Field Notes
San Joaquin County
February 2020

University of California
Agriculture and Natural Resources

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Processing Tomato Update

For those of you who missed the Northern San Joaquin Valley Processing Tomato Meeting in Modesto on January 29th – I am providing some summary notes about a few select talks below. Additionally, you can find the presentation slides from all seven talks posted online at: https://ucanr.edu/sites/veg_crop_sjc/Presentations/. However, I would suggest that the slides posted online are most useful if you have already heard the presentation and wanted to perhaps see the results table a second time or review photos of disease symptoms. On their own, the slides will not be as educational. In any case, if you have questions about a topic, I hope you will please contact me or the presenter. If you are not currently receiving meeting announcements from me and would like to, please contact me or sign up online at https://ucanr.edu/sites/veg_crop_sjc/Newsletters_966/. Also, the California Tomato Research institute (CTRI) maintains a statewide processing tomato e-calendar that is distributed via email. To subscribe, go to https://tomatonet.org/ and click on "Subscribe to or edit your email alerts here".

Tomato spotted wilt virus. UC Advisor Tom Turini provided an update on the situation with respect to resistance-breaking tomato spotted wilt virus (RB TSWV), which has been causing problems in central San Joaquin Valley tomatoes since it was first observed in 2016. Here in the northern San Joaquin Valley, we have not yet seen RB TSWV, and the resistant varieties seem to be holding up well thus far. Tom has been scouting variety trials established by the seed retailers and evaluating the relative susceptibility of the current varieties. (See variety lists in his presentation at the link above). I have been scouting in variety trials in San Joaquin County, and I have not seen the disease causing any problems in resistant varieties in this area. However, I do see TSWV continuing to cause damage in susceptible varieties locally. Tom has conducted many thrips management trials over the years and has found that the insecticides Lannate, Dimethoate and Radiant provide the most consistent control, although thrips are admittedly challenging to control. I would ask that if you see fields of TSWV-resistant tomatoes with more than 3% of the plants showing symptoms, please let me know so we can send samples to the Gilbertson lab at UC Davis to check the strain. On a side note, there are also strains of TSWV which can overcome the host resistance that is being used in resistant pepper cultivars such as 'Huntington'. Pepper resistance-breaking strains have been found in this county, so we are also interested in hearing about TSWV problems in resistant peppers.

Fusarium diseases of tomato. UC Davis Plant Pathologist Cassandra Swett presented on several projects from her research group which is studying Fusarium wilt race 3 as well as a newly emerged crown rot disease caused by *Fusarium falciforme*. This is where you may want to refer to the slides posted online to see color photos of the symptoms of the new Fusarium crown rot pathogen. Correct diagnosis of the problem is critical if you plan to use resistant or tolerant varieties to manage the problem. Dr. Swett explained that resistance or tolerance to one Fusarium disease does NOT correlate with the reaction to another Fusarium disease, so a race 3-resistant cultivar may still be susceptible to *Fusarium falciforme*. Field diagnosis can be quite challenging, so we really need to get laboratory confirmation by sending samples to the Swett lab. Results can be slow but can be useful when making planting or variety decisions the following year. They have obtained funding to work on improved diagnostic techniques which we expect will be accurate and fast and could be conducted locally. On the UC Davis campus farm, they are conducting variety trials in infested fields, as well as evaluations of rotation crops to see which may harbor these two Fusarium pathogens. In 2019, we conducted field trials on campus and in commercial fields looking at the efficacy of fungicides or fumigants applied via the buried drip system. From these we have identified a couple of fungicides that we'd like to continue to evaluate. We also saw some promising results from trials with metam potassium (e.g. K-Pam, Sectagon), which is a fumigant that can be applied through the drip system prior to planting. We don't see chemical control as being a primary strategy for managing these diseases – the core needs to be avoidance of infested fields and use of resistant or tolerant cultivars. Chemicals, however, may have some utility in situations where other options are not

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feasible or used in conjunction with tolerant varieties. This work will continue in 2020. For more information on the Swett lab research activities, see https://swettlab.faculty.ucdavis.edu/.

