Field Notes
San Joaquin County
August 2021

University of California
Agriculture and Natural Resources

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Processing Tomato Update

Deficit Irrigation of Processing Tomatoes

Considering the drought, and the possibility that irrigation cut offs might need to be implemented – the following is some information on deficit irrigation of processing tomatoes. Deficit irrigation strategies have been studied primarily to improve soluble solids levels in harvested tomato fruit, but the results can also be applied to water conservation or water restrictions. Once fruit set is complete (as the earliest fruits are reaching the mature green stage), a substantial level of moisture stress can be imposed with minimal loss to productivity. However, as deficit irrigation is normally practiced with a drip system, we typically would still supply some low level of water to the crop during the fruit sizing and ripening period. A complete cutoff does, of course, reduce yield. Yield impacts of an irrigation cutoff will vary considerably depending on the stage of development, crop rooting depth, soil water holding capacity and the presence or absence of a shallow water table. In general, a cutoff 60 to 80 days before harvest might still yield 80% of the expected yield with full irrigation. However, lighter textured soils will be much less forgiving and result in drastic yield declines. Later planted fields that are still setting fruit will be more highly impacted by early irrigation cutoffs.

Tomato Spotted Wilt Virus (TSWV)

Resistance breaking strains of TSWV have been found in northern California tomatoes, including in eastern Contra Costa and San Joaquin counties, and in the lower Sacramento Valley. Both fresh market and processing tomato fields have been affected. These new strains of the virus can cause disease on tomato varieties with the Sw5 gene, which are categorized as resistant to the virus, and which constitute the majority of varieties grown commercially in this area. Currently, viral strains found in local fields are a mixture of "old" (wild type) and "new" (resistance-breaking), meaning that resistant varieties are still somewhat effective in reducing disease incidence. However, the expectation is that in the future, resistance-breaking (RB) strains are likely to predominate, as has happened further south in the San Joaquin Valley. It's likely that RB TSWV was here at lower levels than in past seasons, but with the very high thrips pressure this year, the RB TSWV proliferated and became more apparent. However, incidence of spotted wilt has not been as high this year as it was prior to the use of resistant varieties. At this point in the season, attempts to control the virus are likely unwarranted. Control strategies generally focus on early-season control of the thrips vector and man-agement of weedy hosts.

For additional information on spotted wilt, please see a recent Grower Alert put together by UCD Virologist Bob Gilbertson and UC Farm Adviser Gene Miyao: http://ccvegcrops.ucanr.edu/newsletters/Tomato_Info_Newsletters90217.pdf

Curly Top Virus

We have seen an unusually high incidence of curly top disease in tomatoes, caused by Beet Curly Top Virus (BCTV) which is vectored by the beet leafhopper (BLH). This seems to be associated with the drought, as past drought years have also resulted in higher than usual curly top levels, presumably due to impacts on the BLH vector and its habitat in the foothills. Interestingly, they are also seeing curly top in the lower Sacramento Valley, which rarely has more than an occasional plant with this disease.

Brenna Aegerter, Vegetable Crops Farm Advisor

Curly Top disease in tomatoes.

Table of Contents:

Investigation of Possible ALS-Resistant Common Chickweed Populations in the San Joaquin Valley

Common chickweed (*Stellaria media*) is a winter annual found throughout California and considered to be one of the most common broadleaf weeds infesting small grains in the state. Herbicides can provide effective control of chickweed; however, overreliance on a single herbicide (or group of herbicides with the same site of action), is likely to result in resistance to that herbicide (or group of herbicides). Even though herbicide-resistant common chickweed populations have not been confirmed in California, lack of effective control with post-emergence applications of the ALS-inhibiting herbicides pyroxsulam (Simplicity) and tribenuron (Express TotalSol) was observed in several triticale fields located in the southern San Joaquin Valley in early 2021. Additionally, ALS-resistant common chickweed has been identified in other states in the US and Canada. Therefore, the main objectives of this article are to discuss how UCCE plans to investigate this possible new case of herbicide resistance in California, as well as to provide information to help Pest Control Advisors (PCAs) and growers in developing more diversified integrated weed management programs for cereal crops.

