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Luke Milliron
UCCE Orchard Systems Advisor
Butte, Glenn, and Tehama Counties

Fall/Winter Prune Orchard Management Considerations

Franz Niederholzer, UCCE Farm Advisor, Colusa, Sutter, and Yuba Counties

Key points:

- Apply potassium (or decide to wait for new crop year)
- Protect pruning wounds (hand or mechanical) with effective fungicide.
- Plan for fall or dormant insect management

Prune to manage next year's crop and tree size plus remove dead/diseased wood:

- Pruning with rain in the 10-day forecast risks pruning wound infection (Cytospora canker, Botryosphaeria, wood rot, etc).
- Remove existing [cytospora](#) cankers and spore sources by cutting branches several inches to a foot below the symptoms and burn prunings (if permitted).
- Consider your management goals: topping young vigorous trees before a big wind can reduce risk of blow-over, while [long pruning](#) can increase early yields in young prune plantings. The excellent anchorage of Krymsk 86 rooted trees should lessen the blow-over risk, allowing longer pruning without blow over concerns.
- After pruning, remove brush quickly and protect fresh wounds from water-borne spores with a fungicide spray (Topsin-M® or Topsin-M® + Rally®).

Clean up your orchard by removing harvester damaged trunk bark (cut back to "tight bark"), and backhoe out diseased or dead trees to prepare for replants.

the amount of fruit harvested this year. Some growers wait to check cropload in the spring before applying any potassium. In-season potassium options include foliar sprays and/or fertigated material.

Plant new trees. Protect trees from sunburn with white interior latex paint diluted 2:1 water to paint, plus tree wraps. If tree wraps are used without painting trees, the boxes should be flattened (◊ from the top, not □) to avoid "wrapper burn." Research in almonds shows that white paint, alone, doesn't protect young tree trunks from herbicide damage.

Maintain micro-irrigation systems to ensure good, uniform delivery of water and nutrient to your orchard next season. Fall is a great time for this activity.

Survey for weeds after the first rain to identify perennials, germinating winter annuals, and summer species that escaped the past season's control tactics to inform next year's control strategies. UC IPM provides a [printable weed survey form \(PDF\)](#).

[Manage gophers](#) when populations are at their lowest before the breeding season (March-May). Trapping, fumigation, and baiting can all be effectively utilized when soil is moist. Gophers kill prune trees. Regular management will help reduce the chance of tree loss to gophers.

Fall/Winter insect pest management:

- [Sample dormant spurs](#) to determine the need to treat for [San Jose](#) and/or [soft scale](#) along with aphids and some [mites](#).
- Aphid: If you have a history of aphid infestations, assume you have an annual problem and [treat aphids between fall and leaf out](#).
- [San Jose Scale](#): Where spur sampling shows a need, treat low to moderate populations with oil, or for moderate to high infestations, oil with insect growth regulator (Centaur®, Seize™). Check with your PCA about using oil if the trees and/or soil are dry to avoid oil burn damage, especially to young shoots.
- [Peach Twig Borer \(PTB\)](#): PTB can infest prunes and allow easy brown rot infection that can spread to nearby fruit. PTB management is part of a brown rot management program. Dormant sprays of oil plus spinetoram (Delegate®), spinosad (Entrust™, Success™) or diflubenzuron (Dimilin®) will kill overwintering larvae without causing water quality issues—oil alone does not control peach twig borer. Pyrethroid insecticides also control PTB (and aphids). Including B.t. (Javelin, Dipel, etc.) with bloom fungicide sprays will also give good PTB control if a dormant spray is not needed for scale.
- Pyrethroid insecticides (Asana®, Warrior®, etc.) are effective and relatively inexpensive pesticides but [highly toxic to aquatic life](#) and [beneficial insects](#). Follow [regulations regarding use of insecticides](#), especially pyrethroids around weather events. Excellent control of prune aphid or PTB is delivered by lower pyrethroid rates. For example, in UC trials, Asana XL delivered excellent aphid control at 4.8 oz/acre, the minimum labeled rate, and excellent PTB control at 6-8 oz/acre. The max label rate for Asana is 14.5 oz/acre. If pyrethroids are the pesticide selected for fall/dormant use your orchard(s), consider these research results when selecting the rate.

