HEALTHY FOOD SYSTEMS • HEALTHY ENVIRONMENTS • HEALTHY COMMUNITIES • HEALTHY CALIFORNIANS

University of California
Agriculture and Natural Resources
Making a Difference for California

Vegetable Crops Facts

UCCE

Merced & Madera Counties Vol. 1, Jan 2020

UC Cooperative Extension 2145 Wardrobe Ave. • Merced, CA 95341 • (209) 385-7403
FAX (209) 722-8856 • cemerced@ucdavis.edu • http://cemerced.ucdavis.edu

IN THIS ISSUE:

- ✓ **UCCE/CTGA meeting**
- ✓ Process tomato production notes
- ✓ Fusarium update
- ✓ Melon herbicide summary

Special Note:

CA Processing Tomato Production (tons):
2015: 14.36 million
2016: 12.64 million
2017: 10.46 million
2018: 12.28 million
2019: 11.18 million

Merced rainfall:
2014 - 15: 7.2”
2015 - 16: 16.7”
2016 - 17: 18.2”
2017 - 18: 6.84”
2018 - 19: 15.93”

Scott Stoddard
Farm Advisor

UC Cooperative Extension
Northern San Joaquin Valley Processing Tomato Meeting
held in conjunction with
The California Tomato Growers Association (CTGA) Annual Meeting

Wednesday, January 29, 2020
8:00 - 11:00 am
Modesto Double Tree Hotel
1150 9th St, Modesto, CA, 95354

PROGRAM

7:30 am. Registration desk open

8:00 Welcome. Zheng Wang, Vegetable Crops Farm Advisor, UCCE Stanislaus

8:05 Recent changes in tomato spotted wilt virus: management and research. Tom Turini, Vegetable Crops Farm Advisor, UCCE Fresno County

8:25 Integrating biologicals for a holistic soil health management. Anthony Fulford, Soil Nutrient and Health Advisor, UCCE Stanislaus

8:45 Tools for diagnosing and monitoring Fusarium pathogen and cultivar responses to F. falciforme. Cassandra Swett, CE Plant Pathology Specialist, UC Davis

9:15 Evaluation of chemigation and fumigation for control of Fusarium diseases. Brenna Aegerter, Vegetable Crops Farm Advisor, UCCE San Joaquin County

9:35 **Break**. Refreshments in exhibit room provided by the CTGA

10:00 Project updates on tomato root-knot nematode and southern blight in Kern County. Jaspreet Sidhu, Vegetable Crops Farm Advisor, UCCE Kern

10:20 Availability of nitrogen from processing tomato residues. Daniel Geisseler, CE Nutrient Management Specialist, UC Davis

10:40 Updates on the grafted processing tomato production trial. Zheng Wang, Vegetable Crops Farm Advisor, UCCE Stanislaus County

11:00 **Adjourn**, visit exhibits

12:00 CTGA lunch and program

The California Tomato Growers Association (CTGA) Annual Meeting:
for information and registration, see www.ctga.org. Note that the UCCE educational meeting is free and open to the public, no registration is required.

Continuing Education Units (CEUs) requested

This Cooperative Extension sponsored meeting is free and open to the public. The meeting room and refreshments are generously provided by the California Tomato Growers Association, Inc.
Pre-registration is required to attend the California Tomato Growers Association Annual Meeting.
Please contact CTGA at (916) 925-0225 or ctga@sbcglobal.net

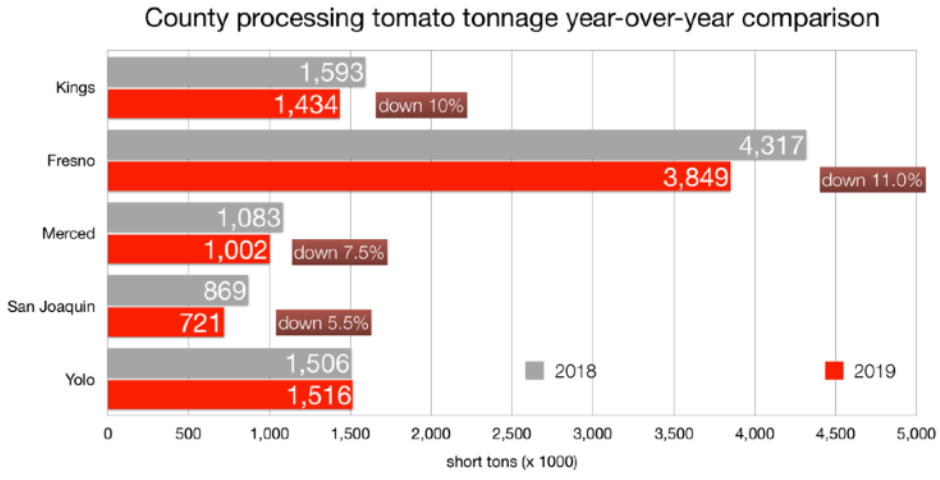
Other Meetings of Interest:

