

Can Plants Thrive With Grey Water?

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Can plants thrive with grey water? I watered every single plant every other day. Half with grey water and the other half with tap water. Both of these plants do best in full sun and dry soil. Every other day I watered four of these plants with $\frac{1}{4}$ cup of greywater and the other four with $\frac{1}{4}$ cup of tap water. Every day I watered the plants, I measured their height, width, and health. I noticed that the tap water worked better. On the last day of results, the tap water schelling pea plants were the largest plants out of all eight of them! The largest one was $9\frac{1}{2}$ inches tall by $9\frac{1}{2}$ inches wide. It also had the most stems out of all the schelling pea plants. I noticed that the schelling pea plants that were watered with grey water had curly edges, whereas the tap water ones had curly edges. The tricolor sage are meant to be a smaller plant so they weren't as big as any of the schelling pea plants. Just like the schelling pea plants, the tricolor sage that were watered with tap water were healthier. The smallest tricolor sage was actually one of the plants watered with tap water. It was just naturally smaller, but it was a lot healthier than the grey water plants. The biggest tricolor sage plant was $6\frac{1}{2}$ inches tall by $7\frac{1}{2}$ inches wide. It had very big/healthy green leaves. I noticed that the tricolor sage that were watered with grey water had leaves that were shriveled with creamy white edges. The tricolor sage plants that were watered with tap water weren't shriveled and had white edges. After three weeks of results I found out that the tap water worked the best for the plants.

My experiment was watering plants with different types of water. Grey water is the water that was used to wash your clothes or dishes. Gallons of water go to waste after one use so I wanted to see if it could be useful to water plants. Can we recycle the water so it doesn't go to waste? Well, it just so happens that my project is about testing out if plants are able to survive with grey water. My question is: Can plants thrive with grey water?

My independent variable is the different types of water (grey water and tap water). My dependent variable is the height, width, and health. My hypothesis is that the tap water will work better than the grey water. My constants are the soil, sunlight, and the amount of water. My control group is the plants that I watered with tap water.

Research

Tricolor sage is an edible herb. They grow between 1 and 1.5 feet tall! Tricolor sage attracts butterflies with their beautiful blue and lavender flowers in the summer. Tricolor sage does well in the warm weather and sun. They also tend to do well with dry/sandy soil. According to FineGardening, "Tricolor sage will tolerate drought and poor soil fertility but will produce better with consistent water." Tricolor sage is also an evergreen and cannot survive cold winter conditions.

Schelling pea plants are a lot like tricolor sage. Like tricolor sage, schelling pea plants do well in the sun with well-draining soil. On the other hand, schelling pea plants actually do best in relatively cool temperatures. When it gets warmer they will begin to flower which means they are usually planted in the spring. According to StackPath, "Planting early is especially important in locations that have a short spring season before the summer turns hot as pea plants prefer cooler weather."

Procedure

I started my experiment by going to Portland Nursery and buying four tricolor sage and four shelling pea plants. I got Tomato and Vegetable food. After that, I got eight plastic planting boxes that were 8.89(3 ½ in) centimeters long by 10.16(4 in) centimeters wide. Edna's Best Potting Soil was the last thing I purchased. Once I got home I put one measuring cup worth of Edna's Best Potting Soil into each of the eight plastic planting boxes. Then I measured a teaspoon of Tomato and Vegetable food and put it into the planting boxes. Then, I mixed the soil and the planting food together with a spoon.

After I got the boxes ready for the plants to go in, I took out the four tricolor sage plants and put them each into their own planting box. Then, I put an additional measuring cup of soil into the planting boxes with the newly planted tricolor sage. I then pushed the soil around the plant. Then I repeated those steps with the four schelling pea plants.