Use Gear Up, Throttle Down spray practices to control pests this fall and winter while saving time and money and reducing spray drift. [This is a proven practice in prune production](#).



2024 Prune Resources Through the End of the Year

Luke Milliron, UCCE Orchards Advisor Butte, Glenn, Tehama

Late fall and early winter are a great time for you and your trees to rest after another season of hard work. It is also a great time to get up to speed with the latest research and best practices, as you sharpen your skills for the challenges that await in 2025. Perhaps the single best way to do that is to attend the Prune Research Conference in mid-December:



SAVE THE DATE

2024 CALIFORNIA PRUNE RESEARCH CONFERENCE

Meeting
December 16 & 17, 2024
California Farm Bureau
2600 River Plaza Drive, Sacramento

Dinner
Monday, December 16, 2024
Hilton Garden Inn - Venture Oaks Way, Sacramento

Lodging
Hilton Garden Inn - Ventura Oaks Way, Sacramento



The California Prune Board and UCCE are hosting the 2024 California Prune Research Conference on Monday, December 16th and Tuesday, December 17th at the California Farm Bureau headquarters in Sacramento. This is a free, one-stop-shop opportunity to catch up on cutting edge prune production research and sample delicious new prune varieties from the UC Davis breeding program.

Interested in attending? [CONFERENCE REGISTRATION](#)

Need lodging for an overnight stay? [HOTEL RESERVATIONS](#)

Additional questions? Becky Poland bpoland@californiaprunes.org or Zach Bagley zbagley@californiaprunes.org

COME FOR THE PRUNES – STAY FOR THE INFORMATION

Always in search of continuing education units (CEUs)? The Almond Board has created a convenient and free destination for earning online CEUs at almondlearninghub.com. Although the content was created for almond growers and consultants much of the information (private applicator test prep, soil chemistry, irrigation, etc.) is either universal or has crossover between the two tree crops.

Make the most important call of the 2025 irrigation season early! If you farm in a county served by a Mobile Irrigation Lab, make the phone call now to sign up for a free system evaluation early next year. If you can learn where to make some minor fixes to your system – every irrigation/fertigation/chemigation will be more cost-effective season-long. Current coverage:

Tehama, Butte, Glenn, or Shasta Counties –

Kevin Greer, 530-727-1297 or kevin@tehamacountyrcd.org

Yolo County - Conor Higgins, higgins@yolorcd.org

Solano County - Kevin Young-Lai, kevin.young-lai@solanorcd.org or 707-678-1655 ext. 123

Sutter-Yuba-Colusa - Karandave Kang, srcdoffice@gmail.com

UC Cooperative Extension is here to help you!

Do you prefer reading **articles**?

- Remember that SacValleyOrchards.com has an [archive of great articles](#) regarding the best practices for growing prunes. Great articles this year included: [Prune Browline Alert](#), [Phellinus wood rot, or “Why do my trees blow up at harvest?”](#), and [New UC Davis Prune Varieties Prove Promising](#).
- [UC IPM](#) and Sac Valley Orchards have helpful guides for pests year-round. Including key pests with winter management opportunities like: [aphids](#), [Peach Twig Borer](#), and [San Jose Scale](#).

Learn about best practices on **YouTube**!

- A popular talk by prune grower Joe Turkovich on [Tree Training and Pruning for Sustainable High Yields](#).
- [Practical Canker Management in Prunes](#): If you can't make it to the Prune Conference in December – you can still learn what you can do to prevent canker diseases in this recorded talk.

Do you listen to **podcasts**?

- You can find podcasts on prune research at growingthevalleypodcast.com/fruits or by looking for “Growing the Valley” on the app you use to listen to podcasts.



