UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Yolo, Solano, & Sacramento Counties

Vegetable Info (February/March 2024)

In this issue:

Cover crops learning opportunities coming up

Yolo & Solano Cover Crops Open House

Want to learn how others in the area are experimenting with cover crops? Come join our "open house" through March and April. It's a chance to visit local fields, ask questions, and discuss with other interested folks.

Open to growers only.

Click here for locations, times, & registration

Please contact Patricia Lazicki (palazicki@ucanr.edu) or Margaret Lloyd (mglloyd@ucanr.edu) for more info

Cover Crop Management in Tomatoes

hosted by American Farmland Trust
March 13 10:00-1:30 at
Bullseye Farm
20305 East St. Woodland Ca

A free workshop covering benefits and best practices for growing cover crops within tomato systems. Hear the most recent soil health results from AFT's cover crop trials at Bullseye Farm. A free lunch will be served.

Register here!

Automated transplanters:
Preliminary results from 2023 field trial

According to a recent cost study of processing tomato production in California, transplanting can represent the single largest cash expense in a grower's operation, around 20% of the total seasonal cash expenditure (Aegerter et al., 2023). The increasing expense and uncertain availability of labor make the new technology of automated transplanting an attractive option. However, questions remain as to automated transplanters' planting uniformity and stand establishment, which given today's high tomato prices and the high cost of seed and transplants are also important considerations.

In 2023, I collaborated with Ray Yeung of Kubo-Yeung Farms to do a side-by-side comparison of three different planter types: the Agriplanter automated transplanter, the Ferrari FMAX carousel planter, and a finger planter. We tested all three in a three-bed configuration, planting a single line down 60" beds. The trial was planted with H 2012 on 6/2. I set up three replicates in a single field, with each replicate consisting of two passes of each planter. I measured planting depth, initial stand, heat damage from the high temperatures which occurred directly after planting, stand establishment, estimated empty bed space before harvest, and yields.

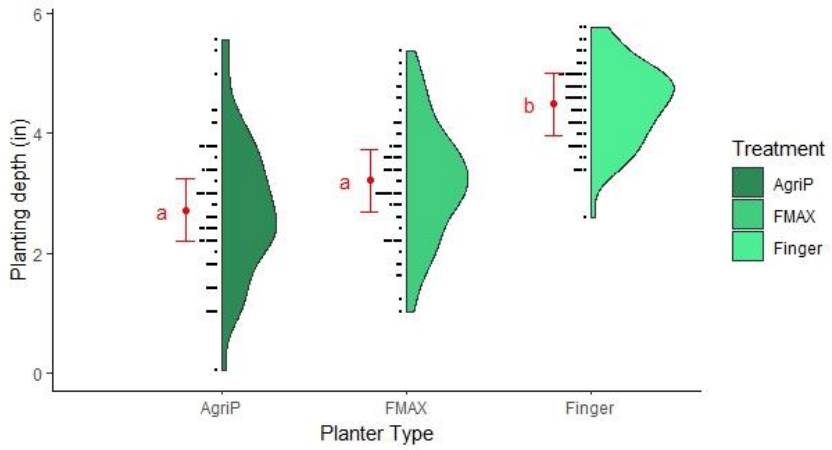


Figure 1. Range and variability of planting depth for the three planter types, calculated as the difference between mean plant height measured from random plants in the trays and height of ten randomly chosen plants measured down two rows per replicate (n=60). Dots represent the number of observations at a particular depth. Different lowercase letters signify that mean depths are significantly different at $p<0.05$.

Planting depth was estimated for each planter by measuring random plants from the trays and from along two rows, from soil line to growing tip. The FMAX and AgriPlanter both planted more shallowly than the finger planter on average, and the depth was more variable.

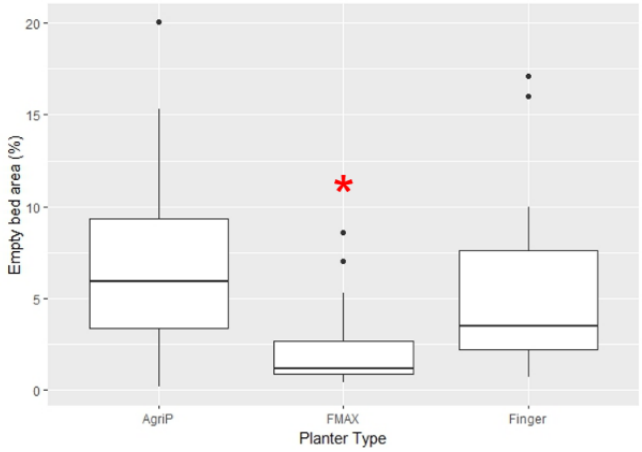


Figure 2. Mean and range of empty bed area measured just before harvest, calculated from the total empty bed length for each row (n=18), as assessed by a measuring wheel. Dark middle lines represent the mean values. The red asterisk indicates significant difference from the other treatments ($p<0.05$)

