UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

Sacramento Valley Prune News

July, 2025

In This Issue

Submitted by:

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Upcoming Events

Date	Event	Time	Location	Contact
July 15	**Prune Research Tour, Part 2**	8:00 a.m.-12:00 p.m.	Corning and Chico Area	Jaime Ott, njott@ucanr.edu
July 18	**TTTF: Walnut Whole Orchard Recycling and Rootstocks field meeting**	8:00-11:00 a.m.	Pleasant Grove Rd near Wheatland 38.983433, -121.487319	Clarissa Reyes, clareyes@ucanr.edu

Prune Summer Management Considerations: July - October

Ben Baldi, Staff Research Associate, Yolo, Solano, Sacramento, Colusa, Sutter, & Yuba Counties

Please note that the following are general recommendations intended to help you keep track of regular practices in a busy time; the optimal timing for management practices may vary based on specific location and conditions.

July

- Anticipate harvest timing. Once the first healthy fruit in the orchard starts changing color along the suture, fruit should be ready to harvest in roughly 30 days. A harvest prediction model using bloom timing can be found here.
- Collect leaf samples to gauge tree nutrient status. Collect from at least 25 trees by gathering 1-2 leaves per tree from non-bearing spurs. A table listing critical levels of essential nutrients in prune can be found here. This information can be used to adjust the rest of the year's nutrient management program and next year's nutrient plan.
- Fruit brown rot treatment sprays, where deemed necessary based on observations and block history, should begin 4-6 weeks before harvest. These preventative sprays are only useful on uninjured fruit. Check with your processor regarding fungicides that are approved for use.

August / Pre-Harvest

- Watch pests and tree water status. Monitor for spider mites, rust, and water status approaching harvest to minimize leaf loss. If spider mite pressure is building right before harvest, consider a potassium nitrate spray to "top off" the potassium levels in the trees and suppress adult spider mites for 2-3 weeks. Leaf loss can slow harvest as

blowers work to keep extra leaves out of bins and expose scaffolds to potential sunburn in postharvest heat.

- **Time your irrigation cut-off** to improve dry-away ratios, reduce premature fruit drop and decrease shaker bark damage at harvest. When to cut irrigation varies by soil type and rootstock. The pressure chamber is a great irrigation management tool to monitor water stress. See the article in this newsletter for more information about summer irrigation.
- Monitor fruit maturity development with a pressure gauge since fruit pressure, not sugars, determine maturity. Fruits are mature and have finished accumulating sugars (dry weight) when internal pressures are between 3-4 lbs.

  To monitor: Randomly sample five fruits from five trees per block (25 fruit). Make sure fruits come from both inner and outer canopy. Measure pressure on both sides (cheeks) of each fruit (25 fruit x 2 pressures/fruit = 50 readings). Average all 50 pressure readings. Ideal fruit pressure at harvest is 3-4 pounds. Fruit pressure drops roughly 1-2 pounds per week, but hotter conditions result in a slower decrease in fruit pressure (cooler weather results in faster softening). While you have your fruit samples, take one half from each fruit and blend them to obtain a juice sample to use on the refractometer for sugar tests.
- **Consider running a field sizer** at harvest. A small sizer (e.g. 15/16") is useful for all operations to remove garbage, undersized, and damaged fruit. Talk to your packer about dried fruit value by screen size to decide if a larger sizer (1" or larger) would be better. When thinking about targeted fruit size, remember to account for change in size during drying. For more, see the article on fruit sizing in this past newsletter.
- **Clean the orchard** before harvest of dead or dying limbs and significant suckers. This will help minimize tree damage during shaking and make for a more efficient harvest. When cutting diseased wood, it's essential to cut past diseased wood into healthy wood.
- **Examine fruit pre-harvest to evaluate damage.** Two to four weeks before harvest, evaluate 40 fruit per tree from 25 trees throughout the orchard for worm, scale, and brown rot damage. Fruit can be picked or evaluated on the tree. If you just take samples at harvest, you may miss damaged fruit that dropped early which may indicate room for improvement in your IPM program. An evaluation form is available here and the protocol for sampling can be found here.