The best resource to get individual attention is to **contact your local orchard farm advisor**. Don't have their contact details? You can find your farm advisor's contact details at your county's UCCE website: ucanr.edu/sites/ucanr/County_Offices

Upcoming Sac Valley Orchard Events		
Mon + Tues Dec 16 + 17	2024 California Prune Research Conference	California Farm Bureau, Sacramento
Fri Dec 20	Sacramento Valley Orchard Sanitation Check-up	Nickels Soil Lab, Marine Ave (0.75 mi west of Wildwood)
Wed Jan 15	2025 North Valley Nut Conference	Silver Dollar Fairgrounds, Chico
Mon Feb 3	North Sacramento Valley Prune Day	Red Bluff Elk's Lodge
Wed Feb 5	Sac-Solano-Yolo Almond Meeting	Woodland
Tues Feb 25	South Sacramento Valley Prune Day	142 Garden Hwy, Yuba City
Wed Feb 26	Sacramento Valley Pistachio Meeting	Woodland
Wed Mar 5	Sutter/Yuba Walnut Day	Yuba City
Thurs Mar 6	North Sacramento Valley Walnut Day	Red Bluff Elk's Lodge
Wed Mar 12	Sac-Solano-Yolo Walnut Meeting	Woodland



2024 Season Retrospective

North Sac Valley: Jaime Ott, UCCE Tehama, Shasta, Glenn, Butte Counties

Despite a much earlier bloom than last year, harvest started only a few days earlier. Fruit size and sugar at harvest was variable: blocks with heavy cropload or which suffered from water stress during the season struggled with size and sugar. Tonnage was down this year overall, mainly driven by losses to sunburn (blue prune drop) during our hot weather. Some orchards were nearly unaffected, while others suffered heavy losses. The most heavily affected orchards I saw were on drip irrigation. In previous years, data from temperature sensors has shown that drip-irrigated orchards run 5-10°F warmer in hot weather than sprinkler or micro-sprinkler orchards, which might help to explain the pattern. Not every drip-irrigated orchard suffered from high levels of sunburn, though, so there is more to the story than just in-orchard air temperature. I saw firsthand the importance of using a sizing chain to get rid of sunburned fruit: in some bins of harvested fruit, almost half was nothing more than a pit with some dried skin around it. This was a tough year for mites, with many growers spraying multiple times through the season. That could also be related to the hot, dry weather we had.

South Sac Valley: Franz Niederholzer, UCCE, Colusa, Sutter, Yuba Counties

In Sutter County, the season started out looking “normal”. Chilling (74 chill portions by March 1) and full bloom timing (March 20-23) were right about recent averages. Bloom temperatures were not dangerous to fruit set, peaking at just under 80 deg (a high of 79°F on Mar 19). Fruit set numbers were generally good with more than 30% of flowers setting fruit in orchards where bloom was tracked around the county. That level of fruit set along with a decent to good bloom usually means fruit thinning should be needed to attain good fruit size in most orchards.

Spring weather was the usual temperature yo-yo in a wet spring with $\pm 25^{\circ}\text{F}$ swings in maximum daily temperatures from late March into early May. However, storm temperatures were cold (max temps $< 60^{\circ}\text{F}$), which probably helped reduce disease (fruit brown rot and rust) pressure. The post bloom heat units, measured as cumulative Growing Degree Hours 30 days after bloom (GDH30) for Sutter Co in 2024 were on the cool side...6094, suggesting a slightly longer growing year and larger sizing potential. Reference date was May 10.

Any sense this was an “average season” went out the window in early July. Summer 2024 was one of the hottest in the last 20 years, producing fruit sunburn, web spinning mite outbreaks, and lower sugars heading into harvest. Sunburn from July heat caused significant fruit loss ($< 20\%$ of total crop) across the region. The easing of temperatures later in August likely helped sugars increase heading into harvest. Many growers delayed harvest as they waited for sugar levels to increase, particularly in orchards with excessive croploads. Overall, processors report a good crop with reasonable size.



Assessing the Needs of Agricultural Producers in Butte, Glenn, and Tehama Counties

Domena A. Agyeman, UCCE Agriculture and Natural Resources Economics Advisor; Butte, Glenn, and Tehama Counties

Introduction

This report summarizes the primary challenges reported by agricultural producers from Butte, Glenn, and Tehama counties who participated in an economics needs assessment survey. Respondents were asked to indicate the top three challenges impacting the future success of their operations and to suggest what the University of California Cooperative Extension (UCCE) should focus on to improve the success of their operations.

