

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 leaching of nitrate, resulting in a deficiency in the plants

Experimental Setup

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

- Added Nitrate Double Water
- Added Nitrate Normal Water
- No Nitrate Double Water
- No Nitrate Normal Water

Materials and Method

- Mix soil- 25% sand, 65% potting mix, and 10% perlite
- Week 1, water all plants normally
- Week 2, apply liquid fertilizer & water appropriately
- Water plants 4 days a week
- Measure height (cm) & number of leaves each week

Results

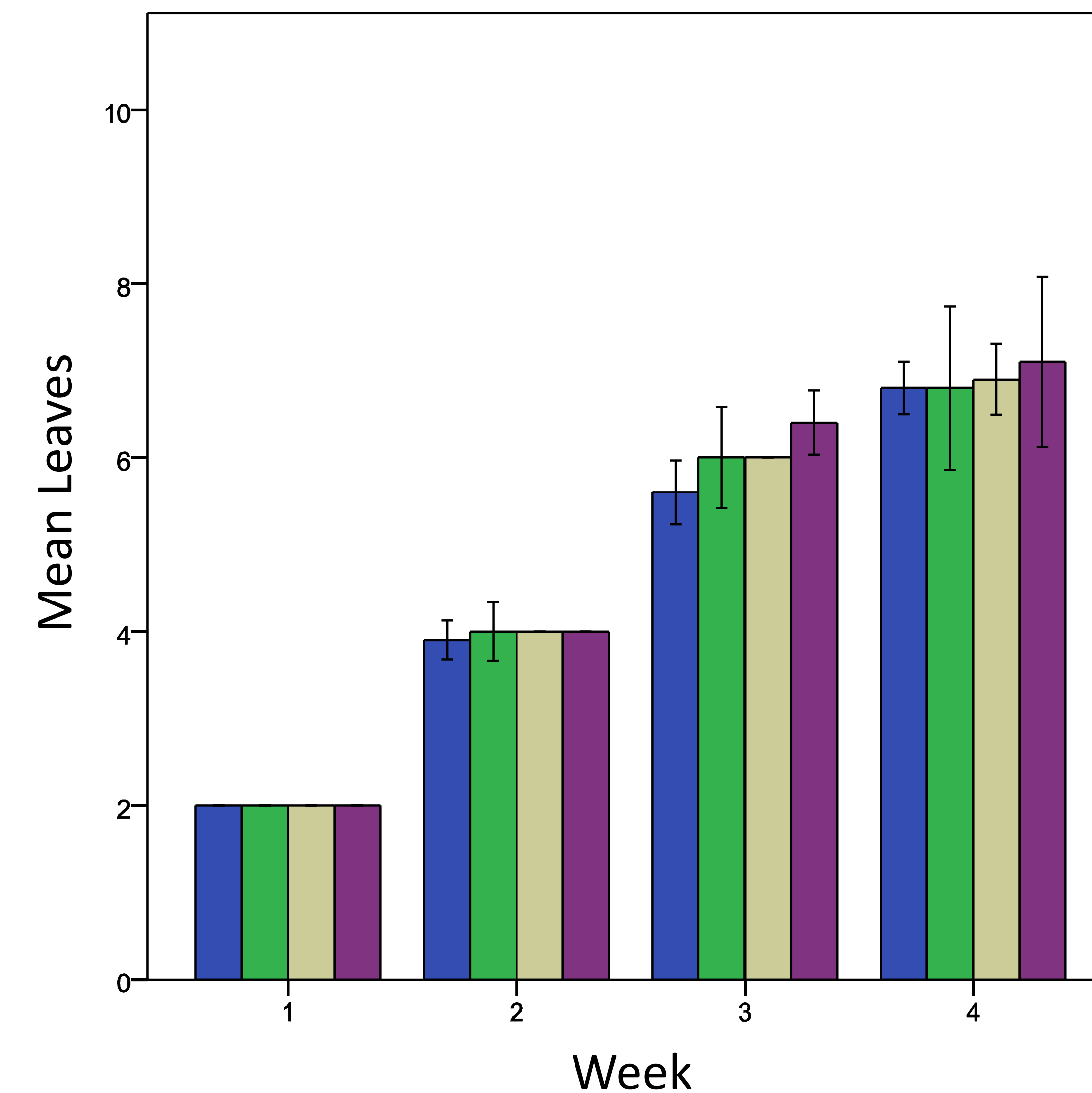


Figure 1: Mean leaf number over 4 weeks of growth. No significant differences were found.