Post Harvest and/or September

- **Manage post-harvest irrigation** to minimize stress. Following harvest, stress should be mild to moderate (-12 to -16 bars). *Cytospora* canker grows faster in orchards under water stress.
- **Fall nutrition program.** When making fall nutrient management decisions consider your July leaf sample results and crop load. If nitrogen levels in your July leaf sample were below the critical value, consider a fall foliar nitrogen spray. This is especially helpful in young orchards where low nitrogen can predispose the trees to bacterial canker infection over a wet winter. Soil applied nitrogen, especially after September, is vulnerable to leaching because of limited root activity. Soil applied potassium (K) should be banded in the fall. Alternative K programs focus on applying during the next growing season and may include fertigating, foliar applications, or a combination.
- **Orchard clean up and pruning.** Plan for pruning to remove *Cytospora* cankers and damaged branches, blighted shoots, tame tree size, and manage next year's crop load. To make sure you're cutting all infected wood from the tree, see photos of a "clean" pruning here. Avoid pruning two weeks prior to a rain event. We strongly recommend protecting pruning wounds with a fungicide spray (i.e. Topsin-M®),

especially if rain is in the forecast. Clean up "barked" trees damaged at harvest. Trunk/limb damage from harvester can result in *Ceratocystis* canker infection and possible tree death. Cut away any loose or damaged bark back to "tight" bark with a sharp knife or chisel and hammer. If you want to, paint the wound with commercial wound sealer. This can protect damaged trunks while healing. Flag dying or weak trees for removal. Backhoe out old trees, making sure to get as many roots out of the hole as possible. As a final sanitation step, remove any remaining fruit mummies from the orchard.

- **Orchard topping:** If you are going to top your orchard, the time to do it will be in fall when no rain is in the forecast. That way cuts have a chance to harden off before seasonal rains. Topping young, vigorous trees will reduce risk of blow-over from wind. If rain is in the forecast, be sure to protect fresh wounds from infection with a fungicide spray (Topsin-M®). This must be done before the rain!
    - Consider your management goals: topping young vigorous trees can reduce risk of blow-over, while long pruning can increase early yields in young prune plantings.

- **Fall/winter aphid control.** Fall and winter preventative management for aphids can be an effective and ideal time to treat orchards with a *history of problems*, particularly if no dormant sprays will be applied for scale or peach twig borer. Fall aphid sprays are not effective for scale and don't provide the same level of control as dormant timings for peach twig borer. During the dormant period, a moderate rate of pyrethroid is effective on aphids *and* peach twig borer, but keep in mind water quality risks when timing dormant pyrethroid applications. Adding oil to a dormant pyrethroid treatment can provide additional efficacy for scale populations. Oil alone will control small to moderate scale populations. (To avoid oil burn, do not spray dry dormant trees with oil.) For additional detail, see articles on prune aphid management here.
- **San Jose Scale.** Once leaf fall begins, dormant spur samples can be used to scout for live San Jose scale and European fruit lecanium. Look for tiny exit holes as evidence of parasitism in both species, as well as aphid eggs and European red mite. This information will help determine if a dormant spray program is needed and, if so, what is in the spray tank.
- **Weed Management.** Conduct a post-harvest weed survey to evaluate your 2025 weed control program. Pre-emergent herbicide should be applied shortly before a moderate rain event or full coverage irrigation (0.25") to move material into the soil. Avoid application prior to a large rain event (> 1").
- **Gophers.** Late fall to early winter is prime *gopher* control timing because populations are generally lowest at this time of year.

