The Effects of Grey and Black Water on Plant Growth
I choose to do my science fair project on recycled water. I wanted to see if the water we use in everyday life could be used more than once. I am using what is known as black and grey water for my project. Black water is water that has been used in toilets or dishwashers or kitchen sinks for cleaning. I will only be using the water from the kitchen sink for health reasons. Grey water is water that comes from bath/shower water or the washing machine water. I will be using bath water because it will be easier for me to get. I am going to see if using this water will affect the growth of a common fall flowering plant. I purchased 6 plants all that are the same size and type. I choose to use a common household orange/brown mum. I measured them to get a starting height to compare to. I used a basic tape measure to do this. I labeled each plant with the type of water that I was going to use on them. I watered the plants every 2 to 3 days with the different types of water. I watered them with ¼ cup of water. I continued this for 1 month. I found that the plants watered with black water, dish water, the blooms turned black and died after 2 ½ to 3 weeks. I found that the plants watered with grey water, bath water, also died but it took 1 month. The plants that were watered with regular tap water still had blooms on it after the month ended but was starting to die because of the cold water. So in conclusion, black and grey water will kill plants or the flowers of a plant. This leads me to wonder though, what would happen if I filtered the water or boiled it first.
I want to THANK my mom for helping me with this project.
Introduction

- This project is about using recycled water. I want to see if there is a difference in the outcome of fresh tap water being used on plants and compare it to recycled water. I am going to use both grey and black water in this project. Most people think that all water once it is used is the same, just old water. In fact, the water is considered to be either grey or black water depending on where it was used before. Black water is water that has been used in toilets or dishwashers or kitchen sinks for cleaning. I will only be using the water from the kitchen sink for my project. Grey water is water that comes from bath or shower water and washing machine water. I will be using bath water for my project. By using both types of water in this project I will be able to see if the water we use in our everyday lives could be reused for other things. This would benefit people who live where there is water shortages or in areas where there is no city water. Even though water is recycled on Earth through the water cycle some areas are not as fortunate as others with the amount of water that is available.
Purpose

- The see what the effects of grey water and black water are on plant growth.
Problem

- What is the effect of grey water and black water on plant growth?
- With the way that the resources are being used up I want to see if there is a way that we can reuse water that has already been used for something else such as watering our plants and lawns.
- Black water is water that has been used in toilets or dishwashers or kitchen sinks for cleaning. I will only be using the water from the kitchen sink.
- Grey water is water that comes from bath or shower water and washing machine water. I will be using bath water.
Hypothesis

• I think that if you use grey water on plants that the plant will still grow but it will only grow half as much as the plant with regular water.

• I think that if you use black water on plants that the plant will die in 2 days because of all the germs in the water.
Variables

• Independent Variables
  – Black Water (water that has been used in toilets or dishwashers or kitchen sinks for cleaning. I will only be using the water from the kitchen sink.)
  – Grey Water (water that comes from bath or shower water and washing machine water. I will be using bath water.)

• Dependent Variables
  – Plant growth (height)
  – Blooms on plants

• Constant Variables
  – Type and size of plant (orange/bronze mum)
  – Area plants are kept in
  – Amount of water used to water plants
  – Time that plants are watered

• Control Group
  – Plants being watered with tap water.
Materials

- 6 household orange/bronze garden mums (same size)
- Measuring Tape
- Pencil
- Notebook
- Measuring Cup (1/4 cup)
- Water taken from used bath water
- Water taken from dirty dish water
- Tap water
Procedure

- Purchase plants (6)
- Place plants on the front porch
- Label plants with grey water, black water or tap water labels.
- Measure plants from ground to tallest bloom.
- Water the plants with the ¼ cup of the appropriate type water (regular, black or grey) every 3 days.
- Repeat every 2 - 3 days until the plants either die or for 4 to 6 weeks.
- Measure plant every 7 days.
- Repeat steps 5 – 7 for each type of water.
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<thead>
<tr>
<th>Day</th>
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<th>Grey Water</th>
<th>Black Water</th>
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Graph

Effects of Grey and Black Water on Plant Growth

% of Blooms Dead

Dates of Experiment


- tap water
- grey water
- black water
Analysis

• This project showed that the water that is being reused in other household chores is not able to be used for watering plants. My hypothesis was wrong. I said that the plants watered with grey water would still grow but grow at a slower rate. I was wrong. They died by the end of the month. I said that the plants watered with black water would die in 2 days because of the germs that was in the water. I was wrong. They started dying at 6 days and was completely dead in 21 days.

• There was another factor that could have made the plants die faster than normal. Those are the temperatures and the rain. I kept these plants outside on the porch during my experiment. When I was beginning my experiment, it rained for 2 weeks straight. By the end of the month, the temperatures were down in the 30’s at night. These could also be a reason for the plants dying in one month
Conclusion

- The effect of grey and black water on plant growth is not good. I found that by watering plants with used or dirty water does shorten the life of the plant. I think that if you filter the recycled water before using it on the plants the plant would be able to continue growing. Filtering the plant would take out the large particles of things that are in the water and some of the soap. I don’t think that boiling the water would work because it would kill all the bacteria that live in normal tap water. I hope someday recycled water is able to be used because this would be a big benefit for those countries and areas that have water shortages or droughts.
Applications & Further Research

If I were to do this project again I would do two things differently.

1.) Boil the water to see if I killed the germs in the water and the soap if that would make the plants blooms last longer.

2.) Filter the water to see if this would be a second option to removing soap and germs from the water.
Bibliography


The End