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Sacramento Valley Prune Newsletter

Bloom 2026

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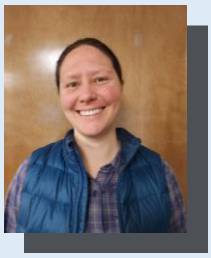

Jaime Ott
UCCE Advisor
Tehama, Butte, Glenn and Shasta Counties
njott@ucanr.edu

Upcoming UCCE Meetings!

Event	Date	Location	Contact
North Sac Valley Olive Day	Mar 24, 2026	Orland	Becky Wheeler-Dykes bawheeler@ucanr.edu
TTTF: Olive mystery disease	Mar 26, 2026	Corning	Becky Wheeler-Dykes bawheeler@ucanr.edu
TTTF: Nematode management	Apr 16, 2026	Orland	Jaime Ott njott@ucanr.edu
Nickels Field Day	May 19, 2026	Arbuckle	Franz Niederholzer fjniederholzer@ucanr.edu
TTTF: Topic TBD	May 21, 2026	Yuba City	Domena Agyeman dagyeman@ucanr.edu
TTTF: Almond variety and rootstock trials	Jun 18, 2026	Orland	Luke Milliron lkmilliron@ucanr.edu
Prune Research Tour, Part 1	Jun 24, 2026	TBD	Jaime Ott njott@ucanr.edu
TTTF: Walnut mold management	Jul 16, 2026	Yuba City	Jaime Ott njott@ucanr.edu
Prune Research Tour, Part 2	Jul 23, 2026	TBD	Jaime Ott njott@ucanr.edu
TTTF: Labor economics	Aug 20, 2026	Orland	Domena Agyeman dagyeman@ucanr.edu
TTTF: IPM Review 2026	Nov 19, 2026	Yuba City	Sudan Gyawaly sgyawaly@ucanr.edu
Prune Research Conference	Dec 15+16, 2026	TBD	Jaime Ott njott@ucanr.edu
TTTF: Prune Dormancy	TBD	Orland	Franz Niederholzer fjniederholzer@ucanr.edu

2026 Prune Orchard Considerations-Bloom

Guadalupe Tejeda, Orchard Systems Lab Assistant, Glenn County

End of February

Bees are a good insurance policy during prune bloom—if the weather and bloom are good, they aren't absolutely necessary, but when conditions or bloom are marginal, bees can make the difference between setting a crop or not. When it comes to **honeybees**, it's recommended to order them typically at 1 hive/acre stocking rate. For suggestions on what would be the best management practices for your hive, more information can be found here. Before any application of fungicides is considered, the 'Bee Check' tool found on the BeeWhereCalifornia app or website is a helpful tool to check for any nearby hives. Your county agricultural commissioner's office can be contacted for further information.

Prior to any heat that may occur during bloom, as well as the upcoming irrigation season, it's recommended to check for any variation in your **irrigation** system's water distribution and perform any necessary maintenance. For free system evaluations, your local Resource Conservation District Mobile Irrigation Lab can be contacted:

- Tehama, Butte, Glenn, or Shasta Counties - Kevin Greer, 530-727-1297 or kevin@tehamacountyrcd.org
- Sutter, Yuba, Colusa or Yolo Counties - Conor Higgins, 530-661-1688 ext. 4 or higgins@yolorcd.org
- Solano County - Kevin Young-Lai, 707-678-1655 ext. 123 or kevin.young-lai@solanorcd.org

Before any sprays for bloom disease are applied, calibrate your spray equipment. Pay special attention when it comes to checking for any broken or worn parts on your sprayer such as pressure gauge(s), nozzles, strainers, etc.

For San Jose Scale (SJS), delayed dormant sprays are preferred timing for treatment, however if these were unsuccessful or weren't applied, monitoring with the use of pheromone traps can be done starting in mid to late February. For SJS, 3 to 4 traps per block is recommended. Traps are evenly distributed throughout the orchard, placing them in the same location as previous years. This monitoring form can be used to record any presence of San Jose Scale found in traps.

We are at 60-66 Chill portions in the Sacramento Valley at time of writing. This is 5-7 lower than we were at this time last year, but still sufficient for prunes and with some good chilling weather in the next week or so. Check the **winter chill** accumulation in your area using this calculator.

For any **replants** and/or **new orchard plantings**, trees can be protected from sunburn damage and herbicides using white interior latex paint diluted 2:1 water to paint, plus tree wraps. If no paint is applied and tree wraps are used, boxes should be flattened (◊ from the top, not □) to avoid "wrapper burn." In almonds, research found that tree cartons can provide protection to young trees against herbicide injury. Paint alone however, does NOT provide protection from herbicide.

