Ananya is getting the fern plants from the plantation garden center.
https://platform.cysf.org/project/edit/hypothesis/

How many times do I have to water the plants??
Mornings and evenings

How much water do the plants need??????
They need water twice a day, once in the morning and once in the evenings.

- [x] ~~Get the plants by the 25ths of December~~
- [x] ~~Get all the Information by early February~~
- [x] ~~2 weeks of watering~~
- [ ] The tri fold done by the week before science fair (feb 14 2024)

How many plants do we need
3 plants for just water
3 plants for just salt water
3 plants for just ice tea
So in total we need 9 plants

Ananya 💗
Water in morning take Photo in the evening
Get plants from plantation garden center or Walmart

How much water the plants rejected
100 ml for ice tea one
¼ cup for ice tea two
120 ml for ice tea two

Water absorbed the liquid

120 ml for salt water one
120 ml for salt water two
120 ml for salt water three

What i need to Research

- How much nutrients do plants need?
- What nutrients do plants need?

Tri fold

- [x] ~~Get photos of plants~~
- [x] ~~Print question~~
- [x] ~~Write hypothesis~~
- [x] ~~Get a picture of the team~~
- [x] ~~Conclusion~~
- [ ] How often did we water
- [ ] How much did we water
- [ ] What liquid did we use
- [x] ~~Our research~~
- [ ] Make tri fold
- [ ] What plant did we use
- [ ] Put where we found the info

- **Hypothesis**: we think that The Saltwater plant will die, and the iced tea one will Grow🌱. Why do we think this because Saltwater tastes gross and if plants taste like us it'll probably die because if I had a drink salt water all day every single day I would probably die!!!!!!
- Some plants do need some different nutrients

How do people nourish and grow ferns:

- Ferns need indirect light
- Temperate temperature (room temp)
- Consistent water
- Feed on schedule
- 10-10-10 fertilizer ratio (nitrogen, phosphorus, potassium)

How to water ferns

- Not being drenched
- It likes water ever 4 - 5 days

What nutrients are in Iced Tea, Saltwater and tap water (ions for water)

Iced Tea

Total fat 0g 0%
Saturated 0g 0%
Trans fat 0g
Polyunsaturated fat 0g
Monounsaturated fat 0g
Cholesterol 0mg 0%
Sodium 7.1mg 0%
Total carbohydrates 0.7g 0%

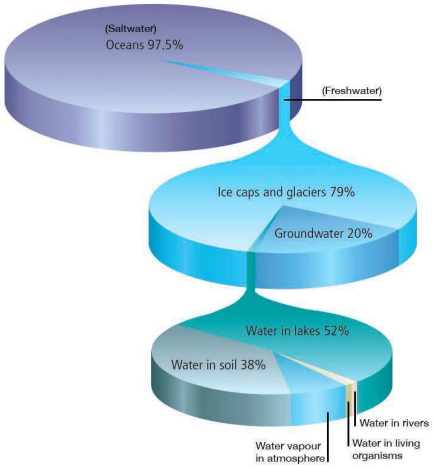
Salt water

Sodium chloride (salt)]
And small ion traces such as:
Calcium
magnesium (Mg)
sodium (Na)
potassium (K)
And water

Why might looking at alternative water sources be important?

Plants need water because the plant uses water for photosynthesis, which is how a plant makes its food. If there is a lack of water (water is scarce), photosynthesis will halt and the leaves become yellow, the plant isn't getting the nutrients it needs.

- https://www.energy.gov/femp/best-management-practice-14-alternative-water-sources#:~:text=Alternative%20waters%20are%20sustainable%20sources,by%20providing%20diverse%20water%20sources.&text=Desalinated%20water.
- https://www.vedantu.com/biology/effects-of-water-scarcity-on-plants



Introduction/Background Research:

Problem:

How do plants react to different liquids?

Hypothesis:
If the plants are watered with different liquids, then some plants will thrive while others die because plants like to produce sugar and there is sugar in iced tea therefore it will thrive, but plants do not like salt in high quantities so those plants will die.

Materials:

- 9 Fern Plants
- 9 Planters (Pots)
- Iced Tea (powder mix)
- Salt
- Water
- Measuring Cup
- Tape
- Paper
- Marker

Procedure:

1. Gather materials
2. Pot plants and label with tape and paper
3. Figured out measurements of each liquid (100mL)
4. Water plants with ‘Water’, make observations
5. Make Ice Tea solution, mix ¼ cup of ice tea powder with water (100mL)
    a. NOTE - Make sure that you use a cup that won’t leak
6. Water plants with ‘Ice Tea’, make observations
7. Make Saltwater solution, mix ¼ cup of salt with water (100mL)
    a. NOTE - Make sure that you use a cup that won’t leak, heat water up to 70 degrees celsius and then mix in salt or else it will not dissolve fully.
8. Water plants with ‘Saltwater’, make observations
9. Take a picture the next day so that results have set in.

Results:

	Observations			
	Day 1 (Jan 2)	Day 2 (Jan 4)	Day 3 (Jan ?)	Day 4 (Jan 15)
Water (Control)	Growing like a normal fern plant	No changes	No changes	No changes
Ice Tea	It looked like a normal healthy fern plant	The leaves are getting longer and healthier than the water plants	It was starting to wilt and get dry and crispy.The soil had a layer of white mold on it	There's this white layer forming on top of the dirt and its sponge,I think its mold and it smells.The tips of the leaves were brown and the whole leaf was smushy
Saltwater	It looked normal and healthy	It started to wilt and turn brown	It was getting crispy and the leaves were falling off	**It died!!!**,the leaves were falling and it was almost fully brown

Analysis:
There was no change in the water (control), the iced tea turned mushy, but the saltwater turned crispy.
Why did the saltwater turn crispy?
Why did the iced tea turn mushy?