Availability of nitrogen in tomato residue. UC Davis Nutrient Management Specialist Daniel Geisseler reported on his study of tomato residues following harvest to assess how much nitrogen is available to the following crop. Of all the nitrogen that is in the aboveground biomass of the plant at the end of the tomato season (generally around 300 lbs N per acre total), about one-third of that N is left behind in the field with the residue (or about 100 lbs). What happens to that 100 pounds of nitrogen in the residue during the fallow period? Dr. Geisseler's study found that N mineralization is slow during the fallow period. In the fall, the soil and residue are too dry for microbial activity. Once it is wet in the winter, then it is too cold, and microbial activity is low. Thus, most of the nitrogen in residues is not released during the winter, is not subject to losses due to leaching, and thus, most of it should be available to the subsequent crop. For more information on tomato fertilization and the Geisseler Nutrient Management Research program, please see http://geisseler.ucdavis.edu/.

Evaluation of yield of grafted tomatoes. UC Advisor Zheng Wang shared the 2019 results of our UCCE team's evaluation of grafting processing tomatoes. This is part of a larger, multi-state U.S. research and extension team working on grafted vegetables (tomato, pepper, cucurbits) with funding from USDA (Award # 2016-51181-25404). We have conducted five field trials over four years from 2016 to 2019. From our 2019 field trial conducted in a Manteca-area commercial field, we learned that for several rootstocks, halving the plant population from about 8,000 plugs per acre down to about 4,000 plugs per acre produced a similarly high yield, about 10 or more tons greater than the yield of own-rooted plants of the same cultivar. The possibility of significantly reducing plant populations may make the practice more economically feasible for the processing tomato production system. For more on grafted vegetable resources, please visit www.vegetablegrafting.org.

Brenna Aegerter, Vegetable Crops Farm Advisor

Herbicide Trial in Delta Drill-Seeded Rice

Weeds are important pests of California rice systems. Integrated weed management in rice systems considers:

- Prevention (e.g. using certified seed, equipment sanitation, maintaining roads and levees)
- Cultural practices (e.g. land leveling, crop rotation, tillage, winter flooding, drill-seeding)
- Fertilizer placement and management
- Water management
- Monitoring
- Herbicides

Herbicides are important tools; however, resistance can occur when products are not rotated, or when diverse chemistries are not available.

In 2019, in cooperation with Corteva Agriscience, I conducted a trial to evaluate the efficacy of a new herbicide product called Loyant (florpyrauxifen-benzyl). Loyant is registered in rice growing states in the southern US but would be a new chemistry in California. Corteva Agriscience anticipates California rice registration in 2020, with the product being available for use in 2021. Previous trials have shown that Loyant provides good control of broadleaf weeds (e.g. ducksalad, redstems), smallflower umbrella sedge, and ricefield bulrush. It has some activity on *Echinochloa spp.* (e.g. barnyardgrass, watergrass). More data was needed, however, in drill-seeded systems. The objective of the trial was to assess the efficacy and crop tolerance of Loyant for weed control in drill-seeded rice in California.

The trial took place in the Sacramento-San Joaquin Delta region on a Kingile muck soil. This soil classification is characterized as having upwards of 40 percent organic matter in the top foot of soil. On high organic matter soils in the Delta, the typical practice fis drill-seeding. Water-seeding, which is the typical practice in the Sacramento Valley, is not successful in the Delta because the soil particles can float and move too easily, causing seed to get buried too deeply and germinate poorly.

Methods:
The rice was drill-seeded on May 15th. After planting, but before rice emergence, glyphosate herbicide was applied to manage weeds that had already emerged. Treatments (Table 1) were applied on June 9th, when the rice was at approximately the 5 to 6 leaf stage. Applications were slightly delayed due to windy conditions. The permanent flood was applied a few days after herbicide application. The experimental design was a randomized complete block design with four replicates. Plot size was 20 feet by 20 feet. We made observations on crop injury on 7-day intervals from 7 to 42 days after treatment (DAT). We made observations on weed density on 7-day intervals from 14 to 42 DAT. The trial was harvested on November 1th, measuring 1-m^2 quadrat per plot.