MARCH

If there is **cold** forecasted at bloom, a closely mowed and moist orchard floor is warmer than orchard floors with tall weeds/cover crops. Soil that's been freshly disced is the coldest.

If **heat** is forecasted during or soon after full bloom occurs, where temperatures go above 80°F, the fruit set of prune trees could possibly be reduced and crop loss can occur. To maintain the orchard as cool as possible, sprinklers are recommended to be run throughout bloom time (especially during full bloom and the following 2-3 days after full bloom occurs) when temperatures reach 75°F and keep them running until the temperature goes below 75°F. The evaporative cooling that occurs by using this irrigation practice can aid in the reduction of orchard temperatures.

Check out the FREE UC IPM Fungicide Timing and Efficacy publication available as a pdf by clicking here. Information on prune fungicide timing and efficacy are on pages 69-70.

During a wet bloom, it's recommended that fungicide be applied twice, once during green bud and the second at full bloom to protect against **brown rot** infection. However, if there is no rainfall expected during bloom, brown rot infection can still occur through dew. A single spray at 40-50% bloom will provide effective control of brown rot. Recommended fungicides for a single bloom spray program are the locally systemic fungicides in the FRAC 3, 9, and 11 groups. Consult with your PCA regarding materials and rates.

Russet scab develops when there is a significant amount of rainfall during or immediately after bloom. If a single bloom spray is being applied before 50% bloom for brown rot, scab material can also be included in that spray. The risk of scab is mostly gone once fruit is through the jackets. Consider spraying captan or chlorothanil (Bravo®/Echo®) at full bloom to reduce scab at harvest. Be aware of honeybee safety (both fungicides are tough on bees), more information regarding management practices to protect bees can be found here.

If control measures during the fall or winter seasons weren't taken, two applications of 440 oil sprays (4 gal/acre/spray) at bloom can be effective against leaf curl plum and mealy plum aphids if applied 7-10 days apart, at slow ground speeds (for example: 1.5 mph). Oil is sprayed between sunset and midnight, preferably when temperatures have gone below 55°F to avoid foraging bees due to oil having a level II precaution for bee safety.

Peach twig borer (PTB) monitoring can be done during and after bloom. If there is chewing damage found on buds during bloom, it's an indication of PTB activity and could call for treatment. To protect bees, steer clear of any insecticides in the spray tank at bloom except Bt (Bacillus thuringiensis formulations such as Dipel®, Javelin®, etc.).

APRIL

Determining if thinning is needed in an orchard can be done by measuring crop load at reference date. Reference date is 7-10 days after pit hardening. Pit hardening checks begin in mid-April. When cutting across the blossom end of the flower with a sharp knife, if it catches, even if briefly, the fruit has reached pit hardening. Crop load checks in representative trees in the orchard can be done once the reference date is reached. If needed, for the best size results, thinning as early as possible can be done.

Plan your nitrogen (N) & potassium (K) fertilizer applications. The major driver of nitrogen and potassium use in mature prune orchards is crop load. Applying multiple doses of nitrogen after bloom allows for optimal nitrogen uptake. An application of nitrogen before the end of April can be taken into consideration if there is a good crop set. If contemplating foliar potassium nitrate applications as your potassium program or to supplement soil applied potassium, initiate spraying in late April and make additional applications every 2-3 weeks.

Monitor orchard moisture ("feel method" and/or soil moisture sensors) to keep track of orchard moisture status and determine when to apply the first irrigation. Irrigating an orchard too early or applying more irrigation water than the soil can hold at field capacity can saturate soils which leads to leaf yellowing due to iron chlorosis. See article on start of irrigation in prune in this newsletter for more information.

Monitoring for mealy plum aphid and leaf curl aphid is recommended since colonies can grow rapidly soon after bloom. At any time between petal fall to May 15th, oil sprays can reduce mealy plum aphid populations to acceptable levels however, it is also very damaging to parasitoid wasps. Oil is ineffective against leaf curl aphids during this time since the spray is unable to access the inner area of the curled leaf. Some insecticides, applied at low rates in the spring, controlled aphids in UC research trials while preserving parasitoid wasps that feed on the aphids.

Insecticide	Effective rate
Asana	5 oz/a
Warrior (11.4% a.i.)	2.56 oz/a
MustangMaxEW	1.28 oz/a
BeLeaf	2.5 oz/a
Assail 30SC	3 oz/a

**Mention of a product does not constitute a product endorsement or a pesticide recommendation. Work with your PCA to determine the correct product and rate for your needs.*

For obliquebanded leafroller (OBLR), at the beginning of April, pheromone traps (minimum 2 traps per block) can be placed in the orchard to establish a biofix (moths caught on two consecutive trap checks) and start accumulating degree days to inform when to initiate fruit inspections.

