

Controlling in-row weeds with post-plant applications of pre-emergent herbicides

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CTGA Annual Meeting

&



UCCE North San Joaquin Valley
Processing Tomato Meeting

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Situation

- Weeds concentrated in the plant row
- PPI herbicides displaced by transplanting
- no cultivation

trifluralin/pendimethalin (Treflan/Prowl) +
metolachlor (Dual Magnum) PPI
fb 2 oz rimsulfuron (Matrix) 1 week POST
fb 2 oz rimsulfuron 2 - 3 weeks POST







Current management for
weeds in the plant row:

Banded post application of
Matrix (rimsulfuron) 2 oz/A fb
2 oz (total 4 oz/A).

Hand weeding

Rimsulfuron issues

- Black nightshade
- Chemigation



In-row weed management alternatives



Robotic cultivators.



Precision sprayers.



Laser weeders.

In-row weed management: finger weeders





finger weeder - PRE



finger weeder - POST

CROP AND WEED SIZE

MEDIUM CROP, SMALL WEEDS

- Simple, safe, inexpensive.
- Can also break crusts.
- Very limited weed control window.

Can finger weeders be used to incorporate pre-emergent herbicides after planting?



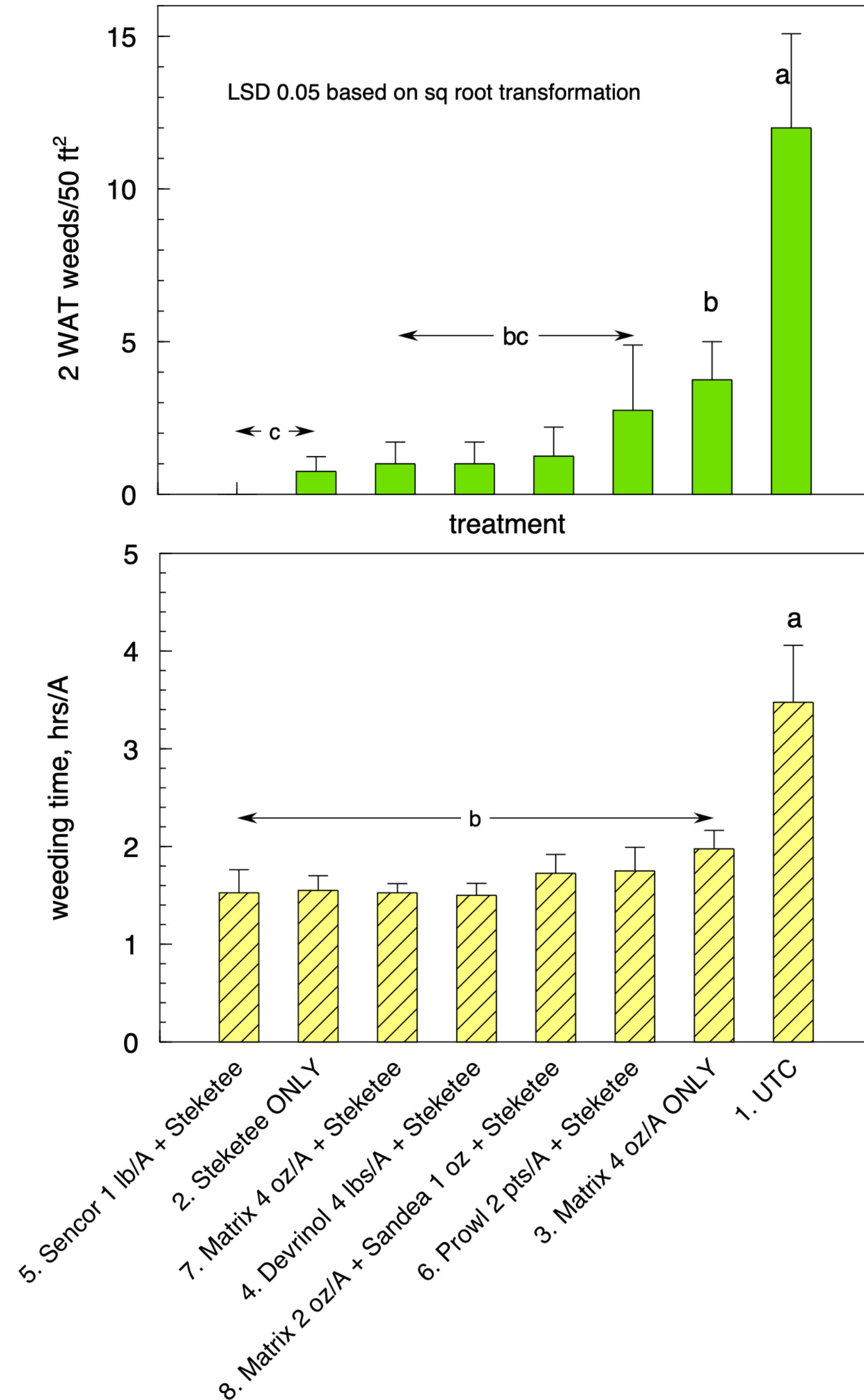
Preliminary work: 2023

| |
|---|
| 1. UTC |
| 2. Steketee ONLY |
| 3. Matrix 4 oz/A ONLY |
| 4. Devrinol 4 lbs/A + Steketee |
| 5. Sencor 1 lb/A + Steketee |
| 6. Prowl 2 pts/A + Steketee |
| 7. Matrix 4 oz/A + Steketee |
| 8. Matrix 2 oz/A + Sandea 1 oz + Steketee |

Commercial FM tomato field. Dual PPI, cultivation, hand weeded.

Post plant pre-emergent herbicides

Le Grand, CA 2023





CTRI Proposal 2024: Evaluate using finger weeders to incorporate preemergent herbicides after planting

- directed spray
- band application ($\frac{1}{3}$ area)
- immediate incorporation
- LeGrand, Merced, WSREC
- Dual, Prowl, Devrinol, Matrix, Sencor



