this is to convert light energy into the chemical energy by using the sunlight water and carbon dioxide that is what they use to create their own food which is known as their sugar that is it's source of food and energy it needs to produce oxygen in order for it to breath and survive the oxygen it produces also is a formation of ozone layer that does shield the plant from harmful ultraviolet radiation that can kill the plant. Fertilizer is important for plants because it can help enhance their health and the performance of the plant it also provides micronutrients for the plant but when using fertilizer you have to be very careful because if you over fertilize the plant it will burn the roots and kill the plant it is also harmful to the environment if you do not use the correct fertilizer. Coffee is also considered to be a plant fertilizer because it is said that coffee is full of nutrients that include magnesium, potassium, and nitrogen these nutrients in the coffee help the plant grow faster and when using coffee for your plant you are also recycling waste which is better for the environment.

Question

What the effect of the type of liquid (tap water vs. coffee ground suspension) on the time it takes a seed to sprout (days)and which one grows the fastest?

Source: Google Images

Hypothesis

If I water a seed using a suspension of coffee ground mixed with tap water, then the flower seed receiving the coffee suspension will sprout faster than the seed receiving tap water because coffee is considered as a fertilizer because of how it has a lot of nutrients which will help improve the plants growth and help the plant grow better and faster.

Source: Google Images

Materials

- Two Evening Primrose seed packets
- Two containers
- Bag of soil
- Coffee/Tap water
- Notebook to record down observations
- Sticky notes
- Ruler
- Sunny window
- Scissors to open the bag of soil

Source: Google Images

Source: Google Images

Procedure

Source:
Google Images

1. Gather materials: Two containers, bag of soil, tap water, coffee, two evening primrose seed packets, sticky notes, scissors, ruler, and notebook
2. Place two containers open soil bag with scissors
3. Fill one container with ½ cup of soil
4. Then open the packet of seeds and place the seeds in the soil then get another ½ cup of soil to cover the seeds
5. Repeat the same process for the second container then mark a sticky note that says tap water for one container then coffee for the other and stick them on a stick and place it in the container
6. Put 3 tablespoons of tap water and 1 tablespoon of water and 3 tablespoons of coffee
7. Once done putting in both liquids then place two containers by a sunny window
8. Record down results in the data table

Source:
Google Images

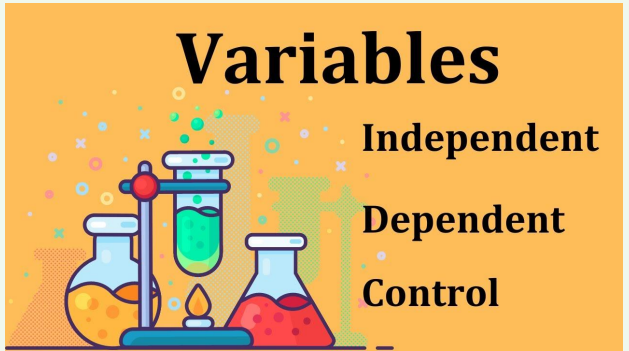
Variables

Independent Variable: Type of liquid (coffee water vs. tap water)

Dependent Variable: Time it takes flower to sprout (days)

Control Variables: Container, room (environment), sunlight, seed (evening primrose)

Control Group: Normal tap water



Source: Google Images

Quantitative Results (Data Table)