Maintain monitoring post-bloom for **peach twig borer (PTB)** to establish a biofix (traps should be up in March). Compared to almond orchards, PTB biofix is often later in prune orchards. PTB damage can provide an entry way for brown rot disease into the fruit. If you set a heavy crop, beware of PTB populations.

If dormant treatments for **San Jose Scale (SJS)** weren't applied, spring SJS pressure appears high or the dormant spray applied didn't do a good job, consider a treatment at 600-700 degree days after the pheromone trap biofix to target emerging crawlers (traps should be up in February). Alternatively, SJS crawler activity can be monitored using double-sided sticky tape placed around limbs starting in April to detect crawler emergence and time spring treatments if deemed necessary. **Caution**: If using neonic pesticides for aphid control (Actara®, Assail®, Leverage 360®, etc.) scale populations may increase.

Determining When to Start Irrigation in Prune

Curt Pierce, UCCE Irrigation and Water Resources Advisor, Glenn, Tehama, Colusa, and Shasta Counties

Deciding when to start irrigating your prune orchard can be difficult. The weather starts to get warm, the soil surface looks dry, and we want to make sure our trees have the best start to the season that we can give them. However, starting irrigations too soon in the season can cause a host of problems in prune orchards that are not always easily attributed to the practice. Saturated soils can promote the growth of pathogens such as Phytophthora, which can cause significant tree damage. Under cooler conditions, high soil water content can lead to elevated bicarbonate levels, reducing iron (Fe) availability and potentially causing Fe deficiency symptoms (Figure 1).

Perhaps most importantly, starting orchard irrigations too early in the spring can reduce oxygen levels in your soil at the worst possible time: when the trees undergo the most significant flush of new root growth in the year. These new roots that grow and develop throughout the spring months are best suited for nutrient and water uptake. As they develop and age throughout the summer, they provide the expanded root structure from which the next flush of new root growth will stem. While temporarily saturated soils are not likely to kill trees, they can suppress new root growth. (See article in this newsletter on early season fruit growth).

Younger roots need sufficient oxygen to grow and develop, and are especially susceptible to the anoxic conditions of saturated soils. They will be the first roots to die back, depriving a tree critical water uptake capacity, which it will need later in the season when evapotranspiration (ET) rates are at their highest and water supplies are most constrained.

So, what are some good approaches to determine when to start irrigating?

Soil Moisture

Estimating your soil moisture is the most basic method. Using a shovel or auger, you can sample soil from the root zone and get a "feel" for the approximate soil moisture content. Whether using the "feel method" or soil moisture probes installed in your orchard, pay closest attention to areas that are most representative of your orchard as a whole. Probes installed next to orchard edges often under-report soil moisture compared to those inside the orchard due to soil compaction, higher temperatures, and reduced irrigation coverage. Consider data from such probes with those caveats in mind, and prioritize data from representative locations within the orchard.

Figure 1 Interveinal chlorosis, a symptom of Fe deficiency on prune leaves. These symptoms are often caused by prolonged saturated and cold soils (photo by Jaime Ott).

Monitor the soil moisture within the effective root zone of your trees, down to approximately 3' from the surface. Many companies supplying soil probes will calibrate them to give direct guidance on when to irrigate, while others may report volumetric water content (VWC) values. Both are typically delivered via a phone or computer application. If using VWC, aim to start irrigations when values are around 25-35% in most soils. Monitoring soil moisture is especially helpful in verifying the effects of previous irrigations and avoiding over-irrigation and soil saturation.

Evapotranspiration (ET)

Crop water use, or ET replacement, is a preferred strategy. A Weekly ET Report is distributed by our offices or can be accessed online. When using an ET replacement method for irrigation, the goal is to match the applied water to the weekly projected ET (factoring in any precipitation and system inefficiencies) and deliver at a rate that doesn't overwhelm the soil's water-holding capacity.

To use the Weekly ET Report, you need to know your system's application rate. This information can be found in your original design documents, from a Mobile Irrigation Lab report (see resources in the bullets of this newsletter), or by sampling a few emitters to calculate an average and then multiplying that by the number of emitters per acre. Calculators to help convert from GPM to acre-inches, the unit used in the ET Report, are available at sacvalleyorchards.com/et-reports, along with video tutorials and other ET-related resources.

Tree Water Status / Stem Water Potential (SWP)

While directly measuring tree water status is the most reliable method for determining when to irrigate during the growing season, it is no longer recommended for scheduling the earliest season sets. Contrary to findings in walnuts, recent work in almonds suggests that timing initial irrigations to when stem water potential (SWP) reaches a bar or two below baseline values may negatively affect production factors. Though more research is needed on prunes, their closeness to almonds, relative to walnuts, warrants caution when using SWP or tree water status to schedule season-starting irrigations in prunes.