- Feb 6, 2020 (Thurs), UCCE Classroom, 2:00 pm -4:00 pm. Metam stewardship class. Required for all growers/applicators who will use metam (metam sodium and metam potassium) this year. Contact Merced County Agriculture Commissioner for more information at 209-385-7431.
- Feb 4 - 5, 2020 (Tues-Weds). CA Plant and Soil Conference and CA CCA Annual Meeting. Double Tree Hotel and Fresno Convention Center. Registration required, $215 includes lunch both days. http://calasa.ucdavis.edu.

General Notes:

For processing tomatoes, the 2019 production year was fairly good in Merced County, but a challenge for the state. A series of late spring storms at the end of May dropped significant rainfall and hail in the south San Joaquin Valley. Early planted fields from Fresno south were impacted the most, and average yields were down from average. Fresno County harvested 500,000 fewer tons than 2018, Kings County 200,000 less. At one point in the season, forecasted production was the lowest in 20 years, but late season fields in Merced and San Joaquin increased production and the state finished at about 11.2 million tons, about 1 million tons less than contract intentions.

Merced county is one of 4 California counties with processing tomato production greater than 1,000,000 tons. While 7.5% less than last year, estimated production was 1.002 million tons from 21,200 contracted acres, which is 47.3. tons per acre on average. Soluble solids was 5.07, and color (Hue) was 21.3 using the new system. Despite all the production issues in 2019, these are all improvements over 2018. The other million-ton counties were Fresno (3.8 million), Kings (1.4 million), and Yolo (1.5 million). TSWV and curly tip were mild this season, as were insects and mites.



The new PTAB fruit quality measurements and processes continued in 2019. Color was

reported using hue angle. Values typically range from 17 - 25 and are similar to the old PTAB LED color scores, in that lower values indicate redder fruit. Soluble solids were measured with an automated system. After 2018, the new system appeared to underestimate fruit soluble solids, however, this appeared to not be an issue in 2019.

Fusarium wilt race 3 (*Fusarium oxysporum f. sp. lycopersici*) [F3] continues to be a problem for tomato growers. This soil fungus has been spreading both in scope and severity for more than 10 years in Merced County. There are numerous F3 resistant cultivars now available that provide very good control of this disease. Furthermore, every new variety being released has F3 resistance. Based on my fungicide evaluations on F3 control in an infested field, resistant varieties have yielded on average 23.6% more than susceptible varieties (Table 1).

Table 1. Yield difference between F3 resistant processing tomatoes and untreated susceptible varieties in a Fusarium wilt race 3 infested field, Merced County 2016 - 2019.

Date	F3 Variety, susceptible	F3 yield, Tons/A	Susceptible yield Tons/A	difference, Tons/A	F3 variety, % yield increase
2016	BQ141, H8504	58.77	54.59	4.18	7.7%
2017	BP19, H5608	56.81	49.79	7.09	12.5%
2018	N6428, H2401	64.21	50.62	13.59	27%
2019	N6428, DRI319	50.26	34.13	16.13	47%
				AVERAGE	**23.6%**

F3 in processing tomatoes causes early canopy collapse, which can lead to increased sunburn, more black mold, and yield losses. Symptoms from infection usually appear about 60 days after transplanting.

I have conducted trials since 2016 evaluating the impact on fungicides and biofungicides applied at planting on the suppression of F3 in both resistant and susceptible varieties in a commercial field severely infested with F3. In 2019 tested fungicides included Velum (fluopyram, Bayer Crop Science), Propulse (fluopyram + prothioconazole, Bayer), Miravis (pydiflumetofen, Syngenta), Topsin (thiophanate-methyl UPI), Rhyme (flutriafol, FMC), and Maxim (fludioxonil, Syngenta Crop Protection). Products were applied to transplants immediately after planting (Rhyme was applied 1 week after planting) as a plant drench using 165 ml of water per plant (about 380 gallons per acre), and again 3 weeks after planting. The variety used was DRI 319 (susceptible).