October

- **Manage post-harvest irrigation** to minimize stress. Following harvest, stress should be mild to moderate (-12 to -16 bars).
- **Salinity**: Soil sample to check soil salinity and toxic salt (chloride, sodium, and/or boron) levels going into a dry winter. Especially important for newer orchard on Krymsk 86 which is more sensitive than Marianna or Myro.
- **Zinc**: If July leaf sample <18 ppm, apply foliar zinc (Zn). Spraying 20 lbs/acre of 36% zinc sulfate as natural leaf drop begins in late October can deliver needed zinc, facilitate leaf drop, reduce blow over risk, and/or disrupt aphid reproduction.
- **Orchard Sanitation**: Sanitize your orchard. See more details in the bullet *Orchard clean up and pruning* above.

Managing Webspinning Spider Mites in Prunes

Sudan Gyawaly, Area IPM Advisor, UCCE Northern Sacramento Valley

Spider mites are one of the pests that can become a problem in prunes. Two-spotted spider mite and Pacific spider mite are commonly found in prunes in the Central Valley. Of the two species, the two-spotted spider mite is the predominant species in the Sacramento Valley, whereas the Pacific spider mite is more common in the San Joaquin Valley.

Fig. 1. Twospotted spider mites

Adult spider mites have a dark spot on each side of their body during periods of active feeding. Spider mites lay spherical eggs often found on the undersides of leaves. Female spider mites turn reddish orange in the fall before overwintering in protected areas such as leaf litter, tree bark, or nearby weeds.

Nature of Damage.

Spider mites infest leaves by puncturing plant cells and sucking out cell contents, that causes stippling leading to mottling and browning of leaves. The feeding by spider mites weakens the plant and can reduce fruit size. If infestations are severe, especially early in the season, they can lead to significant leaf loss, leading to sunburn damage.

Monitoring and Treatment Decision.

While it may seem like extra work, monitoring spider mite populations is critical to ensure that treatment interventions are made only when necessary and not too late. Begin monitoring spider mites weekly starting June 1.

Spider mite monitoring and treatment decisions in prune orchards involve three main steps.

First, select two monitoring spots within each orchard block (up to 40 acres in size).

Second, conduct a timed search for five minutes at each place, resulting in a total of ten minutes of observation per block.

Third, at each spot, examine leaves on ten different trees, checking two to three leaves per tree. This results in about 20 to 30 leaves observed at each monitoring location. Be sure to inspect both the inner and outer canopy of the trees. Record presence or absence of spider mites and their natural predators. This monitoring form, available on the UC IPM website, can be used to record weekly observations and provides useful information on how to rate pest mite and predator populations and make treatment decisions.

Miticide treatment is recommended if either of the following conditions is met during at least one of the five-minute monitoring checks: if mite levels are low to moderate and predator levels are also low to moderate, or if mite levels are moderate to high, even when predator levels are moderate or high.

Managing spider mites.

Predators such as western predatory mites, sixspotted thrips (Figure 2), and spider mite destroyer beetles play an important role in keeping spider mite populations in check. Adult predatory mites are pear-shaped, about 1/70 inch long, and are translucent to white or the color of their prey. Predatory mites are broader at the rear (vs. spider mites are wider at the front) and are actively running on leaves. Adult sixspotted thrips are about 1/8 inch long, pale yellow to whitish insects with long, hairlike fringes on the margins of their wings. They have three dark spots that are apparent on each whitish forewing at rest. The immatures do not have wings. Protecting these predators is critical for an integrated pest management strategy. Avoid using broad-spectrum pesticides such as pyrethroids whenever possible.

Fig.2. Two common spider mite predator species: western predatory mite (top) and sixspotted thrips adult (bottom)

Good orchard health is important in minimizing severe spider mite problems. Keeping trees well-irrigated and vigorous makes them less susceptible to mite infestations. Additionally, minimizing dust is key--oiling orchard roads and maintaining ground cover helps reduce dust, which disrupts natural predators that keep mite populations in check.

Miticides listed in the UC IPM guidelines (see Table 1 below) for prunes provide good mite control when used according to label recommendations. Most miticides are effective in contact, so good coverage of the tree canopy is critical. Miticides, which are active primarily on egg and larval stages, are usually applied before adult mite numbers build up in high numbers. Furthermore, due to concerns about resistance, miticides of a similar mode of action should not be used consecutively or more than once per year. The table below provides more information on some common miticides, their mode of action, activity type, and the life stage of mites they affect.