Source of Error:

- We would add holes to the bottom of the pot
- Water in to big portions
- Water to close together
- Better tracked days
- Water every 4 - 5 days
- If watered 4 - 5 days have a longer time frame
- To much salt

Conclusion:

Fern plants do not like a whole lot of salt water, and they need the hole in the Bottom of the pot Otherwise the water will Clump on top and make it that it has a hard time doing photosynthesis with the sugar from the ice tea and the salt water and not being able to drain it out makes it really hard. Ice tea isn’t good for long term plants but for one-three days the plant thrives pretty good.

Ice tea

Ice tea has too much sugar for the fern. The sugar in the ice tea made a layer of mold on the top of the of the pot, so that the plant.The sugar makes the water the water that is in the iced tea go away because on the bottom all the sugar sinks so sugar is heavier than water and the sugar all sinks on top of the dirt and then that means that there's a layer of sugar and then the water.

Salt water

So some things with salt water are kind of the same with iced tea but they don't have sugar the opposite is I'm salt water because salt is heavier than water so the salt floats down to the bottom and makes a nice layer of salt on top of the dirt and then as the water does it just stays on top of it so technically you're getting salt the plant is taking salt in more than the water is that's why it died

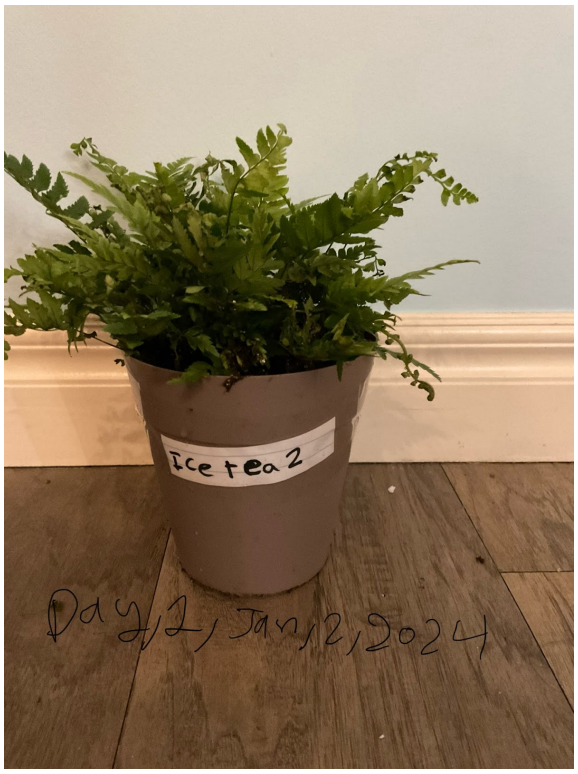
The team<3👋


Day 1, Jan, 2, 2024
water 1


Day 1, Jan, 2, 2024
water 2


Day 1, Jan, 2, 2024
water 3


Ice tea 1
Day 1, Jan, 2, 2024


Ice tea 2
Day 2, Jan, 2, 2024


Ice tea 3
Day 1, Jan, 2, 2024


Salt water 1
Day 2, Jan, 2, 2024


Day 1, Jan, 2, 2024
Salt water 2


salt water 3
Day 1, Jan, 2024, 2


water 1
Day 3, Jan, 2024, 4


water 2
Day 2, Jan, 4, 2024

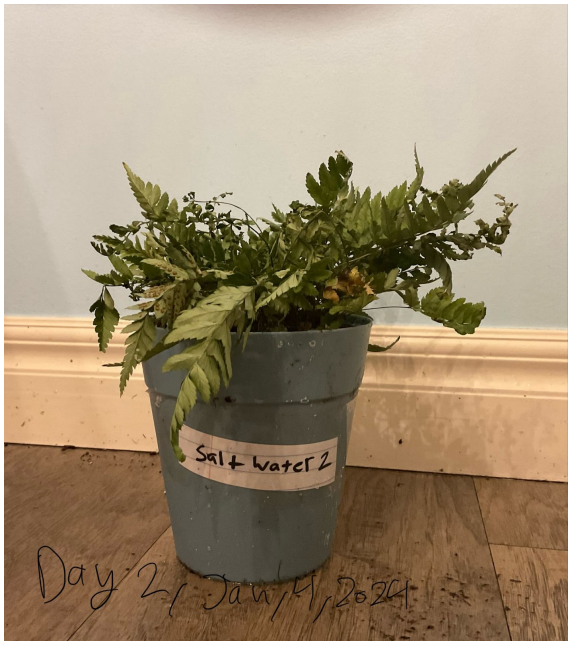

water 3
Day 2, Jan, 4, 2024


Ice tea 1
Day 2, Jan, 4, 2024


Ice tea 2
Day 2, Jan, 4, 2024


Ice tea 3
Day 2, Jan, 4, 2024


salt water 1
Day 2, Jan, 4, 2023


Salt water 2
Day 2, Jan, 4, 2024


Salt water 3
Day 2, Jan, 4, 2024


water 1


water 2


water 3


Ice tea3


Ice tea 2


Ice te


Salt water 3


Salt water 2


Salt water 1


Ice tea 3


1


Salt water 3


Salt water 2


Salt water 1


Ice tea 2


water 1


water 2


water 3

Best management practice #14: Alternative water sources. Energy.gov. (n.d.). https://www.energy.gov/femp/best-management-practice-14-alternative-water-sources#:~:text=Alternative%20waters%20are%20sustainable%20sources,by%20providing%20diverse%20water%20sources.&text=Desalinated%20water

Vedantu. (n.d.). *Effects of water scarcity on plants*. VEDANTU. https://www.vedantu.com/biology/effects-of-water-scarcity-on-plants