The AgriPlanter rows had tended to have more small (1 to 2-plant) skips than the other two types ($p=0.05$), and was the only planter in which skips of 3 plants or greater occurred. In the heat wave that followed planting, the finger planter and the AgriPlanter rows had significantly more mortality than the FMAX rows. This was likely due to the finer planting furrow and closer placement with the transplant water afforded by the FMAX. Thus, there was a greater likelihood of long unplanted stretches in the finger planter and Agriplanter rows, leading to significantly greater empty bed space at harvest (Figure 2). Despite differences in skips after planting and stand establishment, yield did not differ significantly between planter types, and processing quality was similar (Table 1)

Variability across the field (between replicates) was higher than the variability between the planters. In 2024, with support from CTRI I'll be conducting similar side-by-side tests on additional fields around the south Sacramento Valley to gain a more robust assessment of planter performance. In addition to the three included in this trial, I plan to also test the Futura, an automated planter from Ferrari. I'll also be using field trial results, along with information from growers with experience using the different planter types, to work with the UC Davis Cost Study Team to do a preliminary economic analysis.

	Net (t/acre)			Paid (t/acre)		
Rep	**AgriP**	**FMAX**	**Finger**	**AgriP**	**FMAX**	**Finger**
1	56	57	56	50	47	50
2	65	69	67	57	61	58
3	67	73	75	62	64	68
Average	**63**	**66**	**66**	**56**	**57**	**59**
SD	6	8	10	6	9	9
CV%	10	12	15	10	16	16

Table 1. Net and paid yields measured for each treatment in each replicate.Treatment replicates ranged from 0.6 to 0.9 acres and were mechanically harvested into processor trailers; mean and paid values and processing characteristics were received from the processor reports. SD= Standard deviation; CV= Coefficient of variation.

Those interested in seeing the planters in action are invited to attend a field day in early May, as we plant a field trial near Clarksburg. I'll send out more details when the time comes.

Feel free to reach out to me if you have any questions or would like to learn more (Patricia Lazicki; palazicki@ucanr.edu; 530-219-5198)

Many thanks to Ray Yeung & Ron Kubo (Kubo-Yeung Farms), Todd Diederich (MTD Transplanting), Casey Valcheck (Morning Star), Zach Bagley (CTRI), Brenna Aegerter (UCCE San Joaquin County), Spencer Bei & Aaron Black (Robben Ranch), Tony Turkovich (Button & Turkovich), and Bruce Rominger (Rominger Brothers Farms) for their help with this study.

Thrips & tomato spotted wilt virus monitoring

What to expect in 2024

Resistance-breaking TSWV strains are now widespread in south Sacramento Valley processing tomato fields. A newly discovered strain ("CPN") was identified in 2023, which appeared to be the dominant resistance-breaking strain in Colusa and Sutter counties. Yolo and Solano county fields contained a mix of the CPN and the Fresno ("YPT") resistance-breaking strains. So, while TSWV-resistant genetics still have value, they may not be as reliable as they have been in the past as a sole line of defense.

TSWV isn't transmitted to the eggs, and juveniles must acquire it while feeding on infected plant tissue. Because of this, risk of TSWV transmission begins with the second generation. Since we don't currently have any materials that are consistently effective in dealing with large thrips populations, if spraying is necessary it's most effective to target the early generations (often adult 2nd- through 4th generations).

Thrips life-cycle is temperature-driven, so generations can be predicted using a degree-day model. To help keep track of thrips generations in the southern Sacramento Valley, I'll be publishing regular updates on current and forecasted stages, as well as what we're seeing as we monitor local TSWV levels. Updates will be weekly during the crucial 2- 4th generation stages; otherwise frequency will depend on how the season is looking.