Table 1: Examples of common miticides active ingredient used in prunes and their mode of action

Miticide active ingredient/Trade Name	Activity type	Life stages affected	Mode of Action (IRAC Designation)
Bifenazate/ Acramite	Contact (C)	Primarily juveniles and adults	METI (20D)
Abamectin/Agri-Mek	C and Translaminar (T)	Juveniles, adults	GABA Chloride Channel Activator (6)
Hexythiazox /Onager	C and T	Eggs, Juveniles	Growth and Embryogenesis Inhibitor (10A)

Pyridaben/Nexter	C	Juveniles, adults	METI (21A)
Fenbutatin-oxide/ Vendex 50WP	C	Eggs, juveniles	ATP synthase Inhibitor

Note: the mention of products is not a pesticide recommendation, simply the sharing of research results. Products may not be registered for use in California. Consult your PCA and always read the pesticide label; the label is law.

Management of Johnsongrass in Orchards

Ryan J Hill, UCCE Tehama, Shasta, Glenn Counties

Summary:

Rimsulfuron (Matrix, Hinge, Revolt, ect.) applications in early March, as johnsongrass shoots emerge from rhizomes, can be used to reduce johnsongrass coverage and vigor. Including glyphosate at this timing can provide a slight benefit, but since the available leaf surface area is so small, minimal herbicide is taken up by the weed. Rimsulfuron has soil residual activity and is able to move down into the roots and rhizomes of the johnsongrass and provide substantially better control than glyphosate, at least at the early March timing.

Note: the mention of products is not a pesticide recommendation, simply the sharing of research results. Products may not be registered for use in California. Consult your PCA and always read the pesticide label; the label is law.

Research methods and results:

Orchards with established johnsongrass populations were treated with preemergent herbicides (Chateau EZ, Goal2xl, or Brake On!) in January and either rimsulfuron (Revolt) or glyphosate (Roundup Powermax 3) in early March as johnsongrass shoots were emerging from underground rhizomes.

Weed coverage ratings show that the winter preemergents were not very effective in reducing johnsongrass coverage, likely because most of the emerging plants at both sites were established perennials, rather than seedlings. Coverage was reduced by about 50% from the March applications of rimsulfuron. Biomass samples were collected two months after treatment, showing a 26-51% reduction in plant biomass from rimsulfuron treatments.

Treatments		Coverage (%)				
Jan	March	44 DAT		58 DAT		Biomass (g)
Roundup	Roundup	61		54		396
Roundup + Brake On! 41 fl oz/A	Roundup	50		48		306
Roundup + Goal 5 pt/A	Roundup	48		48		339
Roundup + Chateau 12 fl oz/A	Roundup	51		50		320
Roundup	Rimsulfuron	37	*	40		225
Roundup + Brake On! 41 fl oz/A	Rimsulfuron	24	*	24	*	191

Roundup + Goal 5 pt/A	Rimsulfuron	25	*	28	*	235
Roundup + Chateau 12 fl oz/A	Rimsulfuron	27	*	34		280

Rimsulfuron = 4 oz /A Revolt; Goal = oxyfluorfen (Goal 2XL); Chateau = flumioxazin (Chateau EZ); Brake On! = fluridone (Brake On!; *not registered in CA*); Roundup = 2 pts/A glyphosate (Roundup Powermax 3); DAT = Days after treatment; "*" indicates statistical difference from the glyphosate-only control.

A second trial explored further different combinations of Roundup and rimsulfuron. Tree rows were treated with rimsulfuron (Revolt) or glyphosate (Roundup Powermax 3) or a mix of the two in early March (see the graph for rates). All treatments were applied in the presence or absence of a winter-applied preemergent herbicide (Goal 2XL; 5 pt/A) that is effective on johnsongrass seedlings.