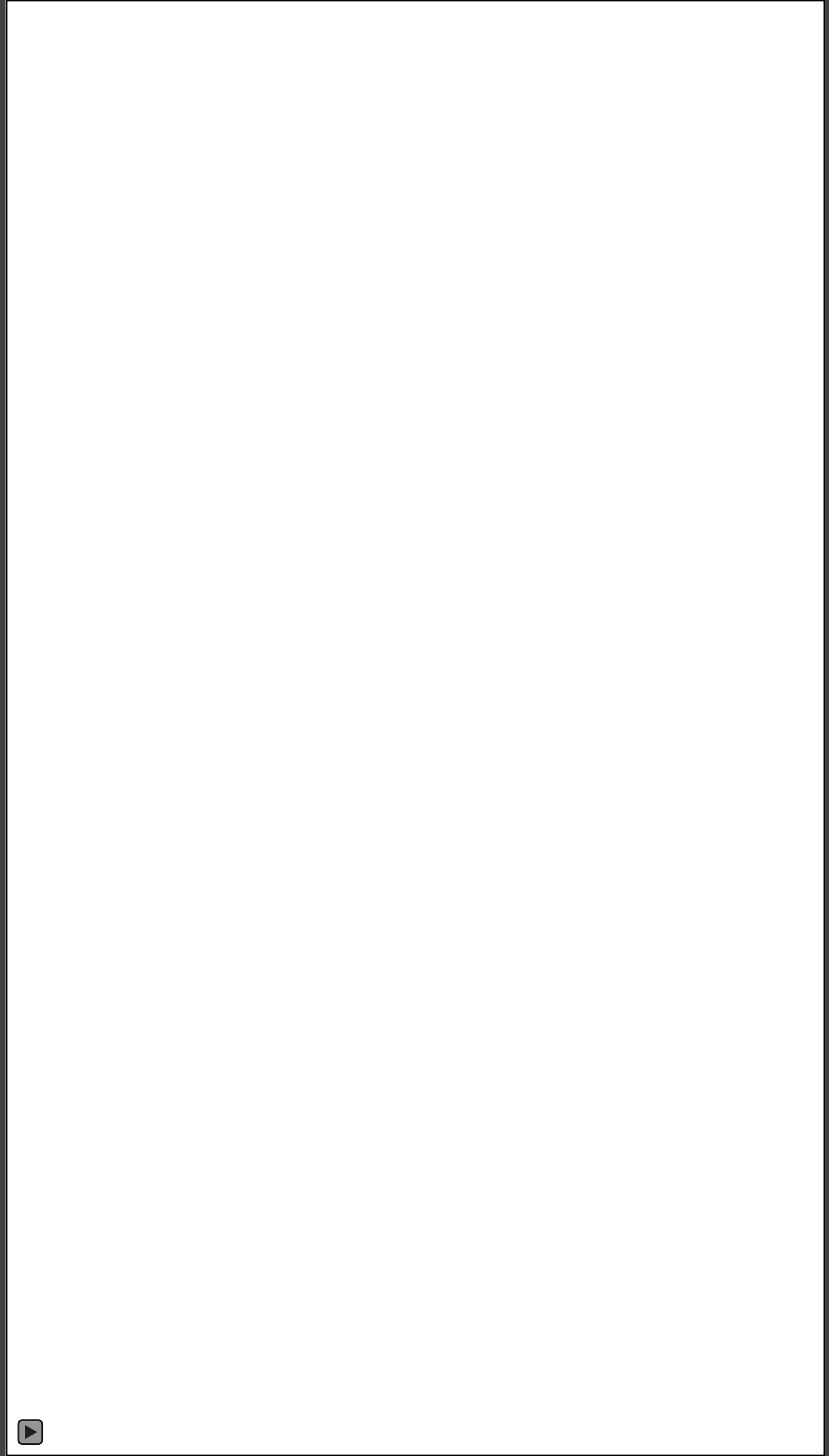
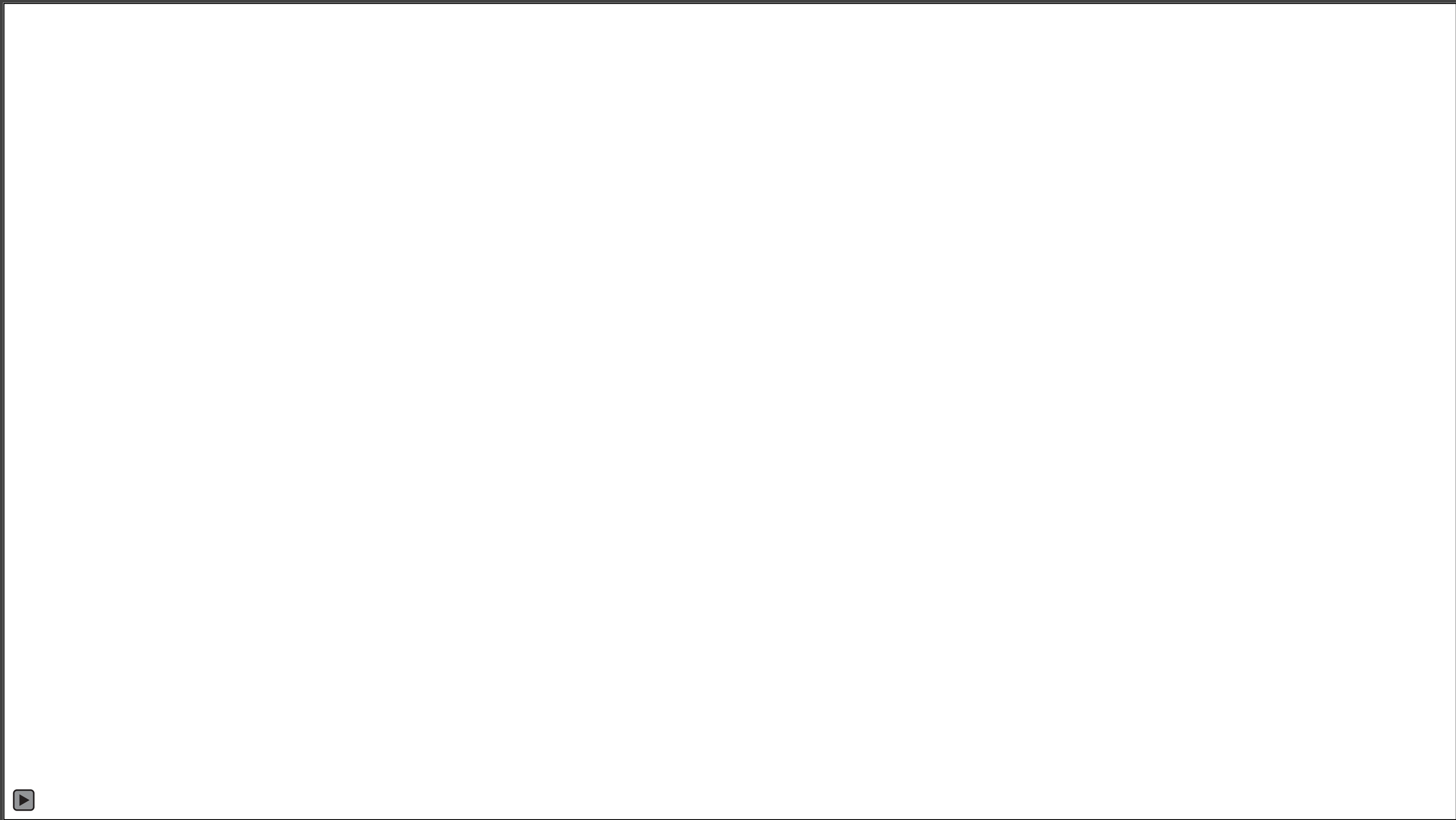
Combining cultivation with herbicides in procession tomatoes in 2024