Early Season Farming

Jaime Ott, UCCE Tehama, Shasta, Glenn, Butte Counties
Franz Niederholzer, UCCE, Colusa, Sutter, Yuba Counties

Choices you make early this season can have major impacts on your returns at harvest. Consider these factors (thinning, irrigation, fertilization) this spring to set yourself up for harvest success.

The bottom line:

- Prune fruit compete for resources, even in April (before thinning). Ensuring proper water and nutrition during this timeframe will maximize early fruit growth.
- Whether to thin, and how much to thin, is one of the most important choices a grower will make during the season. Target what your trees can do, not what you think they "should" be able to do.
- Water and nutrient management throughout the season is crucial for achieving maximum fruit size at harvest, but **you cannot pump enough water and fertilizer into a tree to compensate for overcropping**.

The details:

Early-season fruit growth is an important factor influencing the size of your fruit at harvest. Recent field research results support this statement. In a 2021-23 study, fruit growth was measured through the season in over-thinned trees (no cropload limit on fruit growth) and unthinned trees where cropload was expected to reduce fruit growth rate. The biggest difference in fruit growth rates were in April (before thinning) and in July. In one year, the only difference in growth rate was in April. These data indicate that cropload competition for the resources needed to fuel fruit growth (sugars, nutrients, and water) can occur early in the season, even before thinning, and that this early

limit on fruit growth can reduce fruit size at harvest. Since effective thinning isn't an option between bloom and reference date, making sure the orchard has adequate water and nutrition is important to maximize fruit growth between bloom and thinning (and the rest of the year).

In a 2025 study, we measured fruit size each week from a few days after thinning in mid-May through two weeks before harvest in August (Figure 1, below). What we saw is that the orchard with the largest fruit in mid-May had the largest fruit at harvest, and the orchard with the smallest fruit in mid-May had the smallest fruit at harvest. This is at least partially dictated by cropload, as the orchard with the largest fruit throughout the season had a very light crop. However, many of the other orchards had a similar pre-thinning cropload (before our official measurements began) to the orchard with the smallest fruit throughout the season. Since the pre-thinning cropload was similar in these orchards, there must have been other factors causing that one orchard to have the smallest fruit at thinning. This size difference was likely due, at least in part, to irrigation and fertilization management before our measurements started in May.

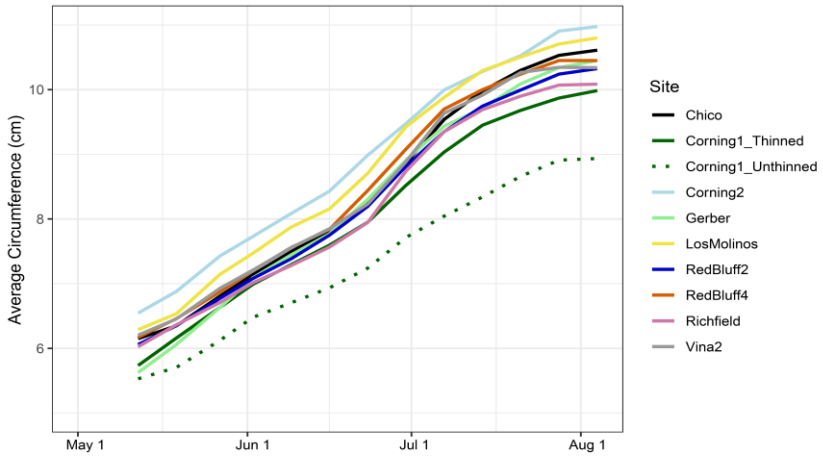

Figure 2. Weekly fruit size in 9 orchards from May 12 through Aug 4, 2025

Focusing on five of the orchards in our study helps us to see the importance of thinning, irrigation management, and fertility management throughout the season (Figure 2, below).

