Effect of Overwatering on Nitrate Absorption in *Raphanus sativus*

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Introduction

- Nitrate is an essential nutrient for plant growth
- Leaching results in a deficiency of nutrients, more specifically of nitrate (4)
- Low nitrate will lead to poor plant growth, pale green to yellow leaves, and inefficient chlorophyll (2,3)
- Nitrate deficiency will effect biomass, photosynthetic rate, chlorophyll count, and stomata efficiency (5)
- Water moves through sandy soil faster than clay or silt (1)
- **We predicted that double watering would cause more leaching of nitrate, resulting in a deficiency in the plants**

Materials and Method

- Mix soil- add 25% sand, 65% potting mix, and 10% perlite
- Divide into 4 groups

Added Nitrate Normal Water ANNW	Added Nitrate Double Water ANDW
No Nitrate Normal Water NNNW	No Nitrate Double Water NNDW

- Week 1, water all plants normally
- Week 2, water the added nitrate water onto the plants that call for it. Water plants appropriately
- Water plants 4 days a week
- Measure height (cm) and number of leaves each week

Results

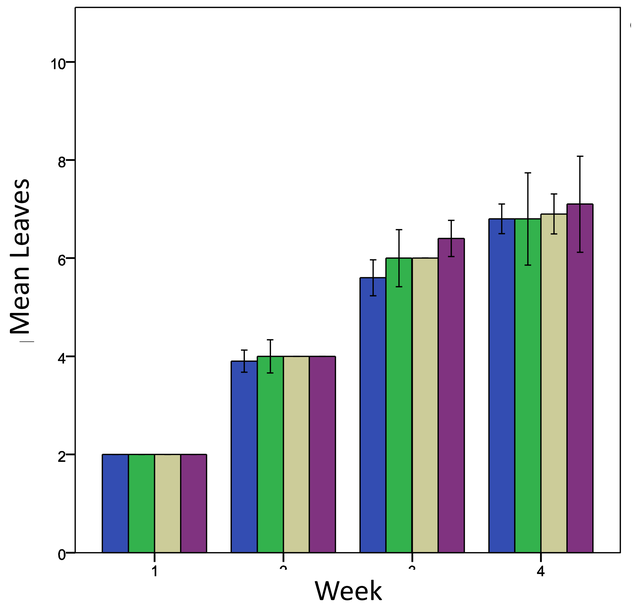

Figure 1. Leaf number per week in the four treatments

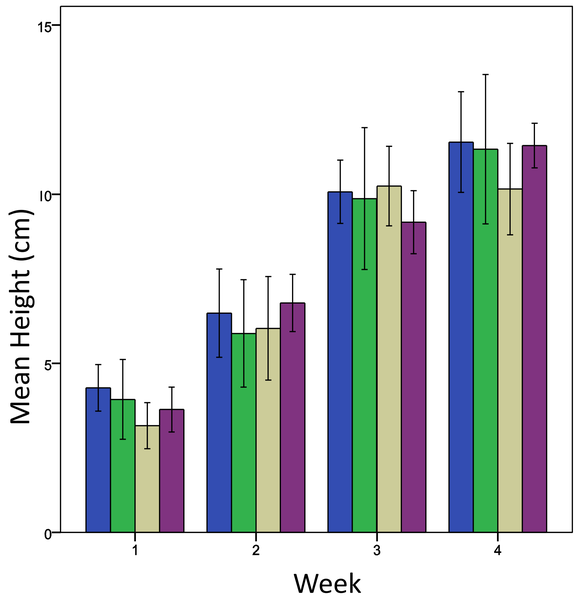

Figure 2. Mean height per week in the four treatments

Discussion

After analyzing and comparing our data (Figs. 1 & 2), we concluded that our hypothesis was not supported. The effect of leaching of nitrate did not have any effect on the plants. This is shown through the overlapping confidence intervals on the graphs, and by using a Tukey's pairwise test in an ANOVA for each trait. The amount of watering also had no effect on the plants. Plants from every group, grew at a similar rate and produced similar results in leaves.

Conclusion

For future research, the amount of sand added to the soil mixture will be less. This would allow the nitrate added to the plants to remain in the soil, meaning less leaching.

Acknowledgements

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References

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