Location of business and main products produced by respondents

Among 52 producers who completed the survey, 75% had their businesses located in Butte county, while 15% and 14% were based in Glenn and Tehama counties, respectively. Additionally, 37% reported they had businesses in other counties, including Colusa, Plumas, Sierra, Stanislaus, Sutter, Sonoma, Solano, Tulare, Merced, Lassen, and Yuba. Most respondents (71%) were crop producers, 42% were livestock and hay producers, and 4% were timber producers. Figure 1 shows the percentage of respondents by the types of products they produced.

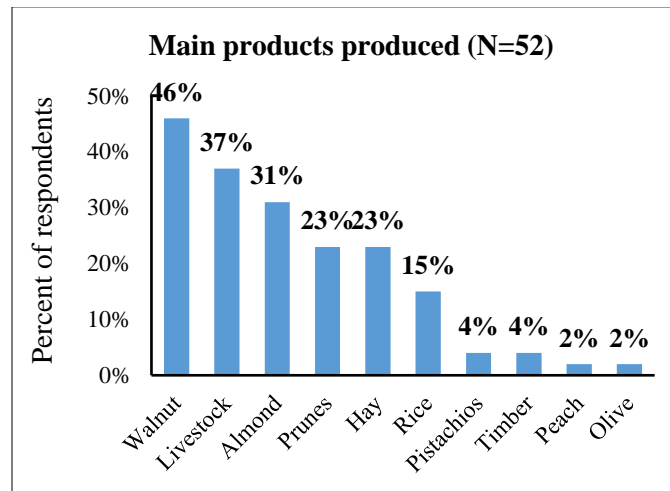


Fig 1: Percent of respondents by types of products they produced.

Main challenges impacting the future success of operation

Among 50 respondents who listed the top 3 challenges impacting the future success of their operations, 74% cited regulations as one of the top three challenges (Figure 2). This was followed by concerns about low prices, which was cited by 42% of respondents, and high cost of production, mentioned by 38%. Notably, 92% of respondents indicated at least one of these challenges in their top three challenges, while 14% listed all three. “Other challenges” represents a combined list of challenges for which each was cited by a few respondents. These challenges included inflation, interest rates, insurance, trade, transportation, fire, drought, encroachment, and unstable world situations. This indicates that while these issues are not as commonly reported as the top challenges, they still contribute to the broader set of concerns impacting the future success of farm operations in the region.

Regulations were the only challenge cited by more than 50% of both crop and livestock producers as among their top three challenges. Only 2 of the 19 respondents who produced livestock reported low prices in their top three challenges, while 20 of the 37 crop producers did. Despite the small sample size, these results are reflective of the 2024 crop prices with livestock at record highs and many other commodities having depressed markets (e.g. rice, walnuts, almonds). All the rice producers who responded to the survey reported water availability as among their top three challenges, a historically common [challenge](#) among rice producers.

Respondents identified various regulations when asked to indicate the most challenging regulation of their operation (Figure 3). Groundwater regulation was the most frequently cited regulation by producers (36%), followed closely by the Irrigated Lands Regulatory Program (ILRP) for water quality and labor regulations, each cited by 32% of respondents, and then surface water availability (20%). These results underscore the critical role water management and labor issues play in agricultural operations in the region. Responses categorized under ‘other’ included spray regulations and regulations related to wolves.

