

# Does Liquid Fertilizer Help plants Grow More Than Granular Fertilizer?

## Hypothesis

If I use a liquid spray fertilizer on a plant and a solid fertilizer you mix in the dirt on another, then the one with spray fertilizer will grow faster because it can reach the seed in the soil unlike the solid fertilizer which can't reach the seed.

# purpose

My project is to see how granular fertilizer and spray fertilizer help two types of radishes grow better than soil or if they don't.

# Procedure

- 1 buy two packs of radishes (*German Giant and the French Breakfast*)
- 2 get 24 small pots
- 3 separate them into three groups of eight
- 4 four will be German Giant and the other four will be for the French Breakfast radishes
- 5 use regular soil for 8 (*these will be control*)
- 6 put soil for another 8 but also add granular fertilizer
- 7 put soil and use spray/liquid fertilizer on last 8
- 8 make sure you fill up the pot one inch down from the top
- 9 make  $\frac{1}{2}$  inch hole and put at least 3 seeds in every hole
- 10 water plants 1-2 cups a day so that the soil is always damp
- 11 take data and graph at the end

# Materials

- Two packets of radishes (*german giant radish packet and French Breakfast*)
- Place 2-3 seeds per planter pot
- 24 small planter pots (*8 trials for each situation plus control*)
- Miracle Gro granular and liquid fertilizer
- Regular, cheap soil

# Control

The german giants are on the left row and french breakfast are on the right



Control plants roots



6 of the 8 radishes survived with no gfert



# Liquid Fertilizer

German giants are on the right row  
french breakfast are on the left ignore  
the far right



Liquid Fert plants roots



4 of the 8 radishes survived  
with liquid fert



# Granular Fertilizer

German giants on the right and the french breakfast are on the left



Granular Fert plants roots

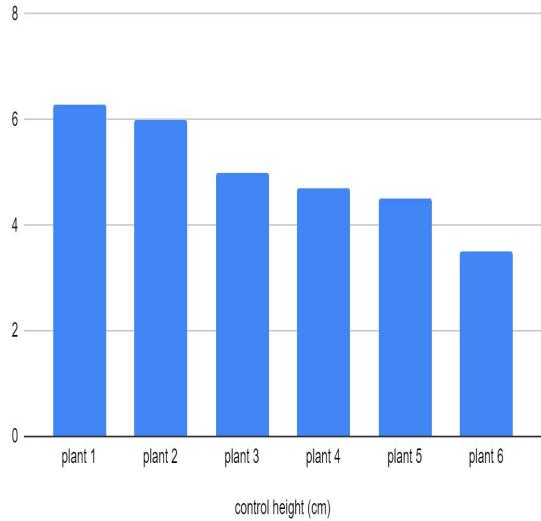


Only 2 of the 8 radishes survived with granular fert

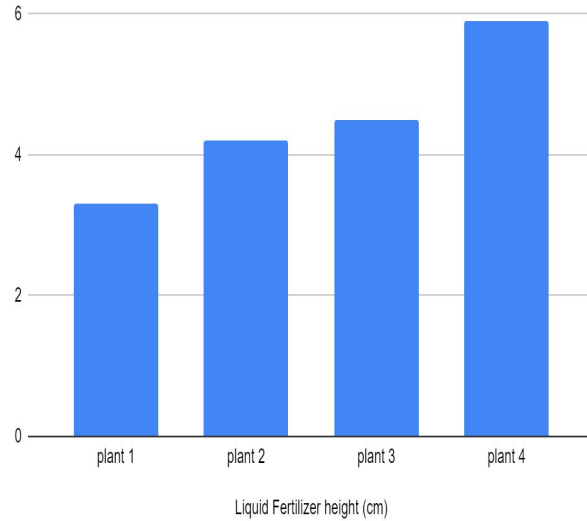


# Data - plant heights (cm)

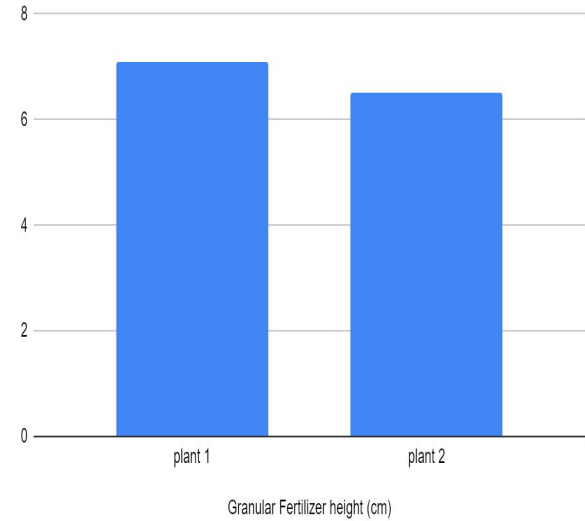
control height (cm)