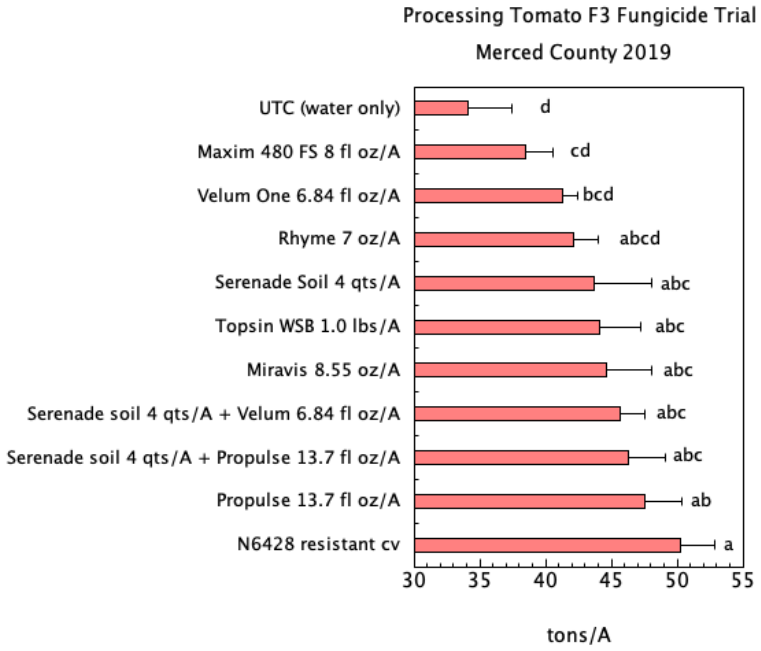
The appearance of Fusarium wilt was first observed in the plants in early July, which was confirmed to be caused by *Fusarium oxysporum* race 3 by UCCE Plant Pathology Specialist Cassandra Swett. The fungicide treatments had slightly less fewer infected plants after transplanting as compared to the water control at 60 days, but by 90 days all but Maxim and Topsin had significantly fewer diseased plants.

All of the fungicide treatments improved yield over the untreated control. Yields were significantly increased by most of the fungicide treatments (Figure next page). Propulse gave statistically similar yield as untreated N6428. Many of the treatments also reduced the amount of fruit rotting, from 17% to about 10%.

In general, fungicides have shown consistent short-term suppression of this disease, usually 60 days or less, but impacts on yield have been mixed. In 2017 and 2019 there were yield increases in the susceptible varieties when fungicides were used at or near transplanting, but in 2016 and 2018 there were no significant yield improvements (Table 2).

Table 2. Yield differences between an untreated control (UTC) and fungicide treatments in susceptible processing tomato varieties in a Fusarium wilt race 3 infested field, Merced County 2016 - 2019

Date	F3 susceptible variety	UTC yield, Tons/A	fludioxynil yield Tons/A	fluopyram yield Tons/A	significance test (p = 0.05)	increase, %
2016	H8504	54.60	53.72	—-	NS	-1.6%
2017	H5608	49.79	56.81	55.75	*	12.0%
2018	H2401	44.53	50.22	49.31	NS	12.4%
2019	DRI319	34.13	38.53	41.25	*	16.9%
					AVERAGE	**9.9%**