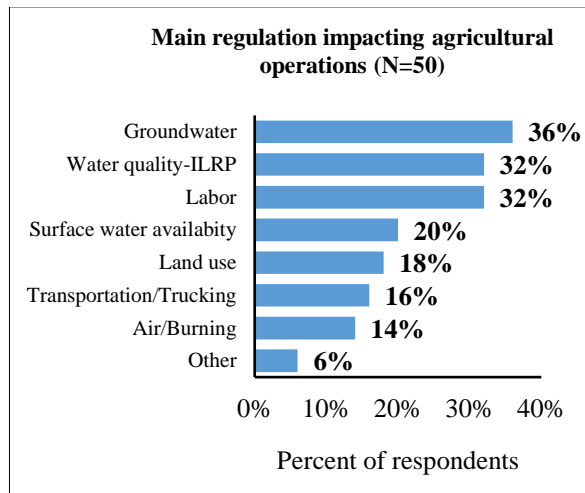
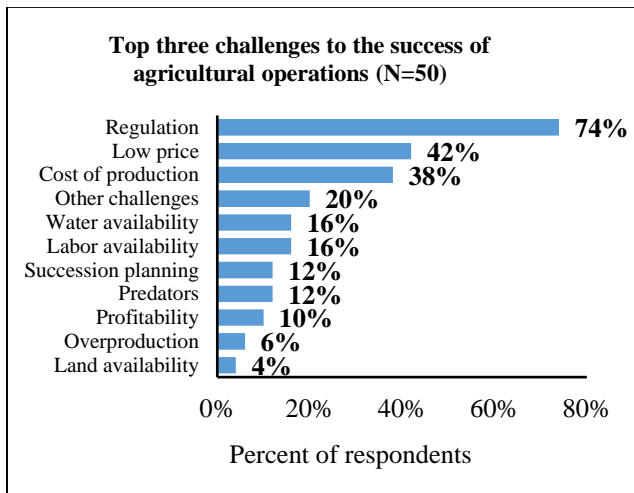


Fig 2: Percent of respondents by their top three challenges to regulation

Fig 3: Percent of respondents by type of regulation

Producer request to UCCE

Thirty-one respondents provided recommendations on how UCCE could better support the success of their operations. The highest percentage (42%) of respondents called for UCCE to advocate for reduced government regulations and increase efforts to educate legislators and the public about the regulatory burdens on producers. Additionally, respondents expressed a desire for UCCE to provide economic insights into their operations, with 29% requesting strategies for reducing operational costs and improving profitability. A few crop producers requested insights into potential new crop candidates that are more drought and disease resistant and can command higher prices. Additionally, a few crop producers requested increased efforts to develop local markets for their products. Overall, UCCE is urged to continue providing valuable information and support while advocating for measures that alleviate the pressures faced by agricultural businesses in the region. Below is a response from a producer who seeks education of the public on the regulatory burdens producers face:

“Education of federal and state government officials and the public on the burdens put on farmers. They must let us farm if we are to keep the world in food. Cut the regulations!”

Recommendations

There is a need for increased awareness about the economic impacts of regulations on farm operations, along with education for producers on regulatory compliance requirements and streamlined pathways for fulfilling those regulations. In addition, research and education of producers on market trends, financial management, profitability, risks, and management practices are needed to help them improve profitability and identify new market opportunities. Producers should also receive guidance on evaluating economic factors before investing in new agricultural enterprises. The economic advisor program will contribute to addressing these producer challenges and respond to their requests by conducting research and education initiatives. Information will be delivered to producers via their preferred means including workshops, newsletters, field visits, webinars, and fact sheets.

Special thank you to the farmers and ranchers who took the time to provide their perspectives by completing the survey, and to the Butte County Farm Bureau for their assistance with its distribution. Acknowledgment to the staff at USDA-Farm Service Agency and to all the Advisors who helped distribute the survey.

New Staff Intro: Ben Baldi



Ben Baldi joined UC ANR in 2024 as a Staff Research Associate to serve the southern Sacramento Valley with Katherine Jarvis-Shean, Franz Niederholzer, and Clarissa Reyes across six counties. He is assisting farm advisors with trials in almond, walnut, pistachio, and prune orchards. Ben has a B.S. in Plant and Soil Science from the University of Massachusetts, Amherst and earned a M.S. graduate in International Agricultural Development specializing in Plant Pathology from UC Davis in June 2024. He is eager to support farmers, grow his agricultural knowledge, and contribute to advancing sustainable practices. Ben enjoys reading, rivers, and spending time with his lizard companion named Mojo.