The previous trial showed a slight reduction in johnsongrass coverage associated with the winter treatments. It was not so in this case, and no effect was observed of Goal treatments on johnsongrass coverage. Again, weed coverage was reduced by about 50% from the March applications of rimsulfuron, an effect that was maintained through two months after treatment. Biomass samples were also collected, showing a non-significant reduction in plant biomass (57-76%) from rimsulfuron treatments.

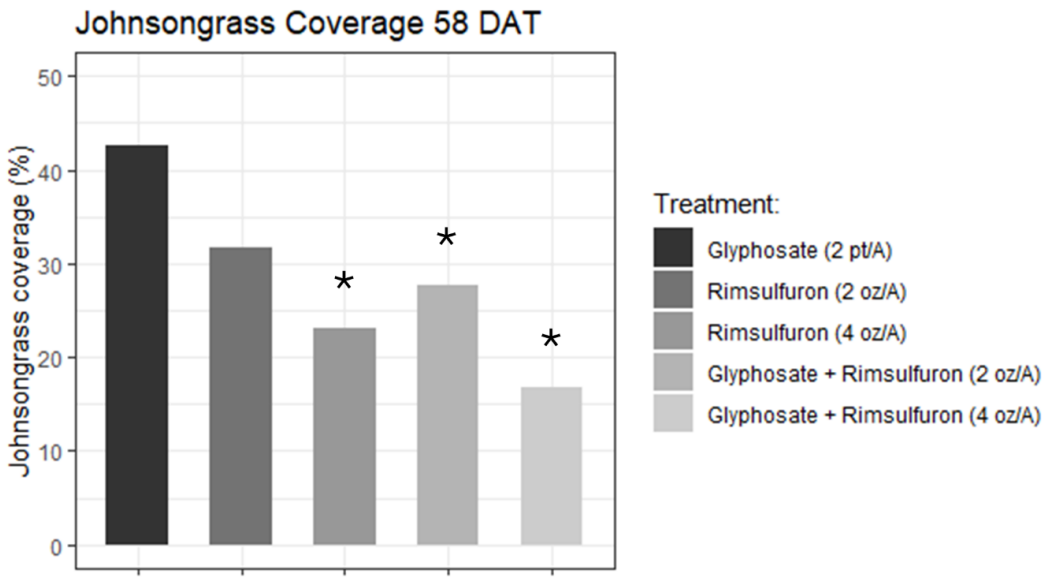

Figure 1: Goal 2XL applications in January did not affect weed coverage, so data were combined for this graph, showing more clearly the effect of the spring treatments.

Conclusions:

These results together seem to suggest that a winter application of preemergent herbicide may not benefit johnsongrass control, though it is interesting that the two treatments that maintained low coverage in the winter trial included Goal 2XL and Brake On (Brake On is pending registration in CA for orchard use). These two products have activity on johnsongrass seedlings, while Chateau does not.

Regardless, rimsulfuron treatments made the biggest contribution to the observed reduction of biomass and coverage of johnsongrass. The application of winter preemergents suggest that this treatment was active on rhizomes and not just the new seedling emergence. All spring treatments were applied when the weeds were

newly emerged from the belowground rhizomes, but most of the treatment was not contacting leaves, but was rather deposited on the soil surface. This was then watered in by rain events that may have moved the product down in the soil profile to affect the rhizomes themselves. The most effective treatment was a March application of 4 oz of rimsulfuron with 2 pt of glyphosate.

Application details:

Spray volume was 20 gallons per acre, delivered with a spray boom equipped with three AIXR11002 nozzles. Treatments were broadcast over the full plot area, about 180 square feet. January and March treatments were followed by a rain event within 7 days of application. All March treatments included 2% ammonium sulfate and 0.5% nonioninc surfactant and were applied when weeds were just emerging (1-5 inches tall).