Source:
Google Images

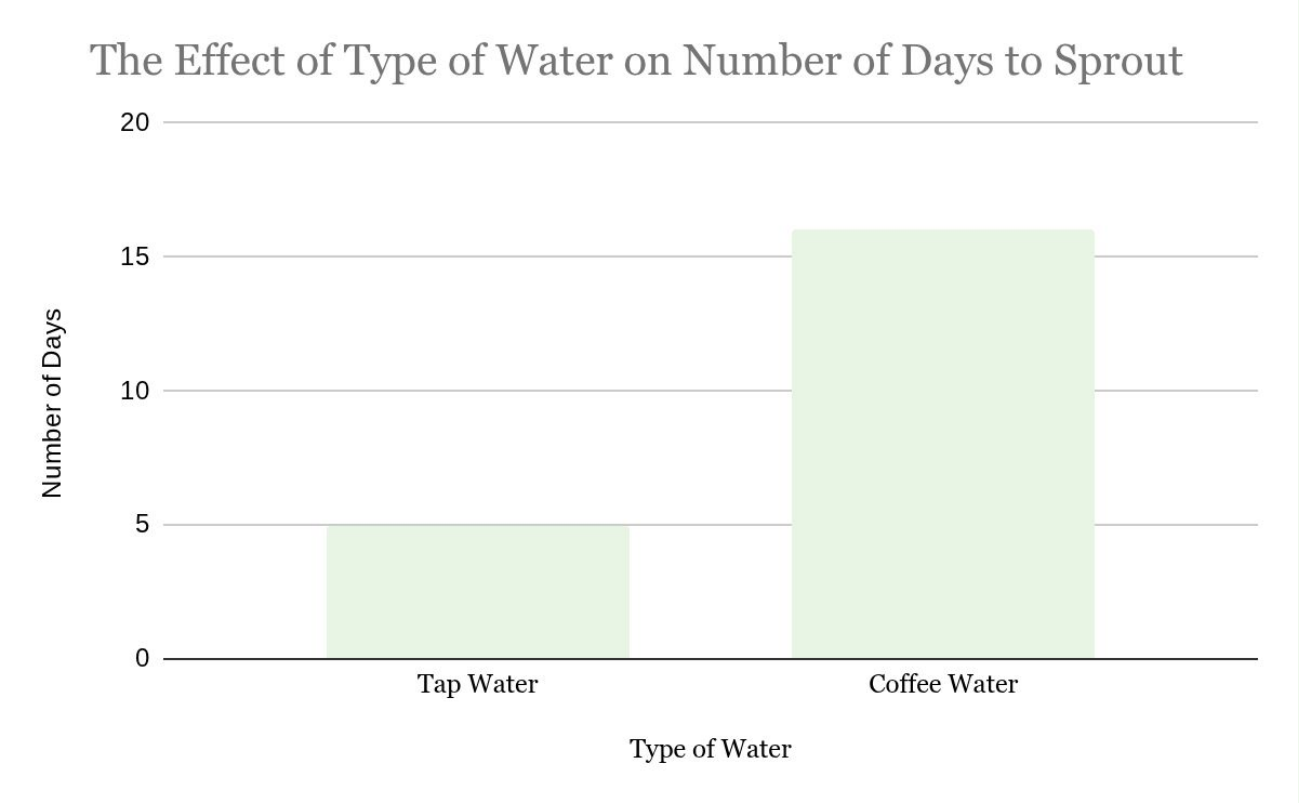
IV: Type of Water	**DV: Number of Days it Takes for Seeds to Sprout**
Tap Water	5 days
Coffee Water	16 days

Observations Journal: Week 1

Source:
Google Images

Date	Day #	Observations/Notes
11/13	1	First day of planting
11/14	2	No changes
11/15	3	No changes
11/16	4	No changes
11/17	5	Tap water seeds sprout!
11/18	6	No changes
11/19	7	No changes

Results - Data Graph



Photos

Source: student image

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Source:
Google Images

Conclusions

My experiment investigated the effect of the type of liquid on the coffee plant. My hypothesis was not supported by the results of my experiment. I thought that the coffee water would cause the seed to sprout faster and grow healthier than the regular water due to coffee's nutrients for fertilizing. My experiment took an unexpected turn by growing mold and killing the coffee plants that were growing, so my hypothesis cannot be supported. My data shows that my coffee plant took a very long time to grow at 16 days while the regular water plant only took 5 days. The coffee water plant sprouted green but then died from mold. This means that my hypothesis was not supported and the coffee plant did not grow faster than the water plant.

Source:
Google Images

Discussion

The purpose of my experiment was to test if coffee water would help a plant grow faster and healthier than tap water. While conducting my experiment, some issues I found were worms and mold in the coffee plant. This could have affected my results by the mold growing in the coffee plant and killing the plant which made the coffee plant not grow. If I did this experiment again, I would use a soil that has only dirt and nutrients in it instead of one with worm castings.

Overall, I learned that when growing plants it is very important to take very good care of them and use the right nutrients in the soil for the plant to grow. I was very interested in this project and I loved it!

Implications

My project is important because it helps us understand the relationship between the type of liquid and the time it takes a seed to sprout. The results showed that the mold killed the plant watered with a coffee solution and the tap water plant sprouted much faster. This information could be useful in daily life because we can try to see other ways that coffee can help plants grow faster and better as a fertilizer. Coffee also recycles waste which is better for the environment. People could use these results to learn how to recycle better for the earth.

Future Research Ideas

If I could continue this project, I would use different soil that doesn't have earthworm castings. One new question I have is would a non-earthworm soil significantly change my results? In the future, I would improve my experiment/design by testing more types of flower seeds. These changes would help me learn more about how effective coffee is as a fertilizer.

Works Cited

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