Results:
For a full report on this trial with data tables, please see my website: https://ucanr.edu/sites/deltacrops/Rice/. Our crop injury observations were characterized as crop chlorosis, tip burn, and leaf curling. We observed noticeable crop chlorosis and tip burning in the grower standard treatment at 7 DAT, and slight effects in the grower substitute treatment.

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Table 1. Herbicide treatments in 2019 drill-seeded rice trial.

Materials	Rate (unit of product/acre)	Denoted as
Loyant, Prowl H2O, MSO	1.37 pints, 5.5 pints, 0.5 pints	Loyant-high + Prowl
Loyant, Prowl H2O, MSO	1.024 pints, 5.5 pints, 0.5 pints	Loyant-low + Prowl
Loyant, MSO	1.37 pints, 0.5 pints	Loyant-high
Regiment, Sandea, Prowl H2O, Super Wham, MSO, UAN-32	0.2 ounces, 0.8 ounces, 5.5 pints, 6 quarts, 16 fluid ounces, 2 gallons/100 gal	Grower standard
Prowl H2O	5.5 pints	Prowl
Regiment, Sandea, Prowl H2O, Loyant, MSO, UAN-32	0.2 ounces, 0.8 ounces, 5.5 pints, 1.37 pints, 16 fluid ounces, 2 gallons/100 gal	Grower substitute

We observed slight to noticeable leaf curling in the Loyant treatments at 14 DAT. Crop injury effects had disappeared in all treatments by 21 DAT. We observed no stunting or stand reduction with any of these treatments; nor did we observe any differences in heading. Heading occurred at approximately 87 days (Aug 15th). All treatments had similar weed control with the exception of the Prowl treatment, which had statistically higher weed counts. Loyant does not control sprangletop, so sprangletop was the weed most commonly observed.

We found no differences in yield or seed moisture at harvest (Table 2), and we observed no lodging. Yield averaged 8965 lbs per acre, averaged across treatments, and seed moisture averaged 13.7 percent.

Conclusions:
The purpose of this trial was to learn the efficacy and crop tolerance of Loyant (florpyrauxifen-benzyl) for weed control in drill-seeded rice. We observed slight leaf rolling with the Loyant treatments a couple weeks after treatment, but those symptoms were gone by the third week after treatment. We observed Loyant to have good activity on the *Echinochloa* species but not on sprangletop, which was expected based on previous trials. We observed Loyant treatments to have similarly low weed counts compared to the grower standard practice, and no significant differences in yield among the treatments. Tank mixes will be needed to manage sprangletop. The results indicate that Loyant could be used in drill-seeded rice herbicide programs, providing a different chemistry for herbicide resistance management.

Acknowledgments:
I would like to thank the following individuals for their support on this trial: Eugene Muzio for hosting the trial; Albert Giannecchini (PCA, Wilbur-Ellis); Whitney Brim-DeForest, Luis Espino, and Ray Stogsdill (UCCE); and Stephen Colbert (Corteva Agriscience).

The aforementioned information on products and practices is for educational purposes only and does not constitute an endorsement or recommendation by the University of California.

Michelle Leinfelder-Miles, Delta Farm Advisor

Table 2. Harvest results for the 2019 drill-seeded herbicide trial.

Treatment	Seed Moisture(%)*	Yield (lbs/ac)*‡
Loyant-high + Prowl	13.8	9251
Loyant-low + Prowl	13.8	9122
Loyant-high	13.8	8632
Grower standard	14.0	8896
Prowl	13.8	8896
Grower substitute	13.1	8994
Average	13.7	8965
Coefficient of Variation (%)	5	3
Significance of treatment effect (P value)	0.0566	0.5748

**Results for each variety are expressed as the average across four replicated blocks.*
‡Yield adjusted to 14% moisture.

Announcements / Calendar of Events

Airblast Sprayer Calibration Training
Thursday, February 20, 2020
7:30am to 3:45pm
Kautz Farms, 5920 Live Oak Road, Lodi
Online pre-registration is required:
https://ucanr.edu/survey/survey.cfm?surveynumber=29243
Contacts:
Farm Advisors, Lynn Wunderlich at lrwunderlich@ucanr.edu
or Franz Niederholzer at fjniederholzer@ucanr.edu

68th Annual Lodi Grape Day
Tuesday, Frebruary 25, 2020
8:00am to 12:00pm, Doors open at 7:30am
Hutchins Street Square, 125 S. Hutchins Street, Lodi
Morning session is free. Lunch is $40 (walk-in fee).
Lunch speaker is Dale Stratton from Constellation Brands.