Herbicide Resistance and Herbicide Use Patterns in CA Cereal Crops

Currently there are a total of 30 confirmed cases of herbicide resistance in California, with most occurrences corresponding to single resistance to ALS- or EPSPS-inhibiting herbicides. One of the most important weed management strategies to delay the selection of herbicide-resistant weeds is the use of multiple effective herbicide sites of action (SOA). Thus, one might ask "how diverse is the cereal crops herbicide program in California?" We analyzed the CA wheat, barley, triticale, oats and rye pesticide use reports (PURs) data, available at the California Pesticide Information Portal (CALPIP 2021), from 2015 to 2019. In summary, the main findings were:

1) The most widely applied SOAs were ALS inhibitors (39.8% of all treated acres), synthetic auxin (28% of all treated acres) and PPO inhibitors (24% of all treated acres).

2) The five most applied active ingredients were tribenuron (20.3%; WSSA 2), carfentrazone (17.7%; WSSA 14), pyroxsulam (15.2%; WSSA 2), MCPA (14.9%; WSSA 4) and 2,4-D (6.7%; WSSA 4).

3) The most individually applied SOAs were also ALS inhibitors (37.8%), synthetic auxin (31.8%) and PPO inhibitors (17.7%).

Based on these findings, a greater herbicide diversification and greater use of multiple effective SOAs would benefit CA cereal crops overall weed management program. The first step in the development of diversified herbicide use starts by knowing the chemical family and site of action to which an herbicide belongs. With that in mind, we created a table (Table 1, pg. 3) to help in planning a more diversified common chickweed chemical control program. It lists all the herbicide options available for common chickweed control in cereal crops with their respective SOAs. Please, remember to always refer to the label for guidance as herbicide use and availability are crop specific.

Is Herbicide Resistance to Blame?

It can be tempting to blame herbicide resistance for all cases of poor weed control with herbicides. However, several biotic and abiotic factors can also significantly impact herbicide effectiveness. Therefore, it is important to eliminate the following possible reasons that can lead to herbicide failure before assuming that surviving weeds are herbicide-resistant (PES 2021):

1) Herbicide application related causes: poor spray coverage and/or incorporation, inadequate rate, improper timing of application of post-emergence herbicides (after weeds are too large to control), failure to use an adjuvant (if needed), excessive dust on leaf surface with post-emergence applications, "wrong herbicide" for the present weed spectrum, and possible antagonism between two or more herbicides.
2) Soil and/or climatic conditions related causes: seedbed condition (clods, etc.), excessively wet or dry soil, herbicide adsorption to soil particles or organic matter, stress conditions (such as hot and dry), and lack of timely rainfall (or irrigation) for pre-emergent herbicide activation.

In addition to these steps, conducting a small herbicide efficacy trial is another helpful approach that can provide insight on the possibility of herbicide resistance. We established such a trial in a triticale field located in Tulare County. The treatments were applied at the late tillering stage and included pyroxsulam (Simplicity CA) and tribenuron (Express TotalSol) applied at 2X and 4X label rates (1X label rates were 0.05 and 0.015 lbs ai acre^{-1} for pyroxsulam and tribenuron, respectively). Visual estimates of common chickweed ground cover (or canopy) were taken 4