Liquid Fertilizer height (cm)



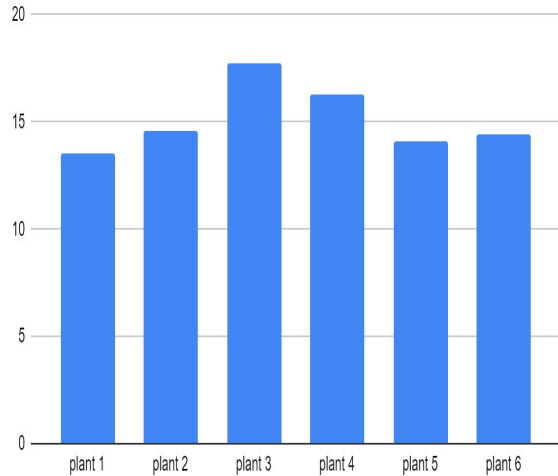
Granular Fertilizer height (cm)





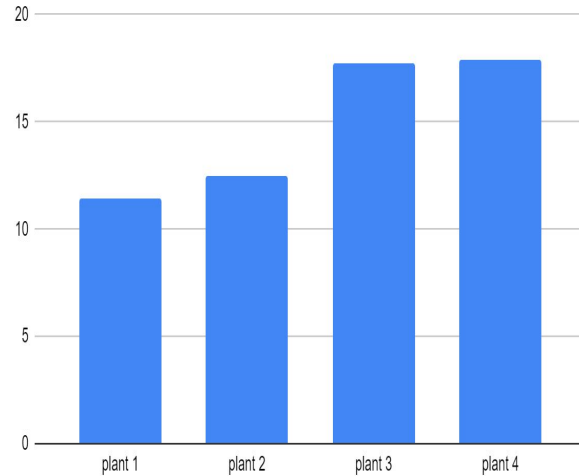
# Data - Plant Heights with depth of roots (cm)

Control height (cm)



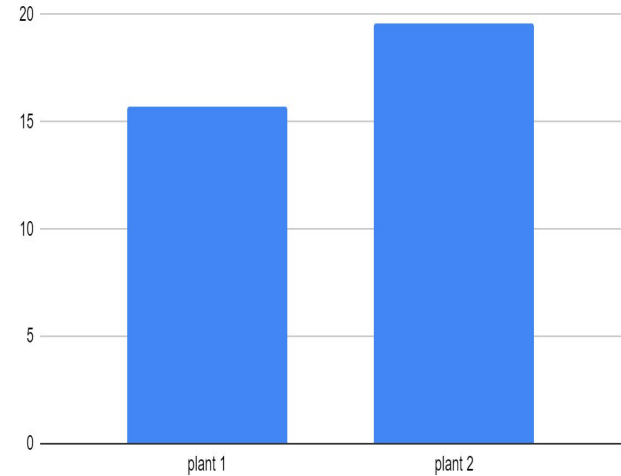
Control height (cm)

Liquid Fertilizer height (cm)



Liquid Fertilizer height (cm)

Granular Fertilizer height (cm)



Granular Fertilizer height (cm)

# Analysis

The radishes with the granular fertilizer died because it burned the seeds too badly so they never grew. The liquid fertilizer can easily burn the plant but it survived more than the granular fertilizer because it doesn't have as much salt. The control survived the best because there was no fertilizer there to burn it. In conclusion the granular fertilizer grew better than the rest.

# reflection

According to the research granular fertilizer does not have the same amount of fertilizer in every piece of fertilizer so it isn't as consistent as spray fertilizer which has the same amount of nutrients in every drop.

Granular fertilizer takes a longer time to work in plants so I think that if I let them grow longer then the Granular fertilizer would have made a better performance. Liquid fertilizer can kill the seed if you apply too much too early so what I think happened with the Liquid fertilizer is that I applied it too early and most of the radishes died. I also think some of the plants dying had to do with the pot size because the fertilizer had nowhere to go so it just burned most of the seeds.

# Research

“Granular vs. Liquid Fertilizers | Sod University.” *Sod Solutions*,

<https://sodsolutions.com/lawn-garden-nutrition/granular-vs-liquid-fertilizers/>. Accessed 13 December 2021.

## Next Time

If I were to do this project again I would record the growth every week and I would also start growing them earlier to get better results. If I planted them earlier I'm sure the granular fertilizer would have worked better than it already has, and I would let the seeds germinate before using the liquid fertilizer because then it would have a lower chance of burning the plant. As well as using bigger pots.