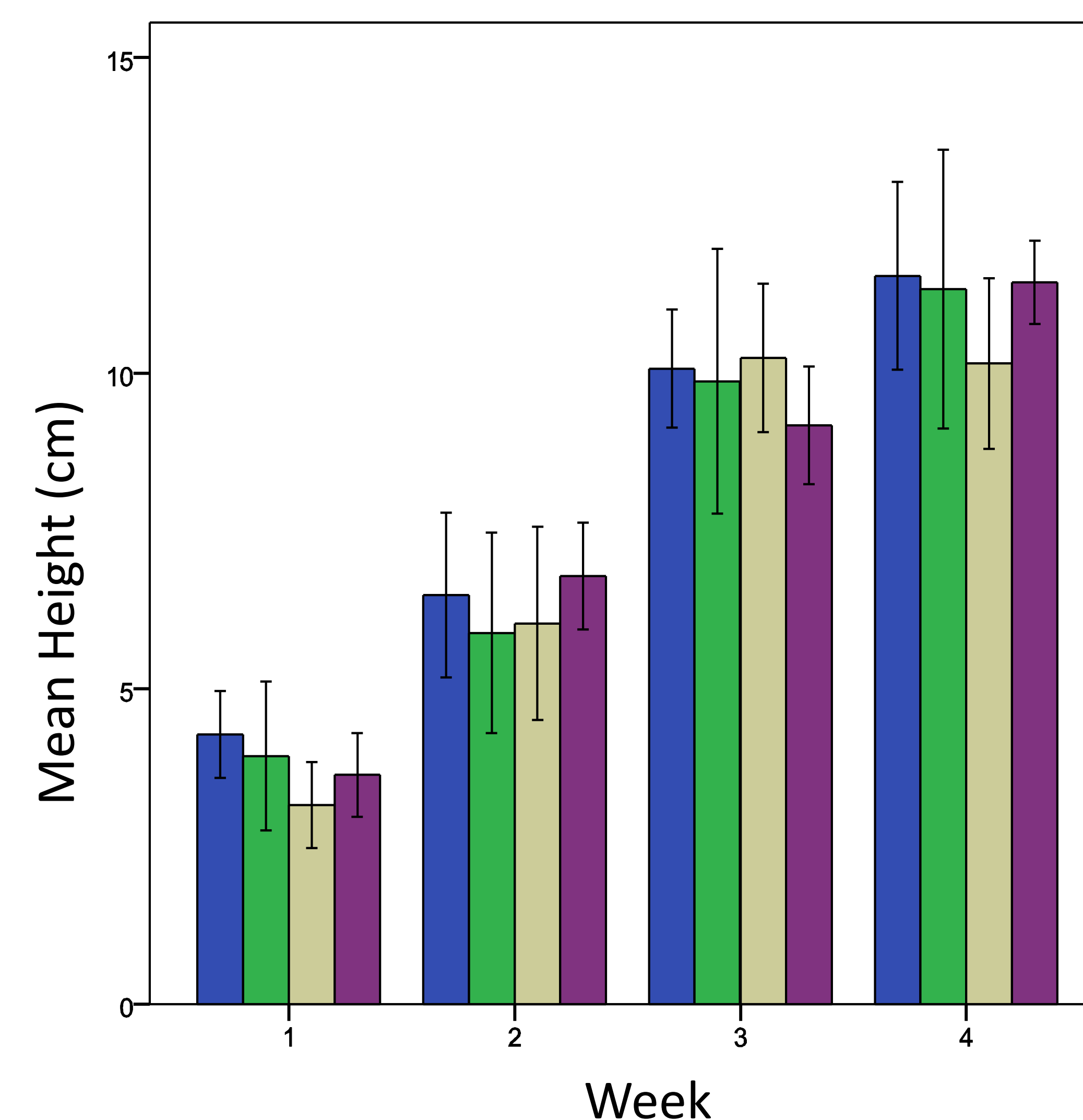


Figure 2: Mean plant height over 4 weeks of growth. No significant differences were found.

Conclusion

After analyzing and comparing our data, the results concluding 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 overlap of the 95% confidence intervals on the graphs, which was confirmed using ANOVA and Tukey's pairwise post-hoc test. The amount of watering also had no effect on the plants. Plants from every group grew at a similar rate and produced similar numbers of leaves.

Discussion

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, resulting in less leaching.

Image 1: Representative plants at harvest.



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References

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