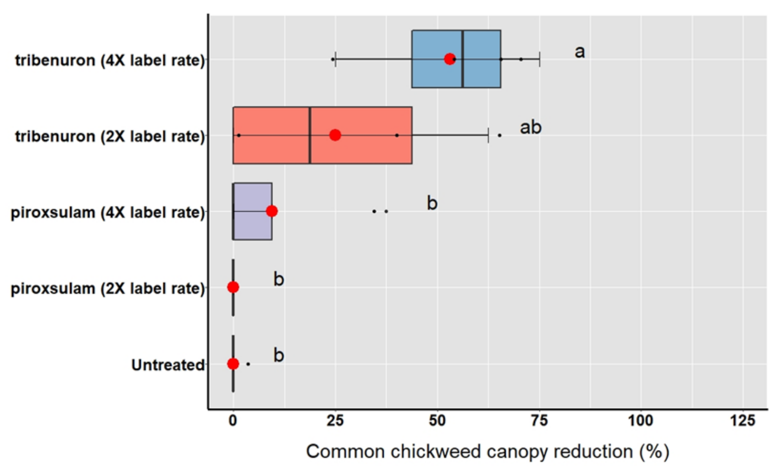

Fig. 1. Chickweed visual percent of canopy reduction in triticale 30 days after treatment. Means followed by the same letter are not significantly different according to Fisher's protected LSD test at P ≤ 0.05.

Continued on page 3

weeks after treatment (WAT). Results from this trial indicated that none of the treatments exhibited good activity on common chickweed, regardless of the rate (Figure 1). The only treatment that provided a significant reduction in common chickweed canopy, as compared to the untreated, was tribenuron at 4X label rate. However, it was only a 50% reduction which likely allowed treated plants to recover and survive.

UCCE Future Efforts

The lack of effective control using above-recommended label rates is concerning and an indicator that this common chickweed population might, indeed, be ALS-resistant; however, more robust studies are still necessary to confirm this possible new case of herbicide resistance. Common chickweed seeds were collected from the problematic fields, and dose-response bioassays will be conducted to test for herbicide resistance. Additionally, UCCE also plans to develop and conduct a series of integrated weed management studies looking at cultural practices such as sowing rate, sowing time, and row spacing in combination with chemical and mechanical weed control to prevent or delay the selection of herbicide-resistant weeds.

Extension Collaborative Work

Early identification of herbicide-resistant weed populations and corresponding changes to management tactics can reduce the spread and establishment of these biotypes. If you believe you have herbicide-resistant common chickweed populations in your small grains fields and would like to collaborate with us in this project, please complete this on-line survey: https://arcg.is/1nSCn51. Thanks!

Jose Luiz C. S. Dias, Agronomy and Weed Management Advisor, Merced, Stanislaus, and San Joaquin counties

Nick Clark, Konrad Mathesius, and Sarah Light, UCCE Farm Advisors

Brad Hanson and Mark Lundy, UC Davis
Anil Shrestha, CSU Fresno

Tab. 1. Herbicide options for common chickweed management in CA cereal crops. Some herbicide labels give different application rates or crop injury potentials for different cereal crops. Labels should be checked before an application is made, and all label instructions must be followed.

Site of action	WSSA Group	Chemical family	Active ingredient	Products example
Microtubule Inhibitors	3	Dinitroaniline	trifluralin	Treflan HFP, Trifluralin HF
			pendimethalin	Prowl H2O, Pavilion H2O
ALS Inhibithors	2	Sulfonylureas (SUs)	chlorsulfuron	Glean XP
			mesosulfuron	Osprey
			tribenuron	Express TotalSol
		Triazolopyrimidine - Type 2	pyroxsulam	Simplicity
Synthetic auxins	4	Phenoxy-carboxylic-acid	2,4-D	Amine 4, Weedar 64
			MCPA	MCPA 4 Amine
		Benzoates	dicamba	Banvel, Clarity, Rifle
PPO Inhibitors	14	N-phenylphthalimide	carfentrazone	Shark EW
		Phenylpyrazoles	pyraflufen	ET Herbicide

Investigating the Cause of Leaf Blotch and Fruit Spot of Apple

Background

Symptoms of leaf blotch and fruit spot were recently observed (late summer 2020) in cv. Pink Lady apples in one orchard in the Linden area, especially on leaves (Figure 1). Microscopic examinations, molecular analyses and pathogenicity tests confirmed the causal agent as *Alternaria alternata*, *A. arborescens*, and *A. tenuissima*. Alternaria leaf blotch and fruit spot are significant threats to apple production in many parts of the world and can be serious mid-late season fungal diseases affecting apple leaves and fruit respectively, in high spring/summer rainfall production areas. In California, dry summer conditions reduce the chance of Alternaria infection on apple orchards, but late dormant season rainfalls and overhead irrigation may increase the risk of infection. This pathogen requires warm temperatures and leaf wetness to infect apple trees – optimum condition could be created by the overhead water-based orchard cooling systems used on very hot days.