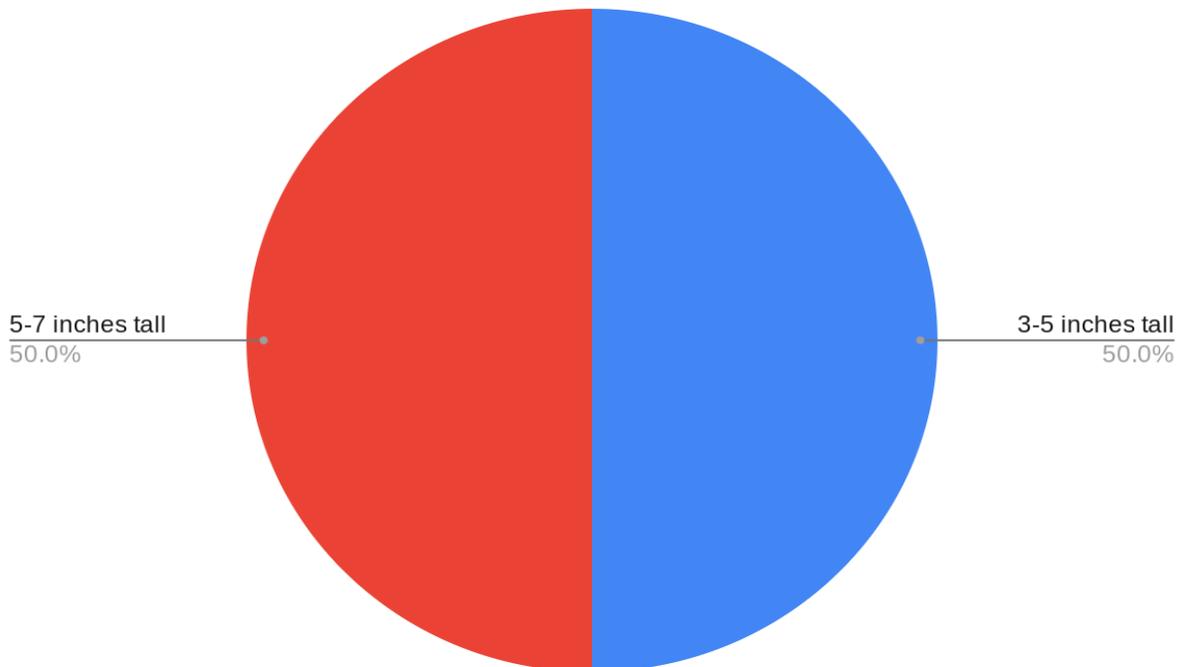
Once the plants were planted, I watered them all with $\frac{1}{4}$ cup of tap water every other day for one week. I labeled all of the plants with a number; 1, 2, 3, and so on. I also clarified which plants they were and what type of water I would water them with after the first week of using tap water for all. Two of the schelling pea plants were labeled grey water and the other two were labeled tap water. I did the same thing with the tricolor sage plants. Then I measured each plant in inches by their height and width. When I measured the height I measured from the soil and up. I also recorded what the plants looked like; their color and health. Every day I watered, I recorded my results. I took pictures every week of their growth.