Golden State Dairy Management Conference
Wednesday, March 4, 2020
8:30am to 3:00pm
UCCE Stanislaus County Ag. Center
Harvest Hall, 3800 Cornucopia Way, Modesto
Online pre-registration is required:
https://ucanr.edu/sites/CAdairyconference/
Contact: Jennifer Heguy at jmheguy@ucanr.edu

50th Annual Quad-County Walnut Institute
Monday, March 9, 2020
8:00am to 12:00pm, Doors open at 7:15am
Cabral Agricultural Center
2101 E. Earhart Ave., Stockton
Contact: Mohamed Nouri at mnouri@ucanr.edu

Principles of Fruit and Nut Tree Growth, Cropping and Management
March 23 through April 2, 2020
For more information on the program, please visit:
http://fruitandnuteducation.ucdavis.edu/education/principles/
For registration questions, please contact Kevin Taniguchi at
kstaniguchi@ucdavis.edu or 530-752-4279

Golden State Dairy Management Conference is March 4th in Modesto!

Come yourself. Send your manager or herdsman. Held in even years, this is the Univer sity of California's third research conference. We've designed the conference with the producer in mind, delivering information in a "news you can use" format. Our speaker line-up includes University of California Farm Advisors, Specialists and Dairy Faculty on topics relevant to California dairying. Most importantly, research presented is derived from California data.

Join us for breakfast Wednesday morning (lunch will be served too!) prepared by the Valley Cowbelles. Their food is phenomenal, and they use profits to fund scholarships for local ag kids – a win-win. After breakfast, Alison Van Eenennaam starts the meeting off with a talk on alternative meats – facts vs. fiction. You're sure to leave that talk with a better understanding of the science and a great dinner conversation starter.

Breakout sessions start mid-morning. Room one will focus sessions on by-product feeding, agronomy (with a nutrient management and water focus) and economics. Room two has an animal health theme, including fly and tick control, calf management, and hot topics.

For more information check out the program https://ucanr.edu/sites/CAdairyconference/.

We hope to see you in Modesto in March!

Jennifer Heguy – UCCE Merced, Stanislaus & San Joaquin Counties

Spray Application Pest Management Alliance Airblast Sprayer Calibration Training

Date: Thursday, February 20, 2020 Time: 7:30 AM-3:45 PM

Location: Kautz Farms, 5920 Live Oak Rd, Lodi, CA 95240.

What: An outdoor, hands-on training course covering airblast sprayer calibration and drift control techniques for applications in vineyards.

Who should attend: This course is for those who are directly involved with spray application operations, those who supervise applications, spray decision makers, vineyard managers, grower/owners and PCAs. **The course will be taught in both English and Spanish.** You will choose which language you wish to be trained in during registration.

The course is ideal for multiple employees within a single farm organization to attend-PCA to owner to applicator.

We will work with axial fan sprayers-however; the training will be applicable to air shear sprayers as well. Only air-assisted application directed to the canopy in vineyards will be covered (no herbicide/ground application).

You will be provided with PPE, please indicate your Tyvek and glove size when registering. All attendees will be asked to sign a waiver of liability and photo release as a requirement before being admitted to the course.

Pre-registration online is **required to attend**

https://ucanr.edu/survey/survey.cfm?surveynumber=29243

Contacts for more information:

Registration: Email ANR Program Support Unit or call Clin Xu at 530-750-1257

Program/Agenda: Lynn Wunderlich, lrwunderlich@ucanr.edu 530-621-5505 or

Franz Niederholzer, fjniederholzer@ucanr.edu 530-458-0570

Pressure gauge testing is available! If you would like your sprayer gauge tested against a certified accurate gauge, please remove your gauge from your sprayer and label it by writing your name and phone number on a piece of masking tape and tape it to the back of the gauge. Drop off your gauge at Kautz Farms between 10 a.m.- 2 p.m. on Feb. 19-the day before the actual training. Your gauge will be returned at the end of class with the accuracy information kept confidential.