| Treatments: WSREC Herbicides | POST FW | timing pre/post |
|---|----------------|------------------------|
| 1 UTC | no | ---/--- |
| 2 No PPI, finger weeder POST | yes | none/June 4 |
| 3 No PPI, Dual + Prowl 1.5 pints/A + FW | yes | none/June 4 |
| 4 No PPI, Matrix 4 oz/A + NIS | no | none/June 4 |
| 5 No PPI, Matrix 4 oz/A + Sandea 2 oz/A + NIS | no | none/June 4 |
| 6 Dual + Prowl 1.5 pts/A PPI + FW POST | yes | May 21/June 4 |
| 7 Dual + Prowl 1.5 pts/A PPI + Matrix 4 oz/A POST | no | May 21/June 4 |
| 8 Dual + Prowl 1.5 pts/A PPI + Matrix 4 oz/A + FW | yes | May 21/June 4 |
| 9 Dual + Prowl 1.5 pts/A PPI + Devrinol 4 lbs/A + FW | yes | May 21/June 4 |
| 10 Dual + Prowl 1.5 pts/A PPI + Prowl 1.5 pts/A + FW | yes | May 21/June 4 |
| 11 Dual + Prowl 1.5 pts/A PPI + Sencor 0.5 lbs/A + FW | yes | May 21/June 4 |

FW = Steketee Finger Weeder with 14" fingers
 POST Herbicide treatments applied as directed spray at 50% band rate
 Herbicide treatments applied at 25 gpa with 8002 nozzles
 RCB design with 4 reps

| Treatments: Seasholtz Farms Herbicides | POST FW | timing |
|---|----------------|---------------|
| 1 Matrix 4 oz/A POST (grower std) | no | 5/17/24 |
| 2 UTC | no | --- |
| 3 Prowl 1.5 pts/A + FW POST | yes | 18-May |
| 4 Devrinol 4 lb/A + FW POST | yes | 18-May |
| 5 Sencor 0.5 lbs/A + FW POST | yes | 18-May |
| 6 No PPI, FW POST | yes | 18-May |
| 7 Matrix 4 oz/A POST fb Dual + Prowl 1.5 pts/A + FW | yes | May 17 and 18 |





