Which Brand of Bottled Water Most Positively Affects Germination and Growth of Raphanus sativus (common radish) seeds?

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Abstract:

The purpose of this research was to answer the question asked in the title: Which Brand of Bottled Water Most Positively Affects Germination and Growth of Raphanus sativus (common radish) seeds by producing the healthiest seedlings within the allotted timeframe?

Each bottled water was tested for water quality using GOBE protocols and recorded for data analysis. Raphanus sativus seeds were placed in a mini greenhouse seed starter kit purchased from the grocery store. Each pot was filled with the same amount of growth medium with one seed placed in it according to seed merchant's directions. The following popular brands of bottled water were used for this experiment: CORE Hydration, Aquafina, Nestlé Pure Life, Fiji, and Smart Water.

Each sample received the same daily amount of water and placed in a warm, sunny area for light. If seedlings sprouted, they were measured over a three-week period.

The plants demonstrating the most growth in that time frame determined the bottle brand water that has the most positive effect on Raphanus sativus germination and growth.

Observations were recorded in a log book and the data was analyzed to determine the state of the hypothesis. The data did not support the stated hypothesis.

Introduction:

Does it make a difference which kind of bottled water refreshes your seeds?

- Most urban areas struggle with clean, healthy water for their community members. It is understood that if the water is not safe for human consumption, its not safe to watering plants that will become food.

- Many of the students in this area have tested bottled water and compared it to tap water for quality drinking water. This particular research was intended for taking those waters that tested highest in safe human consumption and discover which ones would grow the healthiest plants for human consumption.

Introduction:

Does it make a difference which kind of bottled water refreshes your seeds?

- This researcher felt that the bottled water brand Nestlé Pure Life would produce the healthiest plants because this brand along with Core HYDRATION consistently tested as having the highest water quality for human consumption.

- It was expected that people would be purchasing cases of either Core or Nestlé to grow their plants for food. The Raphanus sativus plant was chosen for this experiment because of its fast germination and growth cycle.

Methods:

Experimental Design and Procedures

- Raphanus sativus seeds were placed in a mini greenhouse seed starter kit purchased from the grocery store. Each pot was filled with the same amount of growth medium with one seed placed in it according to seed merchant's directions.
- The following popular brands of bottled water were used for this experiment: CORE Hydration, Aquafina, Nestlé Pure Life, Fiji, and Smart Water.
- Each sample did receive the same daily amount of water and placed in a warm, sunny area for light. If seedlings sprouted, they were measured over a three-week period.
- The plants demonstrating the most growth in that time frame would determine the bottle brand water that has the most positive effect on Raphanus sativus germination and growth.

Results:
What did the data show?

Number of Seeds Germinated

Day Number	Aquafina	Core	Fiji	Nestlé	Smart
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	4	0	3	0	7

The data was very surprising and led to more questions for possible future research. The seeds that germinated grew into seedlings and developed into healthy plants. The observation here is that none of the water previously tested for high water quality provided nourishment for seeds to germinate.

