Watering Plants - But Not With Water

—

By Darcy Sutton, © 2020, Darcy Sutton
St. Therese's Catholic School, Grade 4

Overview

I want to test to see if there is a way to water plants with something that isn’t water. I am going to test different household liquids, (eg. vinegar and lemon juice,) and test what happens. I am also going to use water as a control test.

Background

The reason I want to test to see if watering plants with liquids apart from water is possible is because when I moved house and we had the garden done we also bought some new plants; some of them grew and some didn't; I thought of the idea from this. It would also help with the world's water shortage if you could water plants with something aside from water.

IS IT POSSIBLE TO WATER PLANTS WITH LIQUIDS THAT AREN’T WATER?

The Experiment

Materials

- Lemon Juice
- Vinegar
- Milk
- Pepsi
- Black Tea
- Black Coffee
- Water (Control Test)
- 7 Plants

Hypothesis

I think that milk
will work best.

Hypothesis Support

I think this is what's going to happen because...

There are 6 nutrients that plants need; nitrogen, phosphorus, potassium, magnesium, sulphur and calcium. Milk has both sulphur and calcium.

Variables that may affect the outcome...

- Liquids in the soil affecting the height measurements.
- Spilling the liquids I am watering the plants with.
- Original conditions of plants
- Different batches of liquids being different. (Eg. Different bottles of lemon juice.)

Safety

Make sure to not get any liquids inside your mouth or eyes. If you do don’t induce vomiting. If you get liquids in your eyes wash eyes out with warm water. If you get it in your mouth do not consume. Some soil can be dangerous so wear gloves whilst handling and wash hands afterwards. Some liquids may stain.

Procedure

1. Acquire 7 plants of the same type.
2. Put the plants away from anything that may affect them, eg. rain. Also make sure the plants are in the correct conditions according to their label.
3. Label all plants with a number and write down which plants you will be watering with what liquid.
4. Water them with 20 ml of each liquid everyday at the same time.
5. Record the height and take photos of all plants. Make sure to return them to the same spot.
6. Repeat this for a couple of weeks.
7. Make a graph and an array of the photos to observe the results.

The experiment

What Plants Are Getting Watered With What (Daily)

1. Lemon Juice 20ml
2. Vinegar 20ml
3. Milk 20ml
4. Pepsi 20ml
5. Black Tea 20ml
6. Black Coffee 20ml
7. Water 20ml

As The Plants Grow

Day 1

Day 2

Day 3

Day 4

Day 5

Day 6

Day 7

Day 8

Day 9

Day 10

Day 11

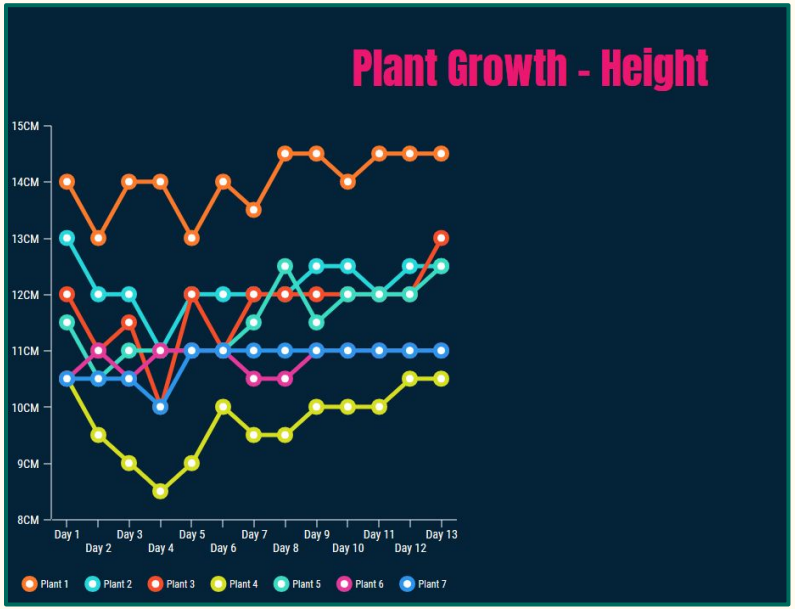
Day 12

Conclusion

In conclusion, all plants apart from plant 4 (Pepsi) had an adjustment in height; whether that be positive or negative, the only negative one being plant 2 (Vinegar). There was a consistent pattern where almost all of the plants started off a light green, started to darken towards the middle of the experiment, then started to lighten again towards the end. Both plants 3 (milk) and 5 (black tea) grew 1cm; whilst all the others either decreased or increased by 0.5cm, apart from plant 4 (Pepsi) which did not change from beginning to end.

In the end, I think that plants 3 (milk) and 5 (black tea) worked best in this experiment and would suffice instead of water. This would would help with the planet's water shortage as we could use leftover tea and milk, as well as out of date milk to water plants.

Conclusion Photos



	Starting	Growth Amount	End
Plant 1	14cm	0.5cm	14.5cm
Plant 2	13cm	-0.5cm	12.5cm
Plant 3	12cm	1cm	13cm
Plant 4	10.5cm	0cm	10.5cm
Plant 5	11.5cm	1cm	12.5cm
Plant 6	10.5cm	0.5cm	11cm
Plant 7	10.5cm	0.5cm	11cm

Thank-You's

- Mum, Jennifer Sutton
- Enrichment teacher, Nicole Cochrane
- Sister, Hannah Sutton

References

- Dairycouncil.co.uk. n.d. What Nutrients Does Milk Contain? – Faqs - Dairy Council Northern Ireland. [online] Available at: <https://www.dairycouncil.co.uk/consumers/faqs/what-nutrients-does-milk-contain> [Accessed 30 May 2020].
- Ersek, K., 2012. The 6 Essential Nutrients For Healthy Plants. [online] Holganix.com. Available at: <https://www.holganix.com/blog/the-6-essential-nutrients-for-healthy-plants> [Accessed 30 May 2020].
- TeacherVision. n.d. In Which Liquids Do Seeds Grow Best?. [online] Available at: <https://www.teachervision.com/seeds-pollination/which-liquids-do-seeds-grow-best> [Accessed 29 May 2020].