Results





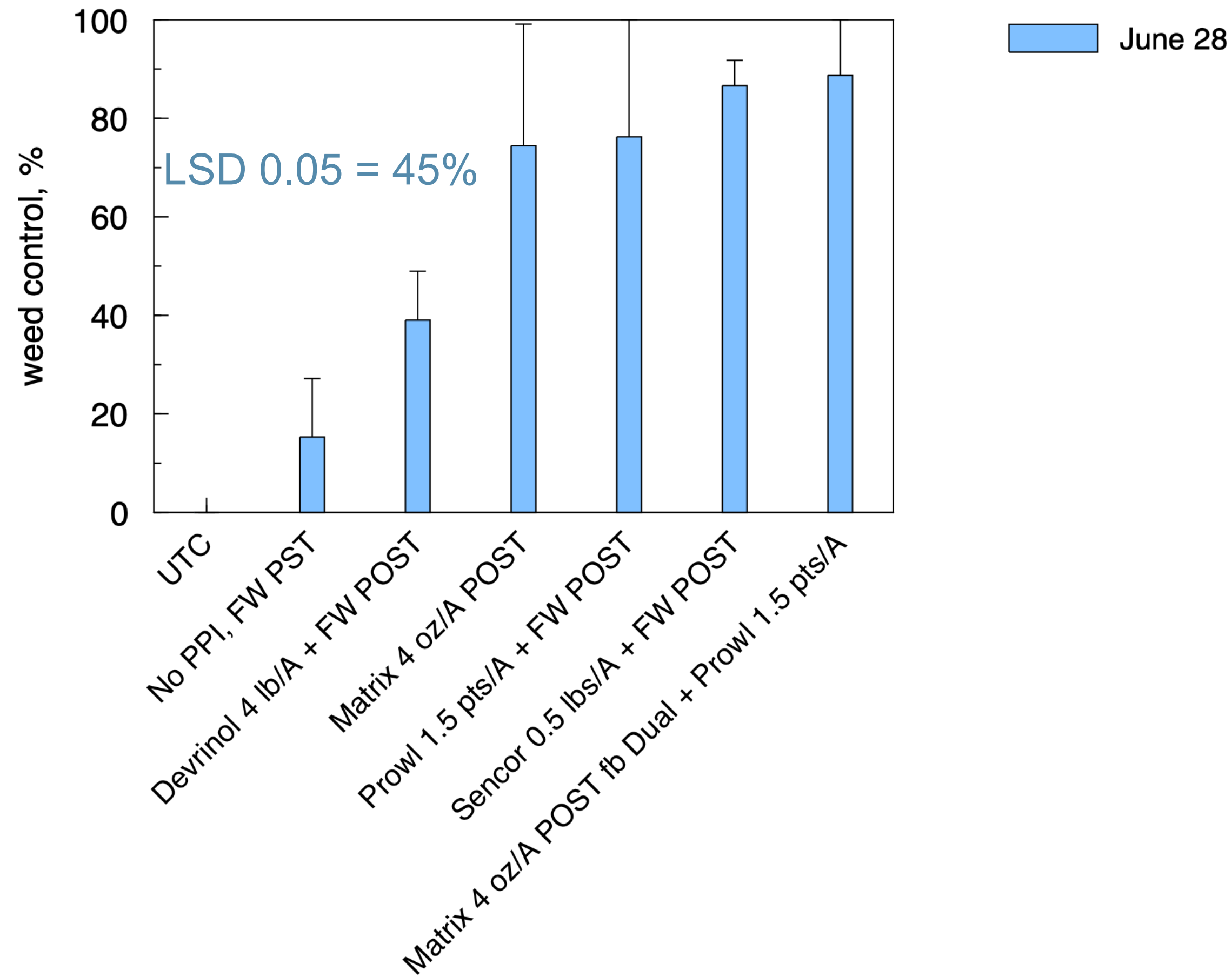
UTC



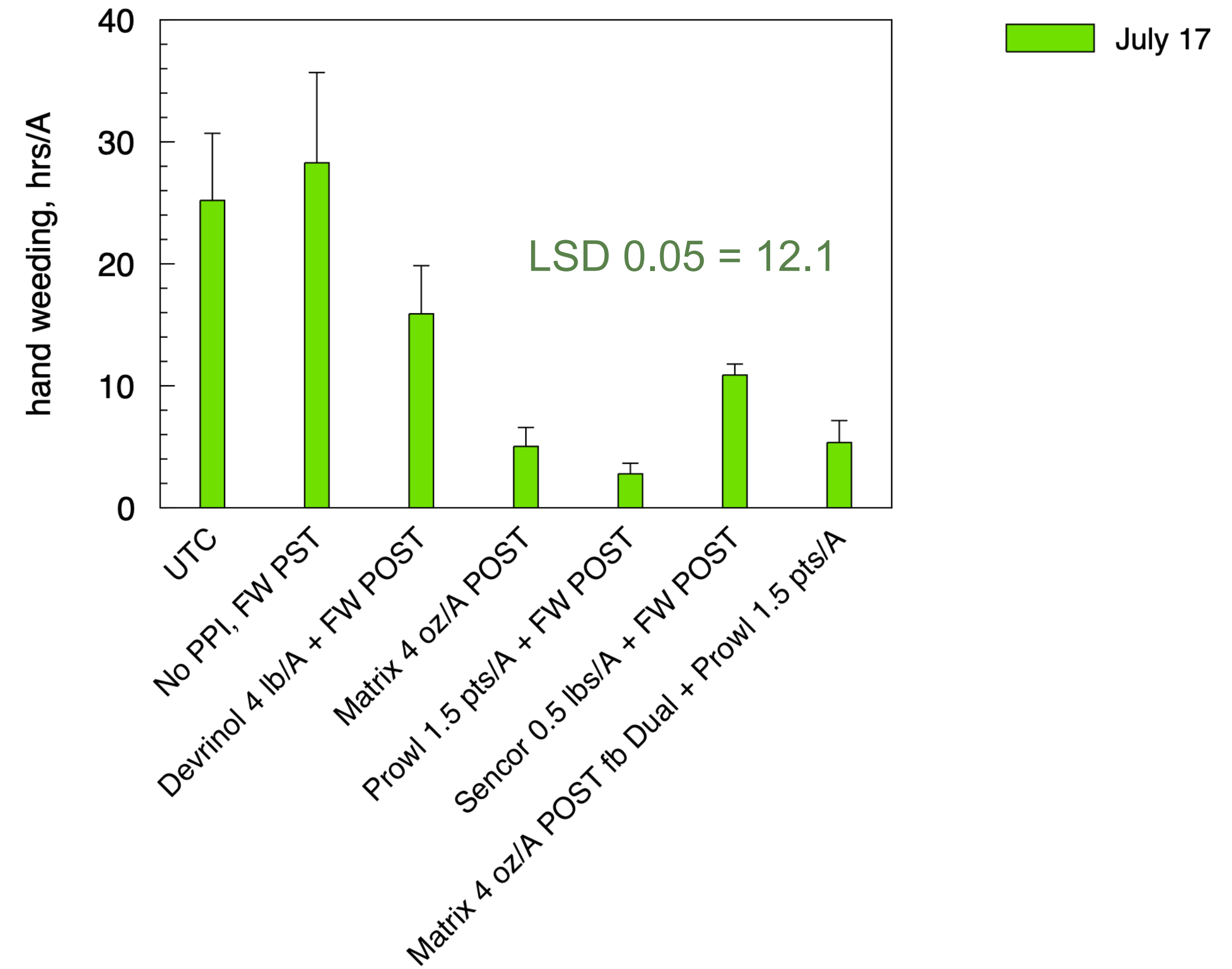
Dual + Prowl PPI fb Sencor +
FW

Merced location, commercial field 2024.

Processing Tomato Cultivation + Herbicide Trial
Merced 2024



Processing Tomato Cultivation + Herbicide Trial
Merced 2024





FW + Matrix + Prowl



Finger Weeder only

Summary

- The finger weeder reduced in-row weeds.
 - ~ 40 - 60% at WSREC**
 - No significant difference in crop stand
- Adding a pre-emergent herbicide and incorporating with the finger weeder further improved weed control.
 - 20 - 40% in tomatoes
- PPI + (Prowl/Matrix/Dual/Sencor) + finger weeder gave best weed control and lowest weeding cost.



Acknowledgements

- Dr. Steve Fennimore, UC ANR

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- UC Davis Veg Crops and WSREC

- CTRI, CA MRB, CTGA



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