

Comparison of weed management strategies in eggplant and pickling peppers among Yazidi farmers in Nebraska

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Abstract

Growers seeking to maximize profitability are often faced with the challenge of minimizing the cost of production, particularly those associated with weed management. Refugees and immigrants of the Yazidi farming community in Nebraska face additional obstacles associated with cultivating in a new climate and language barriers. To address this, the University of Nebraska – Lincoln has partnered with the non-profit organization Community Crops to test low-cost methods of weed control for eggplant and pickling pepper cultivars, two important crops in Yazidi culture.

Objective

- ❖ Test methods of weed suppression specifically for eggplant and pickling pepper cultivars.

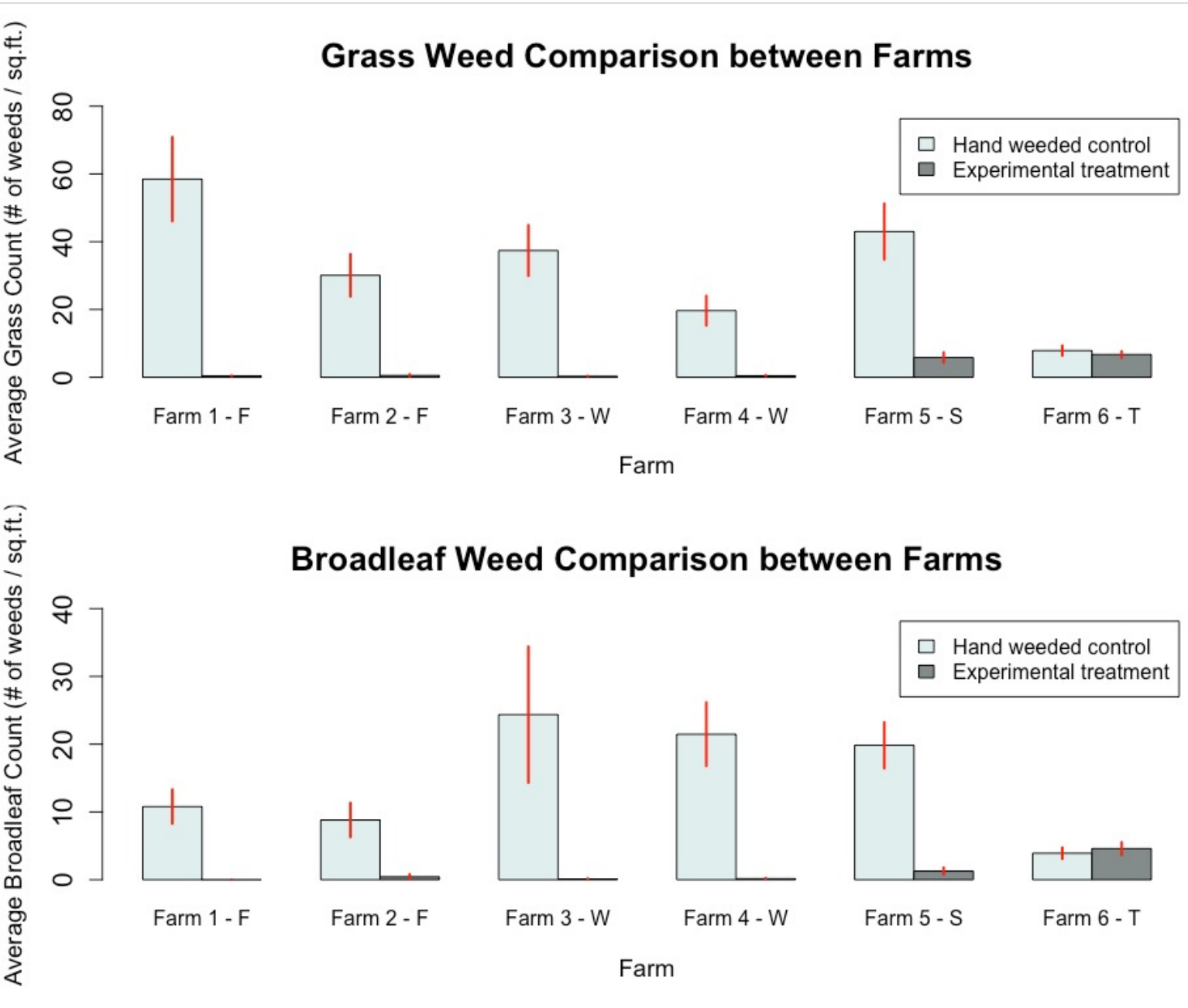


Figure 1 (above) depicts average broadleaf and grass weed counts recorded between May-September 2021. Experimental factors chosen by each farmer are depicted as single letter transcripts to the right of the farm. F = geotextile fabric, W = woodchip mulch, S = straw mulch, T = mechanical tine weeding.

Methods

Six participating Yazidi farmers located at an incubator farm in southeastern Nebraska had the choice to implement one of four weed control treatments in eggplant and pickling pepper plots after a 90-minute presentation denoting benefits and drawbacks of each experimental treatment:

- Woodchips (3-inch depth)
- Straw (3-inch depth)
- Geotextile fabric
- Mechanical tine weeding (3x per week)

All experimental treatments were compared to hand weeded controls, which was the standard approach used by the participating growers prior to the project. Weed emergence, temperature data, water content, yield data and soil fertility was recorded throughout the 2021 growing season.