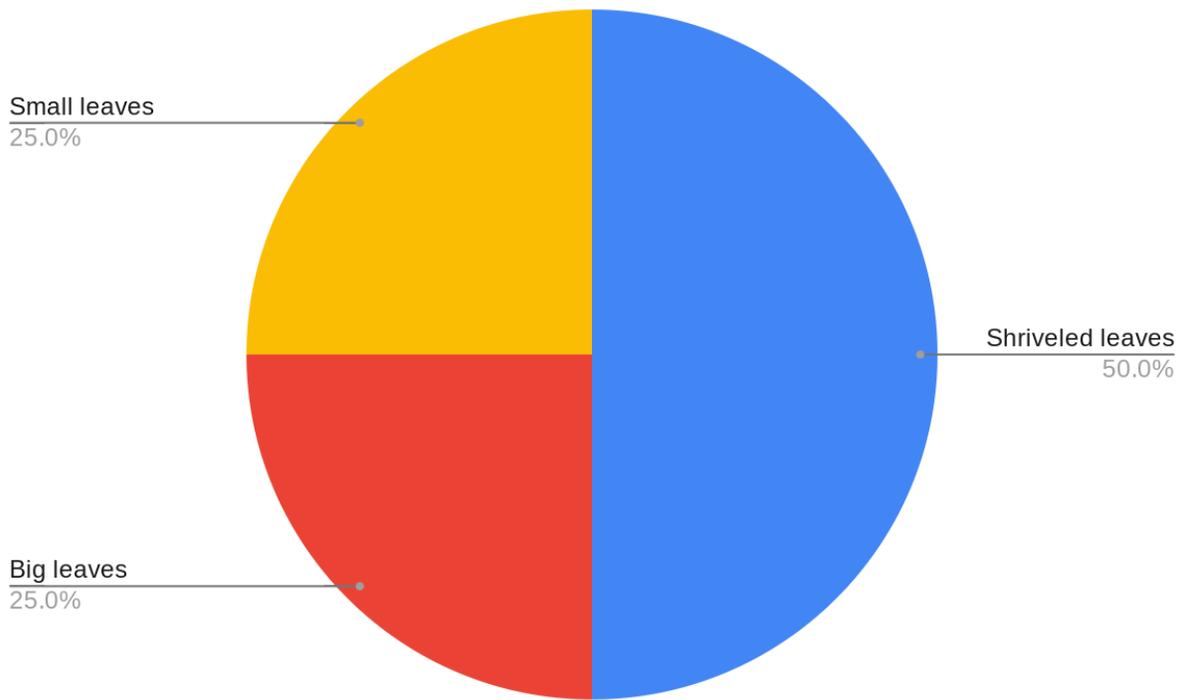
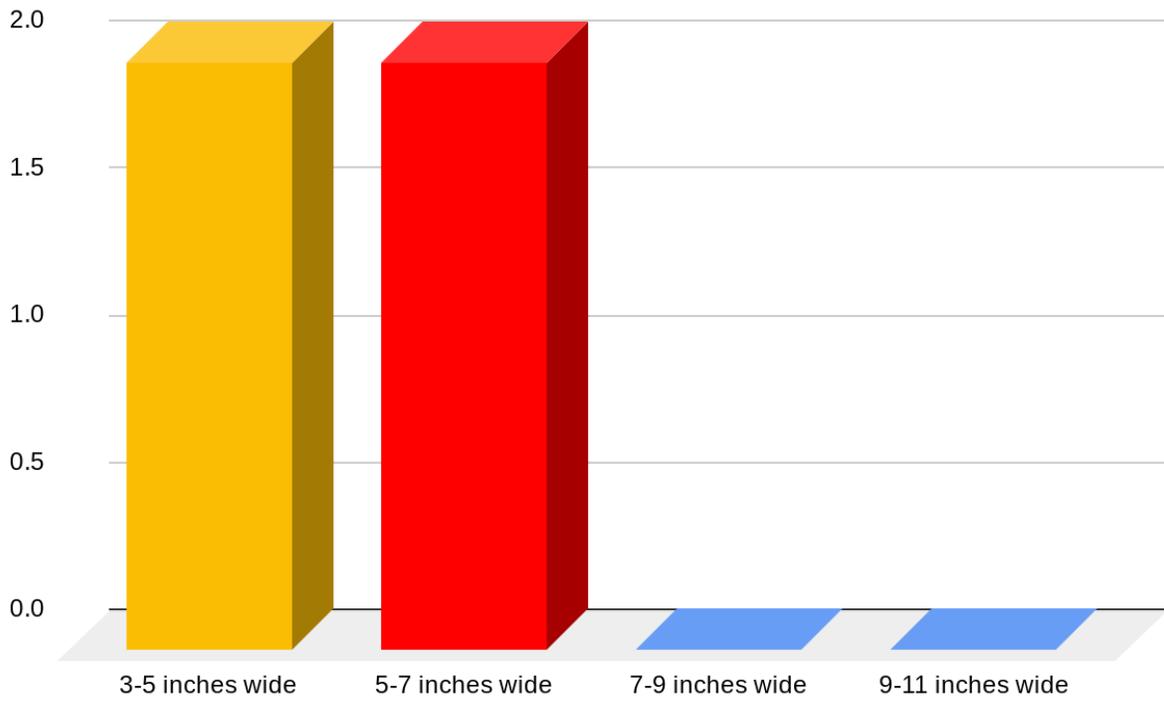
Once I got all eight plants established in the new planter boxes used to tap water, I started to water the ones labeled *grey water* with grey water. I got my grey water from my kitchen sink by washing dishes and then taking a jar and dipping it into the water to fill the jar. I kept watering the ones labeled *tap water* with tap water. Every other day, I watered each of the grey water labeled plants with $\frac{1}{4}$ cup of grey water. I also watered the plants labeled tap water every other day with $\frac{1}{4}$ cup of tap water. I kept this going for 3 weeks.

After finishing the 3 week experiment, I compared all of the days I recorded my results to find out which water worked the best.