Fig. 1. Alternaria leaf infections of cv. Pink Lady apples.

Symptoms

Symptoms were mainly observed on leaves and were characterized by the presence of circular brown necrotic lesions, which enlarged in zonate circular or crescent-shaped rings, often with dark brown margins (Figure 2A & B). These leaf blotch symptoms are followed by a yellowing of the affected leaves (chlorosis) and eventually defoliation (Figure 2B & C). Older lesions often develop a black ring of spores (Figure 2D). On fruits, round, dark-colored, dry, corky lesions were occasionally observed (Figure 3).

Field observations indicate that symptoms initially appear during the summer and continue to express until the early fall. Typically, the leaves are infected in mid- to late June or July, with the symptoms occurring several weeks later.

Comments on the Disease

At present, it is unclear how widespread the disease is in California apple orchards, but surveys are being conducted to assess the prevalence of this disease in orchards. It is advisable to be vigilant throughout the growing season and monitor apple trees for the presence of the disease. Orchards should be scouted for signs of the disease in July through October. Due to the conducive/dry weather for mites, apple trees can contain a high population of mites without dropping leaves. Alternaria leaf blotch severity may be affected by severe mite infestation. Mites should be maintained at or below the established IPM thresholds. Ongoing research lead by Dr. Akif Eskalen from UC Davis is focused on further understanding the biology of these Alternaria pathogens, as well as factors influencing disease expression in order to develop management strategies against this emerging disease.

Acknowledgments

We thank Michael Devencenzi, local pest control advisor, for bringing the disease symptoms to the attention of the authors.

Mohamed Nouri, Orchard Systems Advisor
Karina Elfar and Akif Eskalen, Department of Plant Pathology, UC Davis

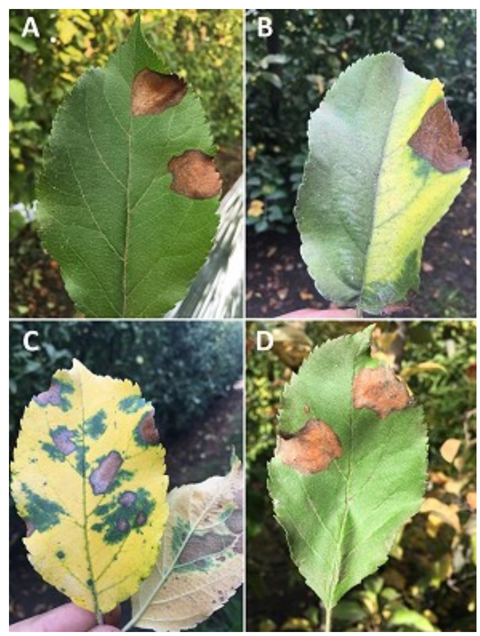

Fig. 2. Alternaria leaf blotch symptoms of cv. Pink Lady.

Fig. 3. Alternaria fruit spot symptoms on the surface of fruit of cv. Pink Lady.

Nitrogen Fertility in Common Beans Following Whole Orchard Recycling

In 2020, we established a trial to evaluate soil properties and kidney bean yield following whole orchard recycling of a walnut orchard. Whole Orchard Recycling (WOR) occurs after the productive life of an orchard and is the process of grinding or chipping trees, spreading the wood chips evenly over the soil surface, and then incorporating the biomass into the soil. WOR has become more common in recent years because air quality regulations restrict growers' ability to manage biomass by burning. Additionally, half of California's biomass power generation plants have closed, and those that still operate are no longer paying for wood chips.

While the process of WOR came about due to biomass management restrictions, researchers have been evaluating its potential benefits for soil health and water management. This is because the practice incorporates large quantities of organic carbon (C) into the soil, and soil C influences other soil properties. The California Department of Food and Agriculture (CDFA) Healthy Soils Program (HSP) now recognizes the practice in their incentives program and provides growers with up to $800 per acre for WOR. The San Joaquin Valley Air Pollution Control District also supports growers who recycle orchards with up to $600 per acre.