Spring soil test results

Farm	Organic matter (LOI %)	Nitrates (ppm)
Farm 1 - F	6.3 %	94
Farm 2 - F	5.8 %	39
Farm 3 - W	5.9 %	27
Farm 4 - W	5.3 %	16
Farm 5 - S	5.0 %	40
Farm 6 - T	4.5 %	31

***LOI – Loss on Irrigation method of determining OM %*

Results

- ❖ Eggplant and pickling pepper yield in most experimental weed management treatments was not significantly different from the hand weeded controls.
- ❖ Geotextile fabric and woodchip treatments provided adequate weed control; price favors the fabric.
- ❖ Application of mulch treatments reduced labor related to hand weeding plots.
- ❖ Application of woodchip and straw mulches may reduce watering frequency in these cropping systems.
- ❖ Organic mulch treatments did not contribute to yield loss related to nitrogen immobilization, possibly due to elevated soil organic matter and nitrate levels.
- ❖ Application of fabric does not contribute to building long term soil fertility like the organic mulches.

Mulch price comparison

Material	Cost
Straw	\$375/5,000 ft ²
Woodchips	\$465/5,000 ft ²
Geotextile Fabric	\$185/5,000 ft ²

***Assumes straw and woodchips are applied in 1.5 ft bands (between beds not mulched) at a thickness of 3 inches. Fabric applied within row at 3 ft width.*

Average Marketable Eggplant yield

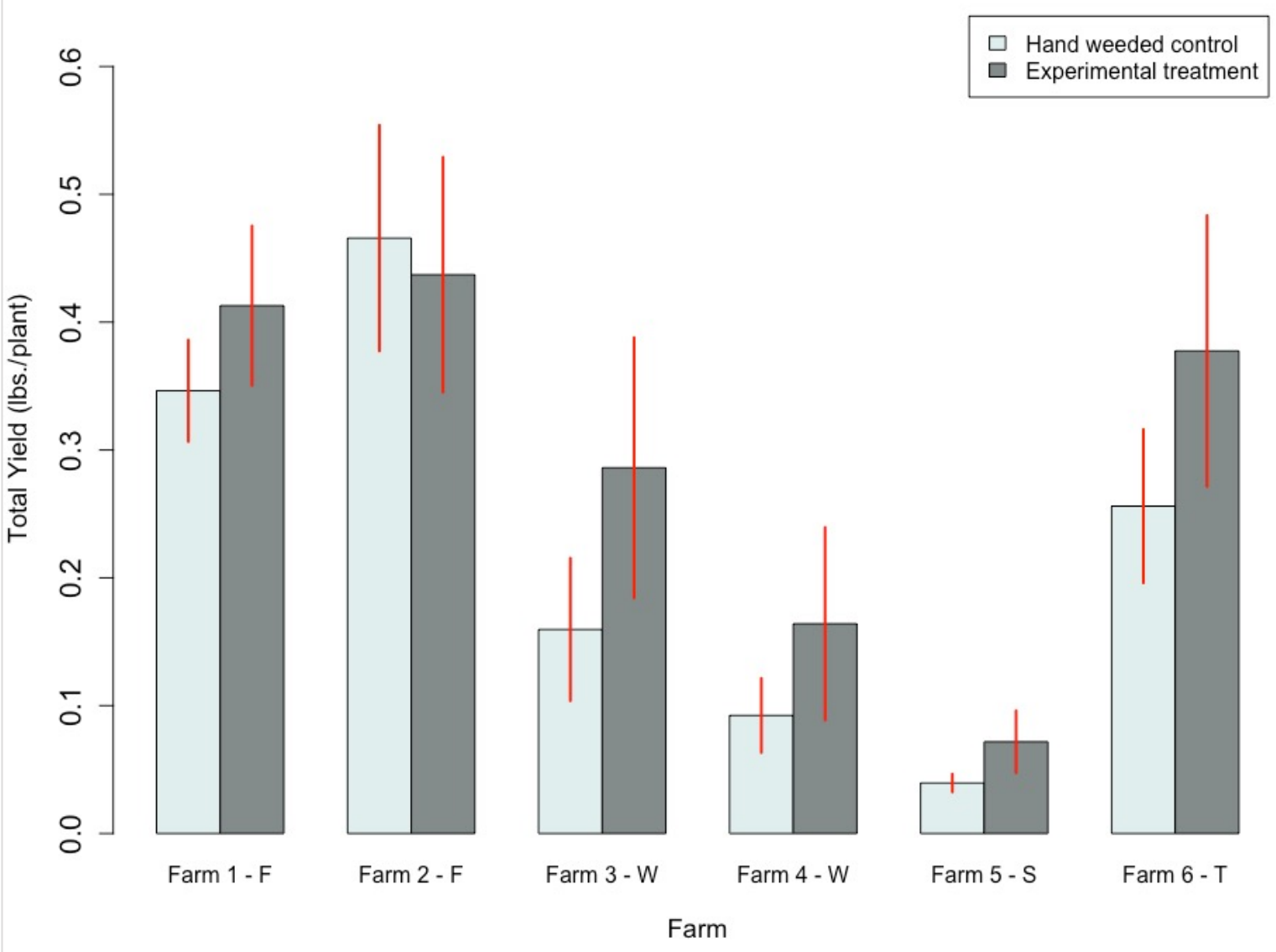


Figure 2 (above) shows the average marketable yield produced per plant throughout the period of July-October 2021. Experimental factors chosen by each farmer are depicted as single letter transcripts to the right of the farm. F = geotextile fabric, W = woodchip mulch, S = straw mulch, T = mechanical tine weeding.

