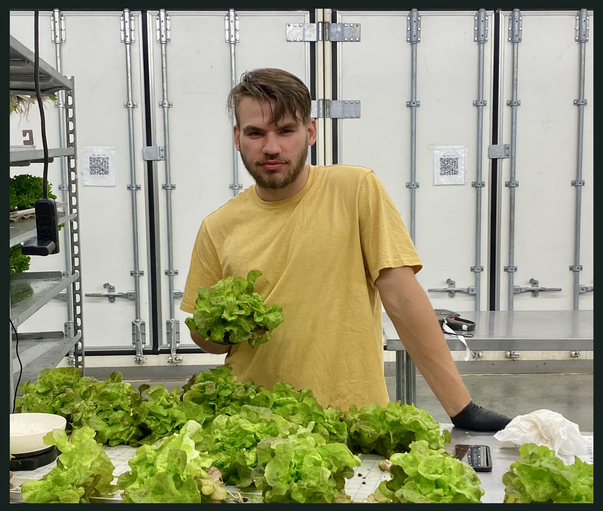
Pre-germination laser seed treatment does not affect lettuce in a vertical farm



Effect of Pre-germination Laser Seed Treatment on Lettuce Cultivated in a Controlled Environment

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Introduction

- Laser seed treatment can potentially improve plant growth and productivity, reducing fertilizer need
- Unlike previous outdoor field trials, this study tested lettuce grown in a highly controlled, 'vertical farm' to test for effects of laser seed treatment and any interaction between laser treatment and lettuce variety

Methods

- Study Location: CubicFarms, Pitt Meadows, BC
- Design: Completely randomized factorial design with 2 replications
- Treatments (20):
  - 5 laser exposure times (0, 15, 30, 60, 120 seconds)
  - 4 lettuce varieties (Cristabel, Elizium, Fairly, Rosalyn).
- Dependent variables:
  - Fresh weight of foliage (7, 14, and 18 days after transplant)
  - Lettuce head height (14 and 18 days after transplant)
- Data analysis: Repeated measures ANOVA

Results

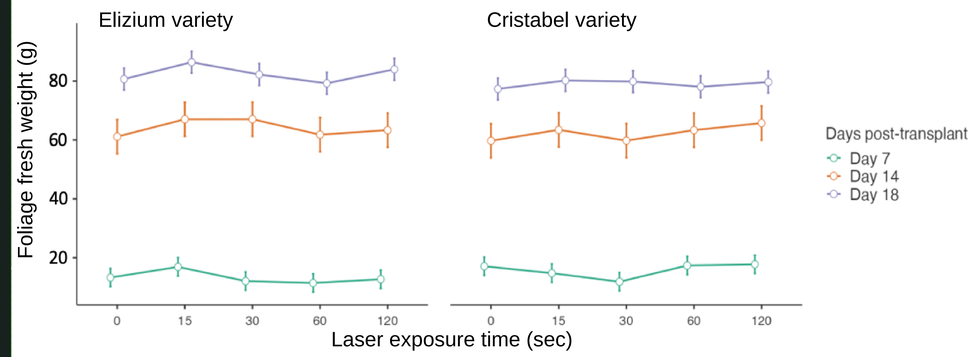

Figure 1. Effect of duration of seed exposure to a laser on fresh weight of selected lettuce varieties 1-2 weeks after transplant.

Discussion

- Previous research found laser seed treatment effects in low nutrient environments. No such effects were detected in the highly controlled, nutrient-rich vertical farm environment. Future research is needed to test for interactions between laser treatment and nutrient availability.

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