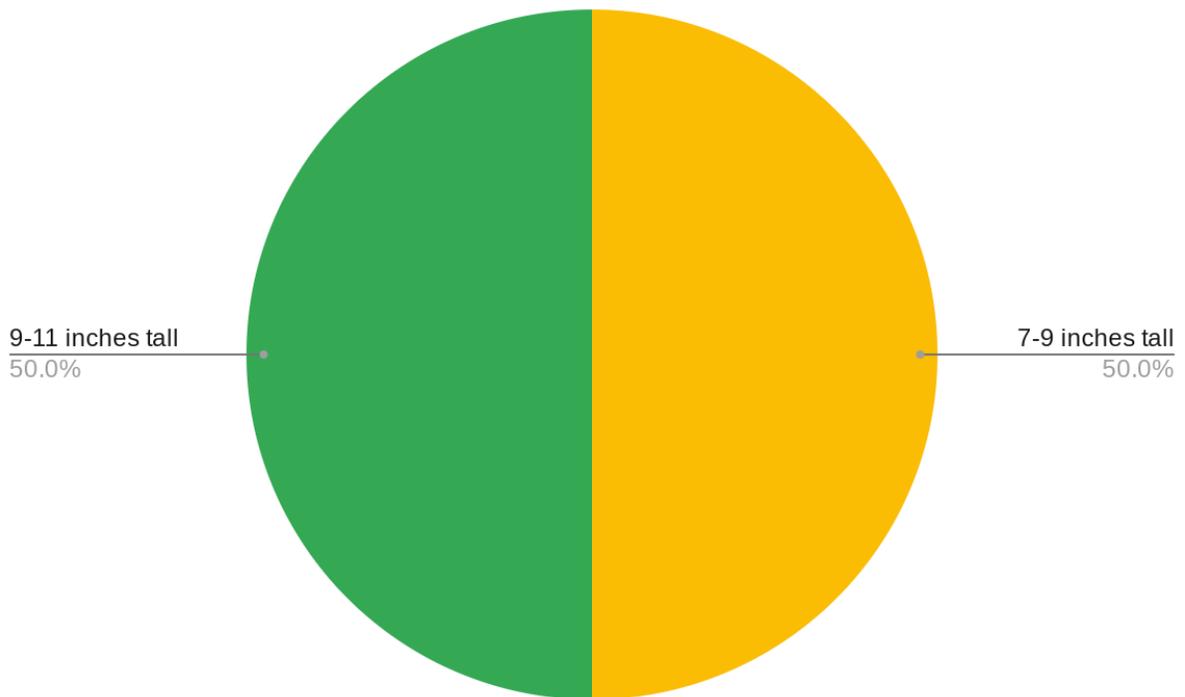
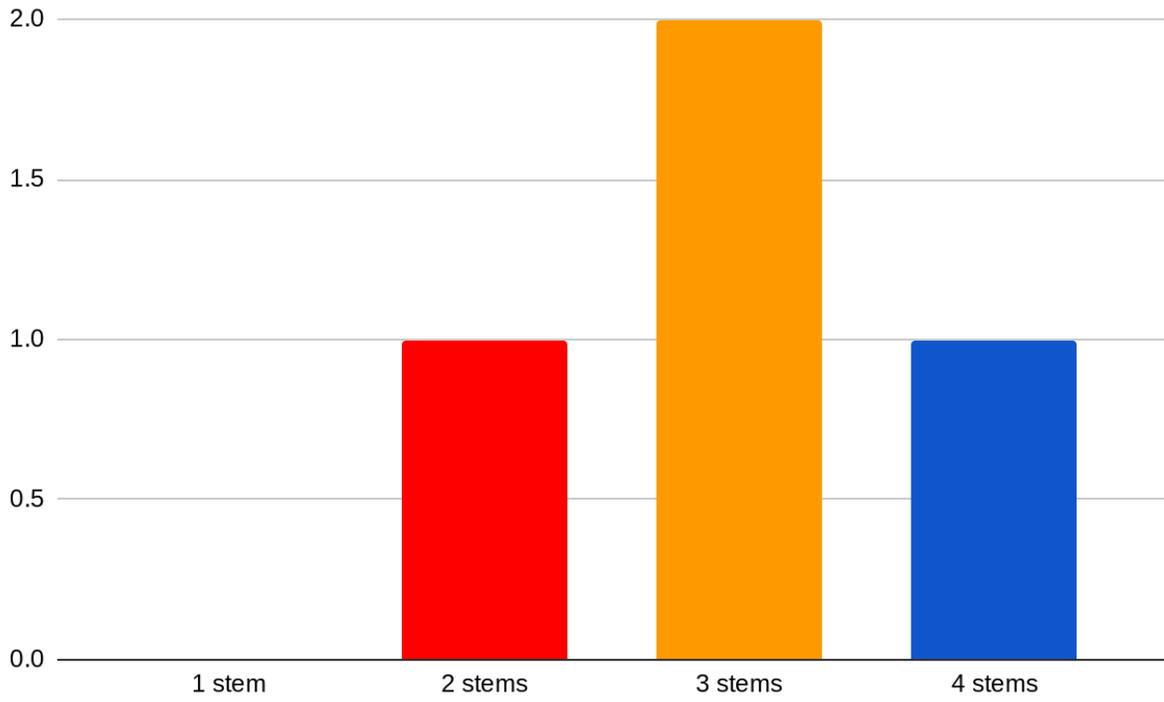
Results & Analysis

