

# Providence Water Quality and Plant Growth

*This project utilized GLOBE Hydrology and Phenology protocols*

---

By: Julia Yakirevich

Ms. Nugent

Grade 6

Nathan Bishop Middle School

How Does Water  
Quality Affect Plant  
Growth In  
Providence, R.I.?



# Introduction

My investigation explored the question of: how do certain plants react to different water sources, with different nitrate levels? I conducted research on plant growth by using water sources from throughout Providence, Rhode Island, and I additionally observed nitrate concentrations in the water.

I wanted to investigate this topic because I was inspired by the different GLOBE projects we performed in class, and it was the first idea that I got that truly interested me. In addition, I was also eager to learn more about just how critical pure drinking water is for humans and plants.

# Hypothesis



# My hypothesis was...

My hypothesis was plants watered with water that had low nitrate levels, would grow and thrive more than plants watered with water that had higher nitrate levels.

# The Experiment

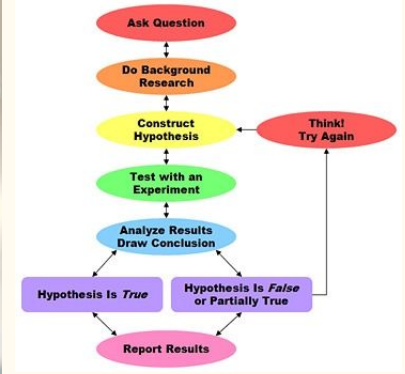
—

# Materials Used

- Water Samples
  - Planting Materials (soil, vermiculite, seeds, pots, etc.)
  - Containers
  - Nitrate testing kit
  - Other GLOBE provided resources
-

# Procedure

1. I collected water samples from different locations.
2. I measured the nitrate concentrations found in my water sources
3. I grew basil plants and watered them with my different water samples
4. I recorded my data
5. I drew conclusions and proved my hypothesis







DATA

# Data Collection

## WATER

Locations: 6 Alton Rd. tap water and filtered tap water, NBMS Science Room, Smart Water (bottle)

Collection: I collected samples before the Covid-19 pandemic every two weeks.

Results: Filtered tap water from my house had the lowest amount of nitrates, Smart Water had the second lowest amount of nitrates, tap water from my house had second highest amount of nitrates, and tap water from our Science classroom had the highest nitrate levels.

## PLANTS

My dining room windowsill

I watered my plants every Wednesday, and recorded data on Sundays.

Basil watered with tap water from my house, grew to be 18.5 inches, however only has 13 leaves. Basil watered with filtered tap water, grew to be 17.75 inches, and has 24 leaves. Basil watered with Smart Water, grew to be 18 inches, and has 19 leaves. Finally, basil watered with tap water from our Science classroom grew to be 17.5 inches and has 15 leaves.

# Conclusion

By using data from my water samples and plants, I am to draw a conclusion and prove my hypothesis, *plants watered with water that has low nitrate levels, will grow and thrive more than plants watered with water that has higher nitrate levels*. My conclusion is that basil plants watered with water with lower nitrate levels, thrive more overall, in comparison to plants watered with water with higher nitrate levels, therefore my hypothesis was correct.

# My Experience with GLOBE

This school year I have had a wonderful experience with GLOBE and Prof. Garik and Ms. Johnson. I enjoyed the experiments we performed in class, and the opportunity to conduct our own research and experiments. Overall, I'm am very thankful for the work Prof. Garik and Ms. Johnson have done for our class, and grateful that we were able to do so much and learn a lot from them.