While there are benefits associated with incorporating large quantities of C into the soil, there are also tradeoffs. The woody biomass of the trees has a high carbon to nitrogen (C:N) ratio. The C:N ratio is the mass of C relative to the mass of N. It is an important characteristic of soil amendments because it influences soil biological activity. When the C:N is high, as it would be with woody biomass, the N is primarily used for microbial energy and maintenance. In other words, the N is 'tied up' by the microbes and not available for plants.

Our understanding of nutrient cycling and availability is most advanced in almond WOR sites replanted back to almond. Previous research at WOR sites that were replanted back to almond found that doubling the N fertilizer recommendation in the first year could help to avoid reduced growth of the new orchard. We established this trial because more research is needed on WOR in other orchard systems, and when annual crops are subsequently planted rather than orchards. Our objectives were to evaluate soil properties and bean yield following WOR compared to a non-WOR control, and to evaluate two N fertilizer rates. We hypothesized that bean yield might be compromised following WOR due to N immobilization but that a higher rate of N fertilizer might overcome the yield gap.

The trial took place on an approximately 35-acre site near Linden, following the June 2019 walnut orchard recycling that incorporated approximately 70 tons of wood chips per acre (Figure 1). At that time, three approximately 0.5-acre plots were kept without wood chips, as 'untreated controls'. We then identified three 0.5-acre WOR plots adjacent to each control plot.

Fig. 1. Recycled orchard site showing wood chips spread over the field and the depth of wood chips applied.

More information about our procedures can be found in the full report, available from https://ucanr.edu/sites/deltacrops/files/352144.pdf. Soils were sampled three times during the season to inform our fertilizer rates and understand C and N cycling. The UC production manual for dry beans indicates that a bean crop that yields 2000 lb/acre needs approximately 80-120 lb of N to grow the crop. While beans are a legume and can fix atmospheric N and turn it into plant-available N, they do not fix enough to satisfy their own N requirement. They fix about 20-40 percent of their need. Nitrogen inputs for the trial are listed in Table 1. The beans were planted on July 10th and harvested on October 19th.

Soil samples were evaluated for organic C, total N, and nitrate-N. With the pre-plant samples collected in June, there were no differences in organic C, total N, or nitrate-N between the WOR treatment and control. Total organic C averaged 1.2 percent across all plots, total N averaged 1052 ppm, and nitrate-N averaged 2.78 ppm. In August, prior to sidedress N application, we observed differences in plant size, with plants in the WOR treatments being smaller than those in the control plots (Figure 2, pg. 6).

By October, soil organic C, total N, and nitrate-N differed among treatments. (See full report for graphed data.) Organic C and total N were significantly

Tab. 1. Nitrogen inputs in 2020 trial.

Source	Grower rate	Doubled rate
Soil residual	18 lb	18 lb
At-planting fertilizer	10 lb	10 lb
Sidedress fertilizer	88 lb	176 lb
Total	116 lb N/ac	204 lb N/ac

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Figure 2. Bean plants in August 2020, prior to sidedress N application, where plants in the WOR treatment were observably stunted compare to those in the control plots where no wood chips were previously incorporated. A) Plants to the right of the pink flag in the foreground are in a control plot. B) Bean plants in the foreground near the pink flag are in a control plot.

higher in the WOR treatment compared to the control, and neither had differences between the N fertilizer treatments. Nitrate-N, however, had an opposite result. It was significantly higher in the control compared to the WOR treatment, and there were differences between fertilizer rates, with the lowest nitrate being in the grower N rate plots of the WOR treatment. The soil results suggest that, by October, the wood chips were decomposing and contributing to the soil organic C and N pools. The organic N, however, was not yet mineralizing to nitrate. Nitrate was limited in the WOR treatment, where it was possibly tied up by soil microbes, unless boosted by the doubled sidedress fertilizer rate.