AGENDA

7:30 AM	**Registration and Coffee**
8:00	**Welcome and Introductions**
8:20	**EQUIPMENT.** Liquid line of flow, the pressure gauge, the fan and air volume, introductions to nozzles: disc and core, single piece, low drift, droplet size.
9:15	Break
9:30	**RATE.** Measuring land rate. Calibration: the basic formula for spraying. Choosing nozzles. Methods to measure flow rate. Actual GPA vs. formula GPA. How much pesticide in the tank?
12:15 PM	Lunch
12:45	**LAWS.** The Pesticide Use Near Schoolsites Regulation. Labels and spray application parameters.
1:15	**PERFORMANCE/ PRECISION.** Measuring coverage. Sprayer adjustments to improve coverage.
2:45	Break
3:00	**WEATHER.** Measuring weather. How weather affects your application.
3:30	**POST-SURVEY**
3:45	**Check out: CE credit verification handed out. Pressure gauges returned.**

6 hours "other" and 0.5 hour "laws" applied for

This course is supported by a Pest Management Alliance grant from the California Department of Pesticide Regulation and was conceived and will be taught by a collaborative team of University of California Cooperative Extension, Agricultural Commissioners, University of California Integrated Pest Management, Spray Safe, and Industry members.

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
2101 East Earhart Avenue, Suite 200, Stockton CA 95206 - (209) 468-2085

68TH ANNUAL

GRAPE DAY

Tuesday · February 25 · 2020

KIRST AND CRETE HALLS · HUTCHINS STREET SQUARE, LODI CALIFORNIA

7:30 am	**Registration / Coffee**
8:00 am	**Welcome**
8:10 am	**Lodi Ant Study Summer 2019** *Kris Tollerup, Ph.D., UC Cooperative Extension Advisor in San Joaquin Valley & Surrounding Areas*
8:45 am	**Applying IPM Principles to Your Fungal Disease Program** *Larry Bettiga, Farm Advisor - Viticulture University of California Cooperative Extension Monterey, San Benito and Santa Cruz Counties*
9:30 am	**Coffee Break**
9:45 am	**Vineyard Weed Management** *John Roncoroni, UCCE Advisor*
10:30 am	**Soil, Rootstocks and Irrigation: Deep vs. Shallow Farming** *Mark Battany, University of California Cooperative Extension, Water Management and Biometeorology Advisor, San Luis Obispo/Santa Barbara Counties*
11:15 am	**Grapevine Virus Outreach in Lodi** *Stephanie L. Bolton, PhD Research & Education Director Sustainable Winegrowing Director Lodi Winegrape Commission*
11:30 am	**Lodi Wine Sensory Evaluation**
12:00 pm	**Lunch**
12:20 pm	**Luncheon Keynote Speaker: Dale Stratton**
1:30 pm	**Program Concludes**

Meeting credits:
3.25 DPR CE hours- Other requested.

TICKET ORDERING FORM for:
2020 LODI GRAPE DAY LUNCHEON

Tuesday, February 25th, 2020 | 12:00 - 1:30pm
Hutchins Street Square | 125 S Hutchins St, Lodi CA 95240

Our 68th Annual LODI GRAPE DAY will be held on February 25th, 2020 at Hutchins Street Square. For over 65 years, the Agribusiness Committee of the Lodi District Chamber of Commerce, along with University of California Cooperative Extension, has brought information about improving yields, fighting diseases, market trends, and mechanization technologies to the hundreds of growers who attend LODI GRAPE DAY. After learning about relevant viticulture topics in the morning, growers, pest control advisors, winery personnel, bankers, and business leaders gather together for a special luncheon featuring a keynote speaker. Previous speakers include Paul Verdegaal (UCCE Farm Advisor), Dale Stratton (VP Commercial Insights, Constellation Brands), and Robert Koch (President & CEO, Wine Institute). Attendance during the morning presentations and wine tasting is free and open to everyone (no tickets or RSVP required).