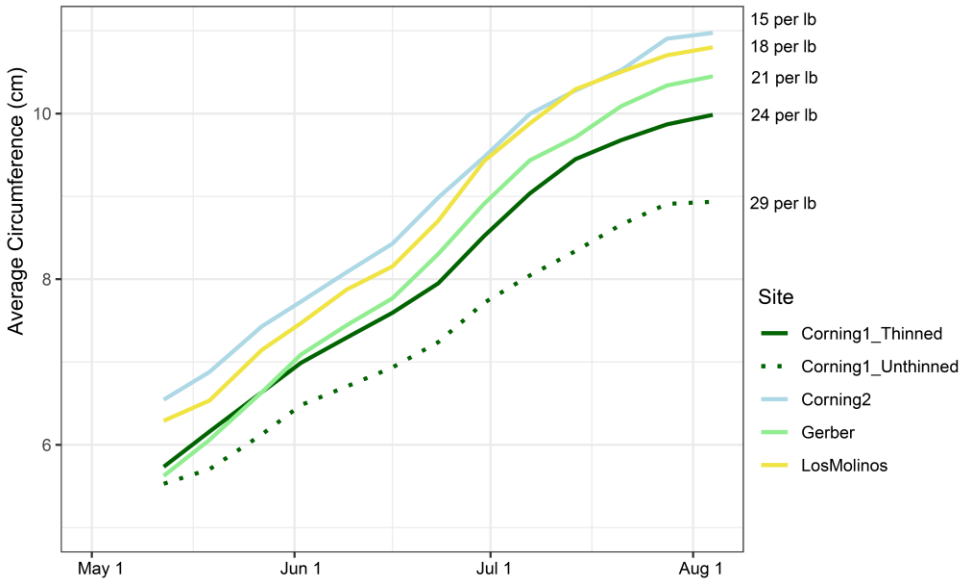

Figure 3. Weekly fruit size in 5 selected orchards from May 12 through Aug 4, 2025. Green fruit pound counts on Aug 4th are listed to the right of the fruit growth line for each orchard.

Thinning: Reference-date thinning has a major impact on fruit growth. Whether you thin, or how hard you thin, is one major factor, sometimes the major factor, influencing fruit size at harvest. To see the effects of thinning, look at the green lines in Figure 2. Compare the dashed dark green line with the solid dark green line (Corning_1 Unthinned vs Corning1_Thinned). These are measurements from the same orchard, where the dashed line is fruit on unthinned trees, and the solid line is fruit on thinned trees. You can see that the fruit on the thinned trees grows faster (steeper slope) throughout the entire season, resulting in much larger fruit at harvest than the unthinned trees. The increased growth rate on the thinned trees is especially evident before June 1st and from late-June through mid-July. Thinning as early as possible allows you to take advantage of the pre-June differences in growth rate.

The observation that thinning increases fruit growth rate and final size is not a surprise: it is the reason we do May thinning in years where the crop is too heavy. However, the thinning in this orchard was very gentle, and likely resulted in too much fruit being left on the trees. This is apparent from Figure 1, where we can see that this orchard had the smallest fruit at harvest of any measured orchard. Compare this to the light green line (Gerber), where the fruit started out the same small size, but grew more quickly (steeper slope) throughout the season, and ended up almost 12% larger at harvest (21 vs 24 green poundcount). The Gerber trees were thinned to a manageable cropload, and the fruit's good growth rate throughout the season reflects that. If you have a block which has historically struggled to size, take a hard look at your cropload. Target what your trees can do, not what you think they "should" be able to do.

Irrigation and fertility management: Next to cropload management, water and nutrient management are the most important factors affecting fruit growth throughout the season and final size at harvest. The best irrigation and fertility program cannot make up for overcropping, but even with a manageable cropload, trees without enough water or nutrients will not be able to size fruit to their full potential. To see the effect of water and nutrient management on fruit growth, compare the light blue and yellow lines in Figure 2. The orchard with the light blue line (Corning2) had a very light cropload in 2025, so had very large fruit in May when we started measuring and the largest fruit at harvest. The orchard with the yellow line (LosMolinos) had a good cropload in May (no thinning necessary), and the second largest fruit at harvest. You can see that these two lines are basically parallel (same growth rate) for much of the season. From mid-June through early July, though, the LosMolinos fruit had an increase in growth rate (steeper slope) for a few weeks, while the Corning2 fruit grew at basically the same rate all season (consistent slope). Looking at Figure 1, most of the orchards we measured showed this acceleration in growth from mid-June through early July. It is likely that something about the management at Corning 2 restricted the growth of the fruit at this crucial time, keeping it from growing at its maximum rate.

Recent fruit growth research confirms what many growers and PCAs already do: pay attention to irrigation and nutrition starting in April and May, then stay on top of both until harvest. Making sure that irrigation keeps up with crop water use (measured by ET, soil moisture monitoring, and/or stem water potential) is important to orchard health and fruit growth. By mid-May, prune fruit contain 40% of the nitrogen (N) found in the fruit at harvest. By mid-June, prune fruit contain 60-70% of the total N in the fruit at harvest. Delivering nitrogen fertilizer in April and May to feed fruit growth and shoot growth is crucial. To feed a 4-dry ton/acre prune crop as well as provide N for spur and shoot growth, estimated N fertilizer inputs would be 30 lbs N/acre in April and another 35-45 lbs N/acre in May. In terms of Potassium (K) management, recent research suggests that foliar potassium nitrate sprays are most effective when applied early (May-June). This research is ongoing but could also support the importance of early-season nutrient management.