Whole orchard recycling and nitrogen fertilizer rate impacted yield in this trial. Yield was statistically higher in the control plots, averaging 2652 lb/ac across replicates, compared to the WOR plots where the average was 1820 lb/ac (Figure 3A). There were also differences in yield among N fertilizer rates (Figure 3B). In the control, the grower N rate and the doubled N rate performed statistically similar. In other words, there was no benefit to applying the doubled sidedress rate in the control. Additionally, the grower rate in the control performed statistically similar to the doubled rate in the WOR treatment. This indicates that while WOR may tie up N – limiting its availability for plant growth and yield – doubling the recommended N rate overcame the yield penalty imposed by WOR. Thus, when coupled with additional N fertilizer, WOR can augment soil health properties, like organic C and N, without penalty to yield.

Summary

This project evaluated soil properties and kidney bean yield following walnut WOR. By incorporating a large quantity of organic C into the soil, WOR has the potential to improve soil health properties, but a tradeoff may be that N becomes limited for subsequent crops. We found organic C and N to increase with WOR from the beginning of the bean season to the end, but plant-available nitrate was limited by WOR. Bean yield suffered as a result of WOR but doubling the fertilizer N recommendation mitigated the yield penalty. Under the circumstances of this trial, a total N rate of just over 200 lb/ac, maintained bean yield where WOR had been implemented compared to the control plots with no wood chips. It does appear, however, that the yield in the WOR treatment might have benefitted from an even higher rate of N. To our knowledge, this trial was the first of its kind and more research will be needed to develop N fertility guidelines in dry beans following WOR. Other tree and annual crops should also be studied. We will continue this trial in 2021 to evaluate whether the impacts of WOR continue in the second season after recycling.

Acknowledgments

We thank Mike Machado and Drew Cheney for their cooperation on this trail.

Michelle Leinfelder-Miles, Brent Holtz, and Mohamed Nouri; Farm Advisors

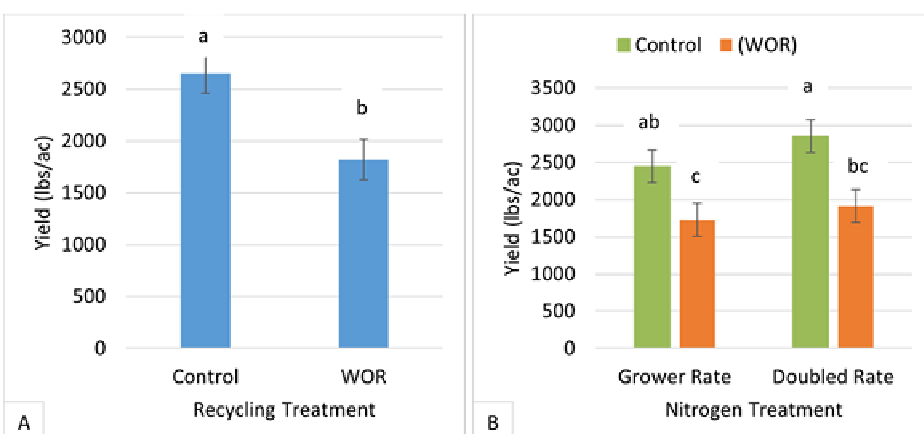

Fig. 3. Bean yield in October 2020 averaged across three replicated blocks. A) Bean yield between WOR treatment and the control was statistically different. B) Bean yield for N fertilizer rates was also statistically different. Bean moisture averaged 10.5 percent across all treatments.

Updates on Botryosphaeria-Phomopsis Diseases of Walnut

In the last several years, Botryosphaeria and Phomopsis canker and blight diseases have been increasingly observed in walnut orchards in almost all walnut-growing regions in California. Results from previous research revealed the occurrence of ten different fungal species belonging in the family of Botryosphaeriaceae and two species of *Diaporthe* (synonym *Phomopsis*) belonging in the fungal family Diaporthaceae. Fungal species in the Botryosphaeriaceae and Diaporthaceae families can be found throughout the year on diseased branches and sometimes can occur together on the same branch, which makes diagnosis difficult in the field. These fungi overwinter on dead branches and shoots and can develop both reproductive structures – pycnidia producing the water-splashed conidia, and perithecia producing the air-borne ascospores – with both spore types being dispersed during wet conditions.