Number of Plants Growing at Experiment End

Week Number	Aquafina	Core	Fiji	Nestlé	Smart
1	4	0	3	0	7
2	4	0	3	0	7
3	4	0	3	0	7

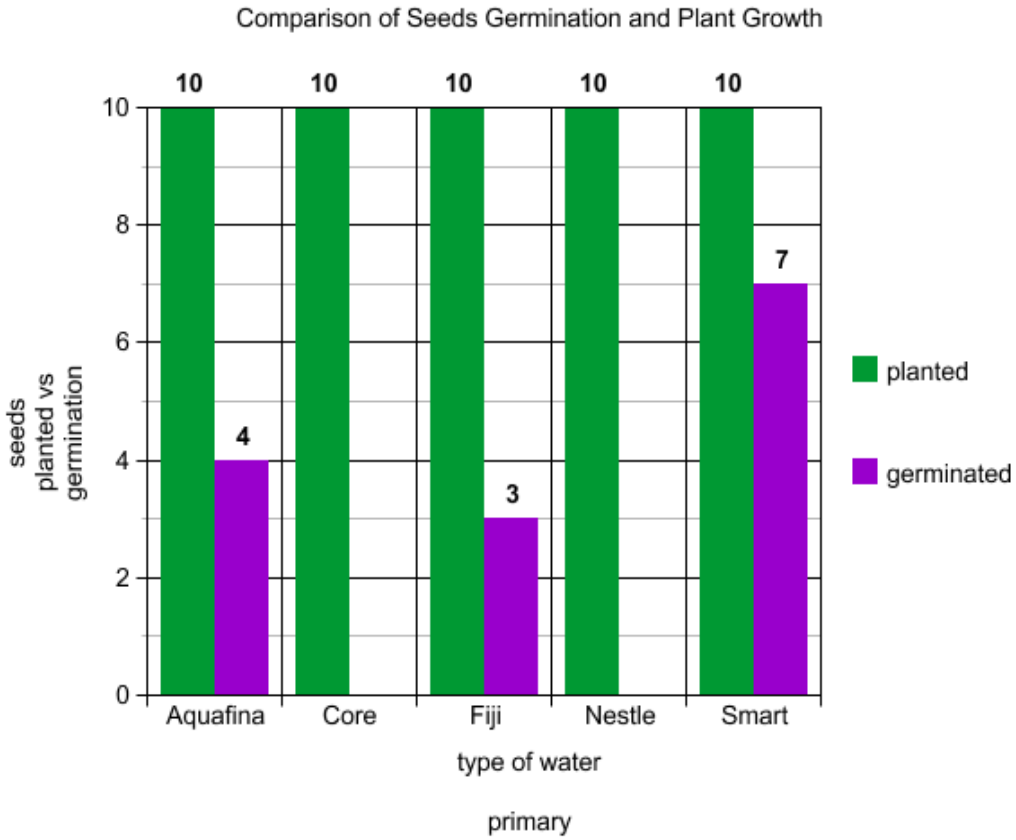
Results:
What did the data show?

Order of Healthy Appearance

Time of Observation	Aquafina	Core	Fiji	Nestlé	Smart
Experiment beginning	2	0	1	0	3
Experiment end	1	0	2	0	3

In the beginning,, the order of healthiest was: Fiji, Aquafina, and Smart Water. At the end of the experiment timeframe, the order was: Aquafina, Fiji, and Smart Water.

Sometimes, seeds germinate a little later than others, but after the initial germination, no other seeds sprouted.



Discussion:

How were the results interpreted?

- The results were very surprising. The seeds that germinated quickly grew into small seedlings. Two brands never germinated seeds in any trial of the ten that were run.

- These were the seeds that were watered with the two highest quality bottled water tested: Core and Nestlé

Discussion:

How were the results interpreted?

- The seedlings that sprouted from the other three brands of bottled water were very similar in appearance.
- Virtually no difference could be observed in the height and strength of the plants by the end of the testing timeframe.

Nothing growing here

Still no plants in Core or Nestle after 21 days

Conclusions:

What do these results mean in the context of my experiment?

In conclusion, the data did not support the hypothesis but it did open up many more questions.

Why did the top two bottled drinking waters not promote the same healthy growth in these plants that humans are supposed to receive?

Could it be that things removed from the water were necessary minerals for plants to grow? This would be research topics for future experiments.

Conclusions:

What do these results mean in the context of my experiment?

It should also be noted that this sample was small, and although it did not support this hypothesis, a larger sample might have. Further research is necessary to determine a fuller outcome of this research.

This research would have valuable information for those in the seed industry and in agriculture as well. With many agricultural industries using irrigation for their systems, the type of water used would be very important in their growth model.

Bottled water manufacturers would also be interested in this research because another question poses itself here: If the missing minerals are the culprit for the lack of growth, are these same missing minerals causing problems in the humans who consume them?

References:

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