So far, this article hasn't mentioned weather effects, especially heat units (Growing Degree Hours; GDH) in the month following bloom (GDH30) on fruit growth and size at harvest. In research on fresh market peaches, warmer spring weather produced higher GDH30 values, slightly earlier harvest timing, and measurably smaller fruit. Subsequent research generally confirmed the relationship of warmer springs and earlier harvest dates in 'French' prune, but fruit size differences were not measured. Right now, our understanding of GDH30 and prune fruit growth is that warmer weather tends to mean slightly smaller fruit sizing potential, but that cropload is more important to final fruit size than spring temperatures. Put another way, thinning makes more of a difference in fruit size than spring weather.

The most recent weather forecast for spring weather in northern California calls for warmer and drier weather than "normal". If this is really what happens in April and May, maximizing fruit growth during that time could be especially important to grower returns at harvest 2026.

For more information on fruit growth and thinning in prunes, see articles at sacvalleyorchards.com and podcasts at growingthevalleypodcast.com. In the podcast line up, we particularly recommend those on prune fruit growth from bloom to thinning as well as one from thinning to harvest.

Best wishes to all prune growers for good fruit set and growing conditions in 2026.

Honeybee Health: A 2025 Retrospective and 2026 Outlook

Becky Wheeler-Dykes, UCCE Glenn, Tehama and Colusa Counties

The 2025 almond bloom began with reports of devastating honeybee colony loss, the likes of which the industry hasn't seen in decades. In many cases, growers and/or beekeepers scrambled to find hives to pollinate almond orchards. Project *Apis m*., an organization focused on supporting honeybee health and reliable pollinator populations, conducted a survey last year showing that commercial beekeepers lost an average of 62% of their bees in the '24-'25 season. These losses equate to over $600 million to beekeepers alone. Beekeepers reported finding bees in their hives with distorted wings or dead. In some cases bees just disappeared and did not return to their hives at all.

Researchers at USDA ARS Bee Labs in Beltsville and Baton Rouge as well as Cornell University are conducting intensive research on both remaining healthy honeybees as well as hives with severe or total losses to identify which factors led to the outsized colony losses of 2025. Populations of *Varroa* mites, viral load in both mites and in bees, quality of bee nutrition outside of almond bloom, and pesticide residues are being studied among other aspects of honeybee health.

The Glenn County Ag Commissioner's office reports that beekeepers locally saw high mite populations, which contributed significantly to colony loss. It is also possible that the mites vectored viruses, compounding the negative effects. Some losses may also be attributed to application of fungicides; even a sub-lethal dose may not *kill* honeybees but can weaken the colony making it more vulnerable to other stressors.

Moving into the 2026 season, beekeepers are advised to be even more vigilant in monitoring mite populations in honeybee colonies. By the time a mite infestation is easily noticeable it is too severe for effective treatment with miticides. In addition to mite monitoring, providing supplemental nutrition and water sources to colonies prior to placement in orchards is shown to improve colony survival rates and long-term health. Some beekeepers have also begun testing samples of queen banks for virus loads, which may help identify and maintain healthy colony sources.

Beekeepers in California have historically been at a disadvantage compared to other states because there are so few effective miticide products registered for use in hives here. This has led to issues with black market products being smuggled into the state and used illegally; please do not do this!! Fortunately, two new products were registered by the California Department of Pesticide Regulation in 2025, expanding the mite management tool set available to California beekeepers*. VarroxSan™, a natural product claims high efficacy against even amitraz- and pyrethroid-resistant Varroa mite populations. Another

Figure 4. Honeybees foraging on an Iceland Poppy. Photo by Becky Wheeler-Dykes.

new product, Norroa™, boasts a new mode of action for beekeeping, stopping the production of mite offspring. Both products are currently available in California.

Growers can also help support honeybee health in several ways. Maintaining pollinator-friendly hedgerows or buffer zones between fields provides additional nutrition for honeybees; research has shown that this additional forage does not distract honeybees or reduce their pollination efficiency for crops. Growers should also continue to follow proper timing guidelines for fungicides, spraying fungicides in the late afternoon, evening, and night to avoid applications during bee flight and when pollen is present, and avoiding all insecticide applications when hives are present. Follow the Best Management Practices published by the Almond Board of California carefully to help optimize honey bee health in your orchards. Utilize BeeCheck though the BeeWhere California app to stay aware of the location of honeybee hives in neighboring fields.

Honeybees are a critical component of many cropping systems, and colony health is crucial for maintaining the incredible yields and productivity California is known for. By working together, orchard crop producers and beekeepers can continue to support healthy honeybee colonies.

Thank you so much to the Glenn County Ag Commissioner's office for their excellent insight and valuable information for this article!

