Title: Biochar Amendment Trial – Co-op Garden (Fall 2025)

Objective

• Quantify effect of 2 % w/w pine-derived biochar on pH, CEC, NO₃⁻ leaching, and yield.

Hypothesis

H0: μ\_yield(biochar) = μ\_yield(control)

H1: μ\_yield(biochar) > μ\_yield(control) by ≥ 15 %.

Site & Layout

• 25 m² loam bed, Zone 9b.

• 8 plots (1 m × 2 m), RCBD; 4 biochar, 4 control.

Materials

• Pine biochar, sieved 2–5 mm, rinsed EC < 2 dS m⁻¹

• Compost 2.5 cm uniform across all plots

• Apera PH60S meter; Merckoquant 1.10020 strips; PVC lysimeter cups (depth 25 cm)

Methods

1. Baseline composite soil sample → lab panel (pH, OM, CEC, NO₃⁻/NH₄⁺, Pb).

2. Incorporate biochar 2 kg m⁻² into treatment plots (7 Aug 25).

3. Sow bush beans + lettuce (8 Aug 25).

4. Weekly: pH/EC/moisture; after ≥ 0.5″ rain: collect lysimeter water, read strip (RGB).

5. Harvest biomass wk 10; dry 60 °C 48 h; weigh.

Statistics

• Shapiro → one-way ANOVA (yield & pH); repeated-measures ANOVA for NO₃⁻.

• α = 0.05; post-hoc Tukey.

Safety

• N95 + nitrile while handling biochar; wash hands.

• Store 5 % NaHCO₃ for neutralising dilute acids.

Authorship & Data

• PI: Reina Vargas (contact).

• Raw data logged in Google Sheet, backed up to OSF nightly.