Click here to subscribe to regular updates

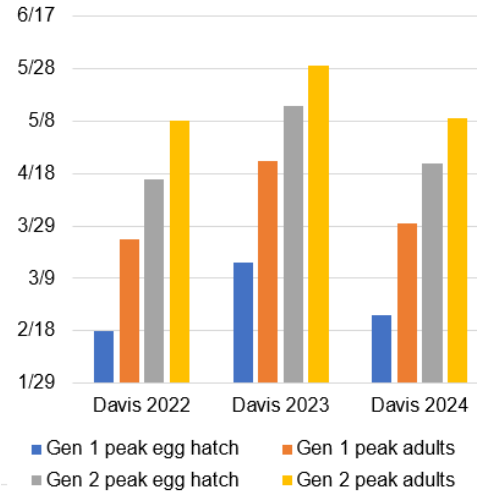
Current situation

Thanks to a wetter-than-normal February we're slightly above normal for our average winter rainfall accumulation in Yolo County, with more predicted soon. The saturating conditions we've seen in some fields in the last few weeks will reduce the chance of survival of overwintering thrips pupae in the soil. However, this year's overwinter survival rate is likely to be greater than it was in 2023, which was unusually cold and wet

Immediate outlook

We're currently in 1st-generation egg hatch (peak 2/23). Generation 1 adults are predicted to peak at the end of March (3/30). Currently 2nd-generation egg hatch and adults are predicted to peak at 4/22 and 5/9, respectively. This puts us a few weeks ahead of where we were in 2023, where Generation 1 egg hatch and peak adult populations were 3/15 and 4/23, respectively. Since this estimate is based on both current weather and average normals, these predictions may shift depending on what the weather is like in the next few weeks.

Additionally, tomato plants which are infected early will be at highest risk of yield loss. This means that intervention may be most useful in late-planted fields near historic hotspots, since these plants will be at greatest risk of infection by thrips carrying the virus.



Choosing tolerant varieties for fields with Fusarium stem rot and vine decline (*F. falciforme*; FRD) history

Replicated variety trial conducted by AgSeeds in 2023. The field variety, HM58841, showed good tolerance at this high-FRD site. However, it's susceptible to Fusarium wilt.

There's no genetic resistance available for Fusarium stem rot and vine decline (FRD, caused by pathogens in the F. falciforme complex). However, trials conducted over the past few years in fields with a history of FRD have found some varieties to be consistently more tolerant than others. Trials will be ongoing in 2024.

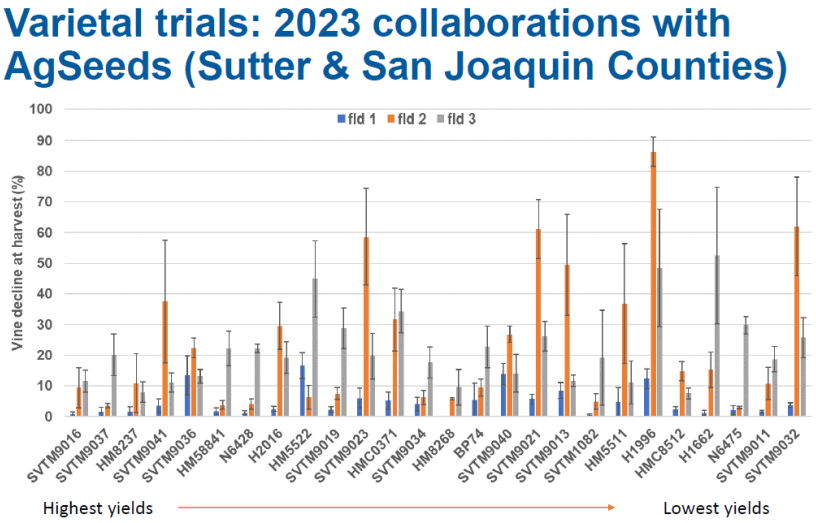
Newer varieties that exhibit tolerance in many/most FRD sites:

- HM8237, HM8268
- SVTM9016, SVTM9019, SVTM9037

Older varieties with good tolerance:

- N6428, HM58841

Consult with seed retailers or UC advisors about your particular situation.



Conclusions are from work conducted by Brenna Aegerter, Patricia Lazicki, Tom Turini, & Zheng Wang (UCCE), AgSeeds, TS&L, and Cassandra Swett (UC Davis), and include replicated trials on grower fields, replicated trials on the UC Davis campus, and non-replicated trials on grower fields.

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2024 South Sac Valley Processing Tomato Production Meeting Presentations Online

Did you miss the January meeting? Find the presentations here

Needs Assessment

As a new farm advisor, an important part of my job is to conduct a needs assessment to guide my research and extension priorities. What do you think are the biggest priorities for increasing the sustainability and profitability of vegetable crop production in Yolo, Sacramento, and Solano counties?

Please click here to take a brief survey