LODI GRAPE DAY AGENDA:

7:30am - 8:00am	Registration & DPR CE Credit Sign-In
8:00am - 11:30am	Invited Speaker Viticulture Presentations
11:30am - 12:00pm	Lodi AVA Wine Tasting
12:00pm - 1:30pm	Luncheon with Keynote Speaker

The full agenda with speaker announcements will be available at lodichamber.com by early January 2020.

2020 LODI GRAPE DAY LUNCHEON TICKET PRICING:

$30 each (early-bird, by January 15th) **| $35** each (January 16th - 31st) **| $40** at the door (limited availability)

PRE-ORDER TICKETS AVAILABLE UNTIL JANUARY 31st, 2020. Pre-ordered tickets will be mailed to the address provided below. CONTACT & PAYMENT INFORMATION:

Firm/Company Name: _____

Contact Name: _____ E-Mail: _____

Mailing Address: _____

Phone: _____ Fax: _____

____ # of tickets @ $30 each (price increases to $35 after 1/15/2020)

Total Amount Enclosed by Check/ To be Charged by Credit Card = $ _____

Name on Credit Card: _____

MasterCard/Visa Credit Card # ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ (no AmEx)

Expiration Date ___ ___ / ___ ___ 3 Digit Code on Back ___ ___ ___ Zip Code ___ ___ ___ ___ ___

Send completed form & check (payable to Lodi District Chamber of Commerce) or credit card information to:

Lodi District Chamber of Commerce, 35 S. School St., Lodi, CA 95240 • Fax 209.369.9344

Questions? Contact Karen Cannon: 209.367.7840 x105 or kcannon@lodichamber.com

Sorry, no refunds available. Tickets are transferrable to another person.

UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

University of California Cooperative Extension

50th Quad-County Walnut Institute

Monday, March 9, 2020

Robert J. Cabral Agricultural Center, Evelyn Costa Room

2101 E. Earhart Ave., Stockton, CA 95206-3949

7:15AM **Registration Opens**

Session Moderator: Dr. Mohamed Nouri, UCCE Orchard Crops Advisor, San Joaquin County

8:00AM Welcome
Dr. Kari Arnold, UCCE Orchard and Vineyard Systems Advisor, Stanislaus County

8:05AM Commissioner's Update, Laws and Regulations
Tim Pelican, Deputy Agricultural Commissioner/Sealer of Weights and Measures

8:40AM Navel Orangeworm Pest Management Survey
Dr. Phoebe Gordon, UCCE Orchard Crops Farm Advisor, Madera and Merced County
Dr. Houston Wilson, UCCE Tree Crops IPM Specialist

9:05AM California Walnut Industry Update
California Walnut Commission:
Claire Lee, Assistant Director, International Marketing
Jennifer Olmstead, Marketing Director, Domestic Public Relations
Carl Eidsath, Director, Regulatory and Industry Affairs

9:35AM Updates on Flatheaded Borer, Scale and Worm Pests
Dr. Jhalendra Rijal, UCCE Area IPM Advisor, Merced, San Joaquin, and Stanislaus Counties

10:05AM Break

Session Moderator: Dr. Kamyar Aram, UCCE Crop Advisor, Alameda and Contra Costa Counties

10:25AM Walnut Rootstock Improvement Survey Brief Introduction
Dr. Annette Levi, Dept. of Ag. Business, Fresno State

10:30AM Research and Field Updates
Dr. Kari Arnold, UCCE Orchard and Vineyard Systems Advisor, Stanislaus County

10:45AM Walnut Orchard Management Research Updates
Dr. Bruce Lampinen, UCCE Pomology Extension Specialist, UC Davis

11:10AM Walnut Mold Differs from Botryosphaeria and Phomopsis Blights
Dr. Themis Michailides, Plant Pathologist, UC Davis

11:35AM Walnut Improvement Program Updates
Dr. Pat J. Brown, Associate Professor and Nut Crops Breeder, UC Davis

12:00PM Adjourn

2.0 hours of DPR CEU
3.0 hours of CCA CEU

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Notes from the Field

February 2020