Symptoms

Main symptoms include cankers in branches and dieback of spurs resulting from infections moving from affected fruits (fruit blight) via the peduncle or shoots through leaf and peduncle scars. The infected branch turns black, cankers enlarge, and the pith of the branch is black or dark brown (Figure 1). Growth in the pith, at least for Botryosphaeriaceae spp., moves beyond the killed woody tissues (external margin of canker) for 1 to 2 inches, which is obvious when one splits a shoot along the long axis.

Fig. 1. Symptoms in walnut trees associated with *Botryosphaeria* and *Phomopsis* fungi; (D, shows the growth of the fungi within the pith beyond the margin of the canker - dead tissues).

Serial inoculation experiments indicated that pruning wounds are susceptible for at least four months, and the wounds of 3- to 4-year-old shoots are more likely to develop larger cankers than those of 1- to 2-year-old shoots. This long-lasting susceptibility may be due to the hollow pith inside the walnut branches, which can provide a favorable condition for the fungal spores to germinate and continue to cause infection. As the infection or the pith cankers on spurs or branches continue growing during fall, the dead part of the branch may become covered with a dense layer of pycnidia (Figure 1D).

You may find dead branches in the lower canopy of orchards, which can be caused by abiotic problems that may include shade/low sunlight or freeze. In this later case, dead branches will not show any vascular discoloration (Figure 2). However, the surface of these branches eventually will be covered with scale and Botryosphaeriaceae fungi.

Fig. 2. Symptoms in walnut trees associated with abiotic problems that may include shade/low sunlight or freeze.

New findings in 2020

Despite several management practices implemented to prevent major yield and economic losses caused by Bot/Phomopsis diseases, recent field survey results showed Diaporthaceae fungi to be the most prevalent fungal pathogen isolated from diseased walnut samples in San Joaquin County. Botryosphaeriaceae fungi were occasionally found in these orchards. Although growers are making several fungicide applications per season to control these diseases with emphasis in controlling Botryosphaeriaceae. The persistence of Diaporthaceae spp. in walnut orchards has raised the question of whether the *Phomopsis* fungi have emerged as the main blight/canker/dieback disease of walnut in San Joaquin County.

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A spore-trapping study was undertaken to determine when and under what environmental conditions spores of these fungi are released. Based on colony counts, the population of Botryosphaeriaceae fungi was significantly lower than that of the Diaporthaceae fungi – which corresponds to the results of the field surveys. Molecular work revealed the occurrence of three new species of *Diaporthe* recovered from both spore trapping and diseased tissues. The occurrence of these new species in walnut orchards represents new reports in California. In this spore-trapping study, we analyzed the correlation between precipitation events, irrigation, and grinding of infected branches between tree rows (following maintenance/cleaning pruning) and Bot/Phomopsis spore release. Among these variables, we found a strong correlation between spore release and precipitation: as precipitation increased, spore release also increased, and spores were mainly captured from March to May, a period that coincided with late season rainfalls.

We also detected high aerial dissemination of *Phomopsis* spores after grinding the prunings (among which were also infected branches) which were placed between tree rows in a mature orchard with a high incidence of Phomopsis disease (Figure 3). This information is of great importance because it helps to identify production practices responsible for the spread of these fungal pathogens within walnut orchards.

In orchards with sprinkler irrigation systems, low number of spores were captured during and following the first irrigation of the season. In addition, our results showed no correlation between further in-season irrigation events and the release of fungal spores of Diaporthaceae and Botryosphaeriaceae fungi. However, the wetness/humidity in the orchard resulting from the first irrigation may cause spores to ooze and be released from pycnidia in diseased tissues within the orchard.

