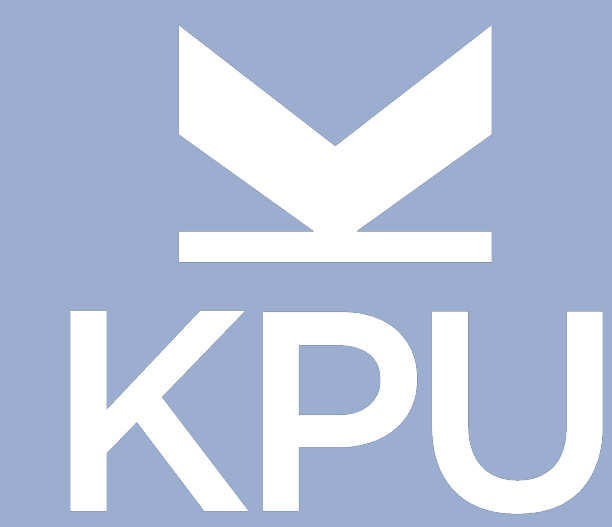


Effect of Solarization on Chickweed (*Stellaria media*) Seed Viability Across Burial Depths

Elyse Farmer, Department of Sustainable Agriculture, Kwantlen Polytechnic University



Introduction

- Soil solarization uses clear plastic to trap heat and kill weed seeds without chemicals
- *Stellaria media* (chickweed) is a persistent cool-season weed
- Little is known about how burial depth changes chickweed’s response to solarization

Methods

- Field study at KPU Farm, Richmond’s Garden City Lands
- Completely randomized factorial design with two factors and nine replicates (18 plots) (Fig. 1):
 - 1) Solarization: Solarized vs. unsolarized
 - 2) Burial depth: 40 seeds per mesh bag at each depth (1, 2, 4 and 8 cm) (72 bags)



Figure 1. Completely randomized factorial design with solarized (blue) and unsolarized (red) plots. Plots measured 2 m x 3 m.

- UV-resistant clear 6 mm polyethylene applied for 8 weeks mid-summer (July 12 – September 6, 2025)
- End of season soil temperature measured at each depth for all plots
- Seeds recovered from buried bags and germinated in plastic bags on moist paper towel
- Weed density measured immediately post solarization and 6-weeks after

Solarization reduces chickweed seed survival near soil surface



Results

- Solarized plots reached higher temperatures at all depths
- Chickweed seeds from solarized plots had lower germination, especially at shallow depths (Fig. 2)
- Field emergence of all weeds was lower in solarized plots

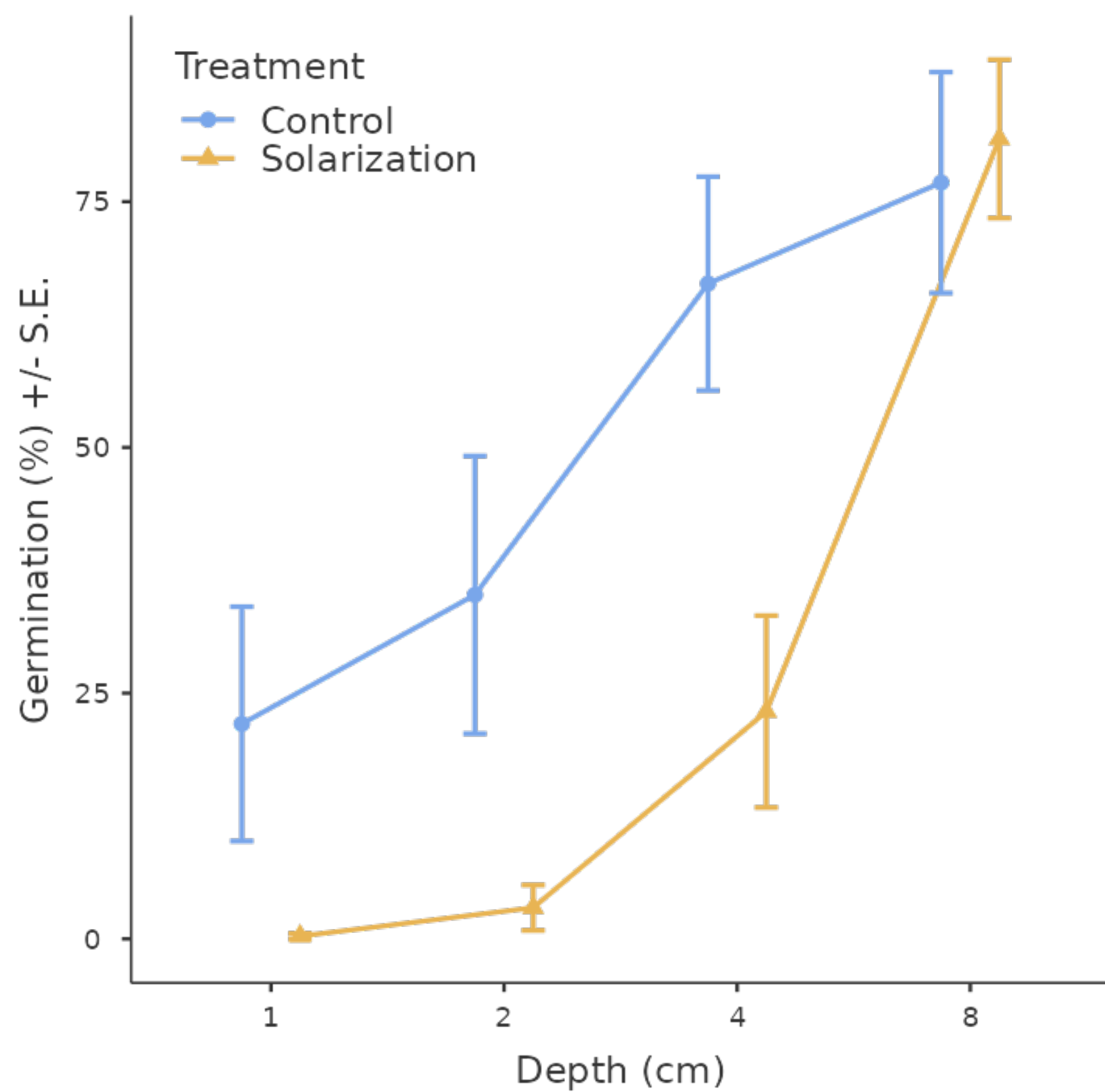


Figure 2. Germination of chickweed seeds buried for eight weeks in mid-summer at 1-8 cm depth in solarized and unsolarized (Control) plots. Error bars denote standard error.

Conclusion

- Solarization reduced chickweed seed survival near the soil surface
- Solarization effectiveness decreased with depth
- Solarization can reduce weed pressure without herbicide application

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Isaac Hendrickson and Hugh Graham assisted with plot establishment and maintenance. Micheal Bomford greatly supported and guided this study.