Products used:

Active ingredient	Trade name	Rate
Fluridone	Brake on!	41 fl oz/A
Flumioxazin	Chateau EZ	12 fl oz/A
Oxyflurofen	Goal 2XL	5 pt/A
Rimsulfuron	Revolt	2-4 oz/A
Glyphosate	Roundup Powermax 3	2 pt/A

Glyphosate only (2 pt/A)

Glyphosate + Rimsulfuron (4 oz/A)

Prune Orchard Pre- and Post-Harvest Irrigation Management (2025)

Luke Milliron, UCCE Orchards Advisor, Butte, Glenn, and Tehama Counties
Curt Pierce, UCCE Irrigation and Water Resources Advisor, Glenn, Tehama, Colusa, and Shasta Counties
Franz Niederholzer, UCCE Farm Advisor; Colusa and Sutter/Yuba Counties

Summary: For the best returns and orchard health, ease up on irrigation before harvest, then resume full irrigation after harvest and continue until leaf drop. The pressure chamber is the best tool to manage irrigation for optimal tree and fruit results.

What's going on with the tree? Irrigation decisions leading up to and following prune harvest not only impact this year but also affect future harvests and orchard health. To manage irrigation effectively, we must first recognize what is happening with the tree and fruit as the season progresses. Shoot growth has been declining since early June, fresh fruit size increases slow by the end of July, while fruit dry weight continues to increase until the fruit reaches physiological maturity (4 lbs. pressure). Floral and vegetative bud development for next year's crop is also taking place, beginning in early summer and ending in late September on this season's growth (see Figure 1). Prune exhibits varying susceptibility to water stress during these different crop development stages. In part because we are optimizing for dried fruit size and not fresh fruit size, more water is not always the solution in prune production. Deficit irrigation, or supplying the trees with less than full ET (Figure 1), can provide key benefits beyond water savings and reduced pumping costs.

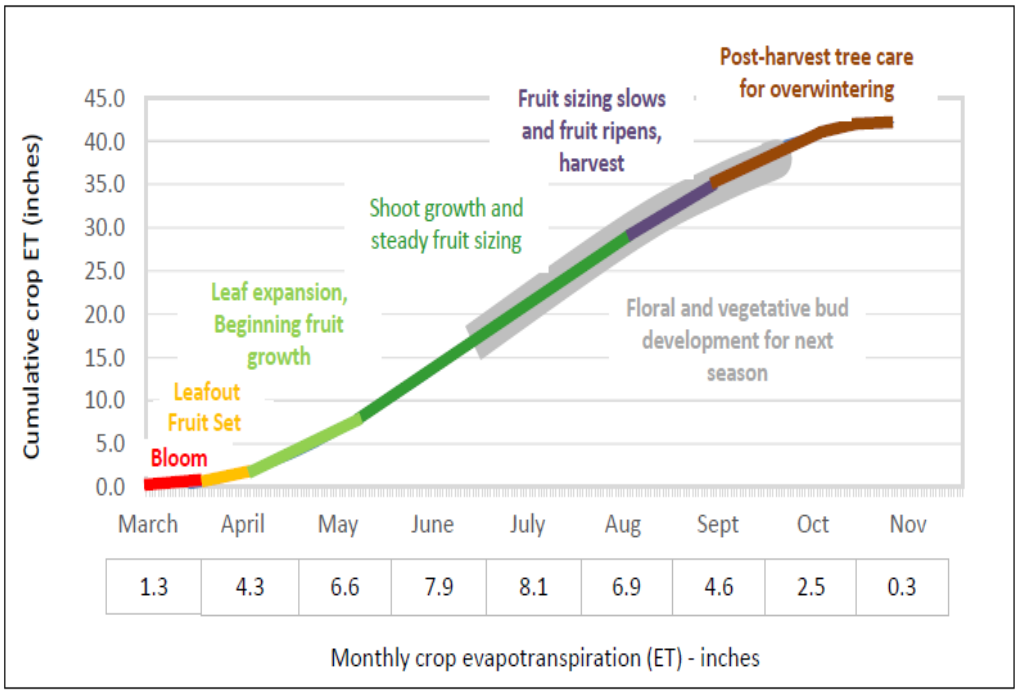

Figure 1. Graphic timeline of prune tree and crop development phases and associated average monthly and cumulative crop evapotranspiration (ET; figure by Allan Fulton, UCCE Tehama Emeritus).