Ongoing research

Based on the spore-trapping study, a new fungicide program was initiated this year to investigate whether an early spray timing would be effective to reduce the disease incidence. Pruning wound protection trials were also initiated this year to evaluate the efficacy of some old and new chemical and biological compounds to protect pruning wounds from infections by canker pathogens.

Disease management practices

Cultural control:

- When pruning dead branches, pruning cuts should be made into healthy green wood during the summer or immediately following harvest allowing enough time before rains occur and spread inoculum to susceptible fresh cuts.
- For young orchards not infected with Bot/Phomopsis pathogens, after pruning (pruning for training), you can shred prunings and leave wood chips in orchard. No sprays are needed.
- For heavily infected orchards, it is advisable to remove out infected prunings from the orchard and shred or burn them if permitted.
- For orchards/trees affected by the November 2020 freeze damage, remove dead limbs and prunings from the orchard because they may eventually be infected with Bot/Phomopsis pathogens.

Chemical Control:

- Timely application of effective fungicides adjusted for weather and Bot/Phomopsis inoculum level in orchard.
- In orchards with a high incidence of *Phomopsis*, emphasis should be given to include a triazole fungicide in the spray program.
- It may be good to consider applying a Bot/Phomopsis spray before the first irrigation of the season. Irrigation may create a microclimate that encourages potential infection and sporulation of these fungal pathogens.

Mohamed T. Nouri, Orchard Systems Advisor

Florent P. Trouillas and Themis J. Michailides, Department of Plant Pathology, UC Davis

Fig. 3. High aerial dissemination of *Phomopsis* spores when grinding infected branches that are placed between tree rows in a mature walnut orchard.

Announcements / Calendar of Events

Rice Experiment Station Annual Field Day

Wednesday, August 25, 2021
7:30am-12pm (lunch included)
Rice Experiment Station, 955 Butte City Hwy., Biggs, CA 95917
For more information, visit http://www.crrf.org/.

Alfalfa and Forage Field Day

Thursday, September 23, 2021
7:30am-12:30pm (lunch included)
Due to Covid-19 safety precautions, preregistration for this event is REQUIRED. There is no registration fee.
Please visit https://ucanr.edu/survey/survey.cfm?surveynumber=35502 to register.
Kearney Agricultural Research and Extension Center, 9240 S. Riverbend Ave., Parlier, CA 93648
Contact: Michelle Leinfelder-Miles, 209-953-6100

Delta Grain Field Meeting

In late-Sept or early-Oct, specific date TBA
See https://ucanr.edu/blogs/sjcfieldcrops/ for a future announcement.
Contact: Michelle Leinfelder-Miles, 209-953-6100

UC Dry Bean Field Day

Tuesday, August 31, 2021
9:00am – 11:30am
Due to Covid-19 safety precautions, preregistration for this event is REQUIRED.
There is no registration fee. Please visit https://tinyurl.com/ucbean21 to register.
Directions from Hwy 113 in Davis:
Take Hutchison Dr. approximately 1.5 miles west from Hwy 113, in Davis. Turn south on Hopkins Lane, and then take the first left turn (heading east) onto a gravel/broken pavement road with a row of olive trees; park along the fence. The field is located north of the Bee Biology Center.
Contact: Michelle Leinfelder-Miles, 209-953-6100

Western Alfalfa and Forage Symposium

November 16-18, 2021
Reno, NV
For more information and to register, please visit: https://calhaysymposium.com/.

2018 UC Dry Bean Field Day, Dr. Paul Gepts presenting.

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Notes from the Field

August 2021

It is the policy of the University of California (UC) and the UC Division of Agriculture & Natural Resources not to engage in discrimination against or harassment of any person in any of its programs or activities. (Complete nondiscrimination policy statement can be found at http://ucanr.edu/sites/anrstaff/files/215244.pdf.) Inquiries regarding ANR's nondiscrimination policies may be directed to John I. Sims, Affirmative Action Compliance Officer/Title IX Officer, University of California, Agriculture and Natural Resources, 2801 Second Street, Davis, CA 95618, (530) 750-1397.

The University of California working in cooperation with San Joaquin County and the USDA.