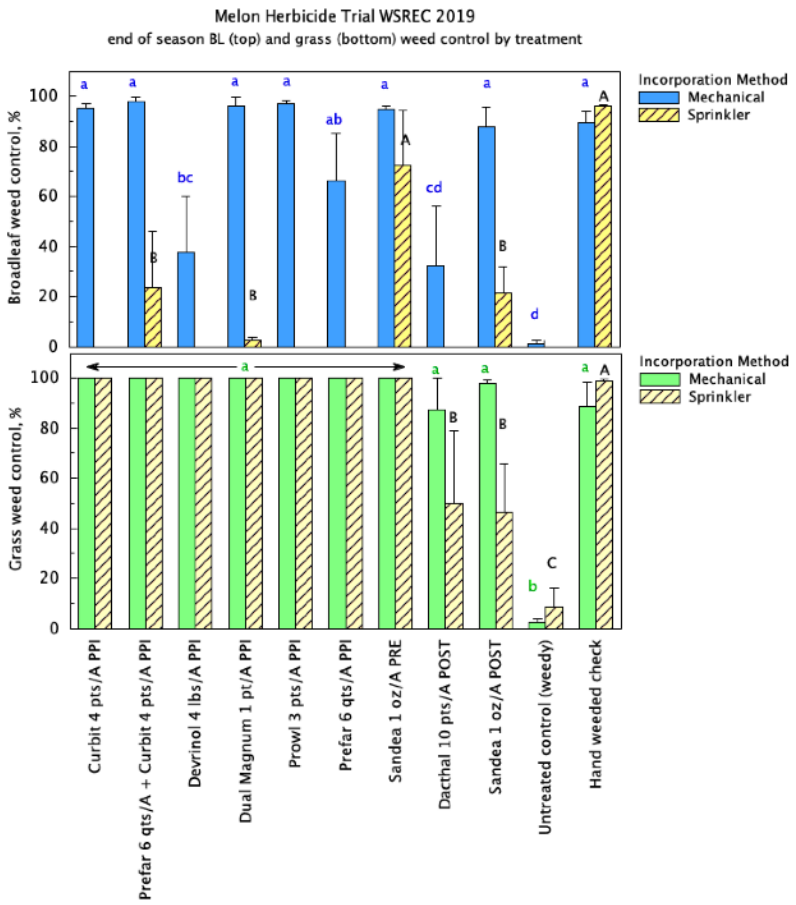


Processing tomato yield results for the 2019 fungicide efficacy trial on controlling Fusarium Wilt Race 3 showed significant increases for most of the treatments as compared to the untreated control (water only).

NOTE: not all fungicides tested are registered in tomatoes.

Evaluating preplant and post plant herbicide programs for weed management in transplanted LSL melons

Trials were conducted at the UC Desert Research and Extension Center (DREC Imperial County) and UC West Side Research and Extension Center (WSREC Fresno County) evaluating weed management and crop safety from various pre plant incorporated (PPI) and post plant (POST) herbicides in transplanted cantaloupes. Cultivar "Infinite Gold" (LSL) was used at WSREC, and "Cayucos Beach" (ESL) at DREC. At both locations, Curbit (ethalfluralin), Prefar (bensulide), Devrinol (napropamide), Dual Magnum (S-metolachlor), Prowl (pendimethalin), and Sandea (halosulfuron) herbicides were applied before transplanting and either mechanically or water incorporated. Additionally, Dacthal (DCPA) and Sandea were also applied 10 days after transplanting. An untreated weedy control treatment was included at both locations for comparison; a hand-weeded check was also evaluated at WSREC.



Herbicides were mechanically incorporated 2 – 3 inches one to two days before planting, or sprinkler incorporated with 0.5" (WSREC) or 1" (DREC) of water soon after transplanting. Both locations were drip irrigated for the remainder of the experiment.

At the DREC location, crop injury was observed only with POST Sandea and Dacthal treatments. Weed control was better with mechanical versus sprinkler irrigation. Curbit, Curbit + Prefar, and Prowl gave the best control of grassy and broadleaf weeds (especially goosefoot). Best total marketable yield occurred with mechanical incorporation of the Curbit+Prefar treatment, at 807 boxes per acre. There were no significant yield differences between any of the herbicide treatments where sprinkler irrigation was used. Average yield with sprinklers was 243 boxes/A.

At the WSREC location, weed pressure from broadleaf weeds, especially groundcherry (nightshade family), was very high, covering nearly 100% of the plot area for certain treatments. With mechanical incorporation, all herbicide treatments provided >90% weed control with the exception of Dacthal, Devrinol, and Prefar; however, significant crop injury occurred in the Prefar+Curbit, Devrinol, Prowl, and Sandea PPI treatments. Sprinkler incorporation of the herbicides did not give adequate weed control, and in fact increased weed germination as compared to the mechanically incorporated plots. Only Sandea at 1 oz/A PPI maintained good weed control throughout the season in the sprinkler irrigated plots, with an average of 72% control. Yields were significantly lower in the plots where sprinklers were used and weed control was poor. Average marketable yield was 1525 and 959 boxes/A for mechanical and sprinkler incorporation, respectively.

NOTE: not all herbicides tested are registered in melons.

Scott Stoddard, Farm Advisor