How do you determine tree water status for optimal performance? Although ET calculations and soil moisture monitoring can be used to manage irrigation around harvest time, they do not directly measure the water status of the tree. In contrast, pressure chamber stem water potential (SWP) readings provide direct measurements of tree water status and can help deliver beneficial stress timings while avoiding unwanted severe stress. As you will see below, SWP is also the method we have the most information on for prune production, with Prune Board-funded research producing nuanced recommendations for both pre- and post-harvest irrigation

management. ET, soil moisture, and SWP each provide different insights into the puzzle: how much to water, where your water is, and when to water, respectively. The expert irrigator integrates all three approaches.

Matching pressure chamber SWP readings to growth stage for optimal orchard performance: Maintaining minimal to mild water stress with SWP readings between -8 and -12 bars from April to mid-June promotes rapid shoot growth and fruit sizing (Table 1). May and June are also the most critical months for end-cracking, which occurs when irrigating very dry orchards, so shorter, rather than less frequent irrigations, are recommended. For the summer months, SWP readings of -12 to -16 bars from late June up to the preharvest irrigation cut-off can help reduce pruning and pumping costs while not impacting production. Cut off irrigation once fruits have reached physiological maturity (4 lbs. fruit pressure), in the week or two before harvest to achieve -16 to -20 bars SWP. This brief period of moderate to high stress can enhance dry-away ratios and minimize shaker bark injury at harvest. This irrigation cut off may also lead to less early fruit drop if the weather cools or there is a pest outbreak. Growers using Krymsk-86-rooted trees should take special care to ensure the trees are sufficiently dried down before shaking to avoid bark damage.

Once the crop is out of the field, follow through with careful irrigation management until the trees have lost their leaves or there is regular autumn rain. Prompt post-harvest irrigation should recover the trees to mild-to-moderate stress (-12 to -16 bars). Sustained high to severe water stress (-20 bars and lower) during the pre- and post-harvest period can reduce potassium uptake, encourage sunburn and growth of *Cytospora* cankers (Figure 2), and result in smaller fruit buds the following year.

The Sacramento Valley Orchards website has detailed guides on adopting the pressure chamber and interpreting SWP readings.

Table 1. SWP levels in prune, consideration of how SWP might compare to baseline values under various weather conditions, and the corresponding water stress symptoms to expect.

SWP range (bars)	General Stress Level	Water stress symptoms in prune
-8 to -12	Low to mild	Favors rapid shoot growth and fruit sizing in orchards when minimal crop stress is sustained from April through mid-June. Continuing to maintain low-mild stress into the summer may not be cost effective.
-12 to -16	Mild to Moderate	Suggested mild levels of stress during late June, July, and early August. Shoot growth slowed but fruit sizing (fresh and dry weights) is unaffected. May help manage energy and irrigation costs.
-16 to -20	Moderate to High	Should be avoided until fruit sizing is completed. Appropriate for late August (preharvest shut down). Imposing moderate to high levels of crop stress by reducing irrigation about two weeks before harvest may increase sugar content in fruit and reduce moisture content or “dry-away” (fruit drying costs).
-20 to -30	High to Severe	More likely to occur in late August and early September during and after harvest. Extended periods of high crop stress before harvest will result in defoliation and exposure of limbs and fruit to sunburn. Extended periods of high stress after harvest may also negatively affect the condition of trees going into dormancy.

Figure 2. Cytospora canker infections spread most rapidly in severely water stressed (sustained lower than -20 bars SWP) orchards. High to severe water stress is more likely to occur in late August and early September during and after harvest. Photo by Franz Niederholzer.

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