*Please note that UC Cooperative Extension has not performed its own efficacy testing on these products; this information is meant to inform producers of new options and is not an endorsement of any products. As always, label is law, this is not a pesticide recommendation, and producers should always consult with licensed PCA's prior to purchase or application of pesticides.

The "SACARAMENTO VALLEY REGIONAL PRUNE NEWSLETTER" is a collaborative effort of research specialists working together to provide Sacramento Valley growers and industry leaders the latest research and information effecting prune production in today's changing environment. This newsletter will be published periodically, be sure to look for upcoming issues! *Note, Mention of any chemistries or trade names does not constitute a recommendation and are for informational purposes only. Always consult with your PCA before use and adhere to the pesticide label and local and state regulations. ANR NONDCRIMINATION AND AFFIRMATIVE ACTION POLICY STATEMENT: It is the policy of the University of California (UC) and the UC Division of Agriculture and 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/169224.pdf). Inquiries regarding ANR's nondiscrimination policies may be directed to John Sims, Affirmative Action Compliance officer, University of California, Agriculture and Natural Resources, 2801 Second Street, Davis, CA 95618, (530) 750-1397.

PRUNE (DRIED PLUM): FUNGICIDE EFFICACY - CONVENTIONAL

Fungicide	Resistance risk (FRAC#)[1]	Brown rot		Russet scab	Rust
		blossom	fruit[2]		
Miravis Duo	medium (3/7)	5	5	ND	5
Bumper**, Tilt[2]	high (3)	5	5	0	4
Cevya	high (3)	5	5	0	4
Tebucon, Teb, Tebuconazole**, Toledo[2,7]	high (3)	5	5	0	4
Viathon	med. (3, P 07/33)	5	5	0	4
Fontelis	high (7)	5	4	0	4
Kenja	high (7)	5	4	NL	NL
Tesaris, Sercadis**	high (7)	5	4	NL	NL
Indar[2]	high (3)	5	5	0	4
Protocol[3]	med.-high (1/3)	5	5	0	5
Inspire Super	high (3/9)	5	5	0	4
Luna Experience	medium (3/7)	5	5	ND	5
Luna Sensation[2]	medium (7/11)	5	5	ND	ND
Merivon	medium (7/11)	5	5	ND	ND
Pristine[2]	medium (7/11)	5	5	ND	ND
Quash [2]	high (3)	5	5	0	4
Adament**	medium (3/11)	5	5	ND	5
Quadris Top, Acadia ESQ[2]	medium (3/11)	5	5	ND	5
Quilt Xcel, Avaris 2XS[2]	medium (3/11)	5	5	ND	5
Rovral[5], Meteor[5] mixed with oil[2] Iprodione**, Nevado**	low (2)	5	NR	0	NR
Scala[6]	high (9)[3,4]	5	4[6]	0	ND
Topsin-M, T-Methyl, Incognito, and Cercobin when mixed with oil[2,4]	high (1)[4]	5	5	0	0
Vangard[6]	high (9)[3,4]	5	4[6]	0	ND
Elevate[2],	high (17)[4]	4	4	ND	0
Rhyme	high (3)	4	4	0	4
Rovral[5], Meteor, Iprodione**, Nevado**	low (2)	4	NR	0	NR
Topsin-M, T-Methyl, Incognito [2,3]	high (1)[4]	4	1	0	0
Quadris (Abound), Acadia, Arius 250	high (11)[4]	3	2	0	4
Botran**	medium (14)	3	3	ND	ND
Bravo, Chlorothalonil, Echo, Equus[7,8,9]	low (M 05)	3	3	3	0[9]
Captan[7,8,9]	low (M 04)	3	3	4	0
Flint Extra[7]	high (11)[4]	3	2	0	4
Ph-D, Oso	high (19)	3	3	0	ND
Rally[2]	high (3)	3	3	0	0
Sulfur[9]	low (M 02)	1	1	0	3

Rating: 5 = excellent and consistent, 4 = good and reliable, 3 = moderate and variable, 2 = limited and/or erratic, 1 = minimal and often ineffective, 0 = ineffective, NL = not on label, and ND = no data. NR=not registered after bloom.

* **Registration pending in California.**

** **Not registered, label withdrawn or inactive in California**

[1] Code numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions (for more information, see http://www.frac.info/). Fungicides with a different Code number are suitable to alternate in a resistance management program. In California, make no more than one application of fungicides with mode-of-actions (MOA) with high resistance risk before rotating to a fungicide with a different MOA (Code number); for other fungicides, make no more than two consecutive applications before rotating to fungicide with a different MOA (Code number).