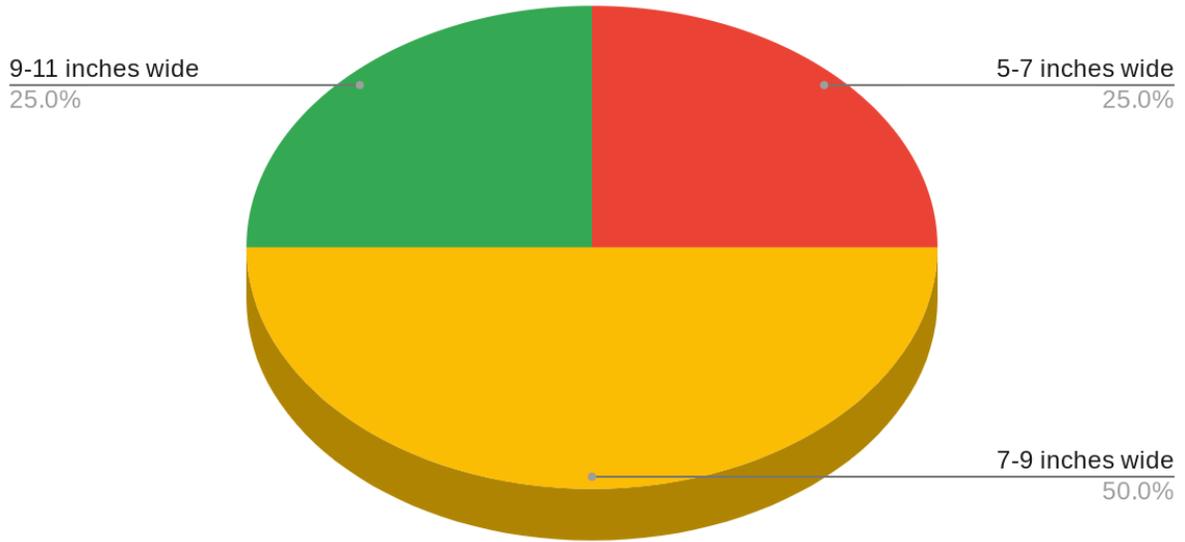
Tricolor sage





Schelling Pea





The main thing that caused my results was the type of water used to water the plants. The results show that the tap water worked the best. The grey water still worked a little bit for their growth, but the plants weren't as healthy. I noticed that the plants watered with grey water were shriveled and smaller. The plants watered with tap water were healthier and bigger. I thought it was really fascinating to find out if water could be recycled to water plants. I think it is good that I now know which water will produce the best plants. I am sad to know that the grey water won't make the plants as healthy as they need to be.

My hypothesis was correct because the plants that were watered with tap water were healthier than the plants that were watered with grey water. The tap water plants were usually taller, wider, and healthier. If I were to do this experiment again I probably would do it with different plants. I thought the plants I did were great, but it would be fun to do different types of plants next time. If I were a scientist I would definitely find a way to recycle tap water. The tap water worked better so it would be really fascinating to find a way to recycle the clean tap water. This experiment was important because it was to test if we could recycle water.

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