[2] Fruit brown rot treatments for fungicides in FRAC Codes 1, 2, 3, 17, 7/11 are improved with the addition of 1.5% to 2% light summer oil. If applied in summer, fruit will lose their waxy bloom and look red. They will dry to normal color. Use a adjuvant sticker as an alternative to the light summer oil (e.g., NuFilm, Tactic, Adhere)

[3] Strains of *Monilinia fructicola* and *M. laxa* resistant to Topsin-M and T-Methyl have been reported in some California prune orchards. No more than two applications of Topsin-M or T-Methyl should be made each year. Resistant strains of the jacket rot fungus, *Botrytis cinerea*, and powdery mildew fungi have been reported in California on crops other than almond and stone fruits and may have the potential to develop in prune with overuse of fungicides with similar chemistry. Subpopulations of both *Monilinia* spp. have been shown to be resistant to AP (FRAC 9) fungicides on prune in CA.

[4] To reduce the risk of resistance development, start treatments with a fungicide with a multi-site mode of action; rotate or mix fungicides with different mode-of-action FRAC numbers for subsequent applications, use labeled rates (preferably the upper range), and limit the total number of applications per season.
[5] Blossom blight only; not registered for use after petal fall.
[6] High summer temperatures and relative humidity reduce efficacy.
[7] Do not use in combination with or shortly before or after oil treatment.
[8] Do not use after jacket (shuck) split.
[9] Do not use sulfur, captan, or chlorothalonil in combination with or shortly before or after oil treatment.

PRUNE - FUNGICIDE EFFICACY - BIOCONTROLS AND NATURAL PRODUCTS

Trade name[1]	Biological or natural product (FRAC code)[2]	Brown rot		Russet scab	Rust
		blossom	fruit rot		
Oso	polyoxin-D (19)	3	3	NL	NL
Botector	*Aureobasidium pullulans* (BM 02)	3	2	NL	NL
ProBLAD Verde*	*Lupinus albus* (BM 01)	3	2	NL	NL
EcoSwing	*Swinglea glutinosa* (BM 01)	3	2	NL	NL
Dart	capric and caprylic acids (NC)	3	2	NL	3
Guarda[3], Thyme Guard	thyme oil (BM 01)	2	2	NL	1
Double Nickel 55	*Bacillus amyloliquefaciens* D747 (BM 02)	2	0	NL	NL
Serifel	*B. amyloliquefaciens* MBI600 (BM 02)	2	1	NL	NL
Taegro 2**	*B. amyloliquefaciens* FZB (BM 02)	2	1	NL	NL
Sonata	*B. pumilis* QST2808 (BM 02)	2	1	NL	NL
Serenade	*B. subtilis* QST 713 (BM 02)	2	1	NL	NL
Aviv	*B. subtilis* IAB/BS03 (BM 02)	2	1	NL	NL
Oxidate 5, Zerotol HC	peroxyacetic acid (oxidizer)	2	2	NL	1
Cinnerate, Seican, Cinnacure	cinnamaldehyde (BM 03)/ cinnamon oil (BM 03)	2	0	NL	2
Trilogy, Terraneem**	neem oil (BM 01)	1	1	2	2
Actinovate AG	*Streptomyces lydicus* (BM 02)	1	1	NL	NL
Sulfur	sulfur (M 02)	1	1	0	3
Copper	copper (M 01)	1	1	0	1

Rating: 5 = excellent and consistent, 4 = good and reliable, 3 = moderate and variable, 2 = limited and/or erratic, 1 = minimal and often ineffective, 0 = ineffective, NL = not on label, and ND = no data. NR=not registered after bloom.

*** Registration pending in California.**

[1] Treatments arranged by performance on brown rot. Some products are not OMRI approved (e.g., Cinnacure). Check the labels.
2 FRAC Codes are provided as BM- or P-number codes. NC = not coded in FRAC. In general, sulfur compounds are fungicidal and may affect applications of fungal biocontrols (e.g., Botector); whereas copper may affect applications of bacterial biocontrols (e.g., Actinovate, Double Nickel 55, and Serenade). Rotations must consider these factors.
[3] Not organically approved.

PRUNE (DRIED PLUM): TREATMENT TIMING

Note: Timings listed are effective but not all may be required for disease control. Timings used will depend upon orchard history of disease, length of bloom, and weather conditions each year.

Disease	Green bud	White bud	Full bloom	May	June	July
Brown rot[1]	2	3	3	0	1	2
Russet scab[2]	0	0	3	0	0	0
Rust[3]	0	0	0	1	2	3

Rating: 3 = most effective, 2 = moderately effective, 1 = least effective, and 0 = ineffective

[1] Flowers are susceptible beginning with the emergence of the sepals (green bud) until the petals fall but are most susceptible when open.
[2] A physiological disorder; no pathogens involved.
[3] More severe when late spring rains occur.