Rootstock options for your next prune orchard (2024)

Luke Milliron, UCCE Orchard Advisor Butte, Glenn, Tehama
Franz Niederholzer, UCCE Orchard Advisor Colusa, Sutter-Yuba
Jaime Ott, UCCE Orchards Advisor Tehama, Butte, Glenn, Shasta

The Skinny: Your rootstock choice should guard against your greatest fear for your new orchard, whether it be blow over, production potential, nematodes, or a disease. The historical choice of a plum rootstock (Myrobalan seedling, Myrobalan 29C, Marianna 2624, Marianna 40) was great for tolerating wet ground and Phytophthora. However, these rootstocks suffer from varying levels of poor anchorage when young, suckering, and susceptibility to bacterial canker. The grower cost and headaches inflicted by these problems have led to plum rootstocks combining for less than a quarter of current nursery sales. Instead, 75-80% of nursery sales from the two major



dry-aways (photo Luke Milliron).

nurseries supplying trees to the industry are Krymsk 86 (Krymsk) rooted. Growers have chosen Krymsk primarily because of its legendary anchorage, however the rootstock has several flaws growers should be aware of before purchasing. Finally, although not widely planted, Viking proved to be an excellent rootstock in recent UC trials and should be considered. No rootstock is flawless. Growers should understand all the qualities of a rootstock ahead of the planting decision.

Photo 1. At the Butte rootstock trial site (no bacterial canker pressure) plum rooted trees were among the largest, highest yielding, and provided some of the lowest

Some Subtlety:

Plum Rootstocks: If you don't have bacterial canker or prune brownline in your orchard, and if you don't see blowovers early in the life of your orchard, plum rooted trees can be incredibly successful. These great conditions were experienced at a recent Butte County trial site where Myroblan 29C produced the highest yields among 13 rootstocks and provided one of the lowest dry-away ratios. Marianna 2624 and 40 also did well at the site. However, if you have a history of bacterial canker, or if you have ring nematode which is closely associated with the disease, steer clear of these rootstocks. At the rootstock trial site in Yuba County where bacterial canker disease was common, roughly half of the Myroblan 29C and one-third of Myroblan seedling died in the first ten years. Marianna 40 and 2624 fared better at the site with about 20% mortality but didn't do as well as the rootstocks we will discuss in the next sections. If you don't fear bacterial canker but you are concerned about the newly rediscovered prune brownline disease, Marianna 2624 is the only known rootstock resistant to the disease. Unwilling to manage the suckering associated with Marianna 2624 one grower is trialing Marianna 40 replants at his site with prune brownline – stay tuned. If you don't fear either bacterial canker or prune brownline – remember that none of these rootstocks have excellent anchorage when compared to Krymsk 86 or Viking.

Peach Rootstocks: Lovell has been one of the classic rootstock options in the Sacramento Valley and was once the default rootstock for almond production in the region. The rootstock had high survival at the Yuba County rootstock trial site with high bacterial canker pressure. However, the trees produced mediocre yields in recent UC trials. Anchorage was historically considered good but is now considered mediocre when compared to Krymsk or Viking. Very little if any suckering. Infamous susceptibility to wet feet and *Phytophthora*, a potentially fatal flaw if you are planting on heavy ground.

The hybrids...

Plum x Almond: Rootpac R is a rootstock that has gained some traction in Sacramento Valley almond production but not in prune production. In the recent UC trials there were only enough trees to plant at one site – Yuba, where the tree had high survival against bacterial canker pressure and moderate vigor. However, despite producing nice trees, these trees produced below average yields. Susceptibility to prune brownline is unknown. The rootstock would have to be tested in more locations to better understand its strengths and weaknesses.

Plum x Peach: As previously noted, Krymsk is now the number one choice of rootstock for prune production largely due to its stellar anchorage and success in Sacramento Valley almond production. For an industry long plagued by orchards with poor anchorage and in certain spots – bacterial canker – this rootstock had perfect survival at the bacterial canker site. At this site it also had the highest yields after 10 years of the 14 rootstocks. The rootstock is susceptible to plant parasitic nematodes, salinity, and prune brownline. There are a growing number of almond varieties with compatibility issues with Krymsk and it remains to be seen if there will be any compatibility problems with the new prune varieties being developed at UC Davis. Despite having some important

flaws – it remains to be seen if the rootstock’s current strength in prune sales will lose any ground in the coming years.



Photo 2. Viking in the foreground had perfect survival at the Yuba County rootstock trial site with high bacterial canker pressure (photo Luke Milliron).

Complex hybrid: Viking is a popular rootstock in almond production but very little is planted in prune. Viking had the second-best anchorage after Krymsk in the recent UC trials, it also had perfect survival at the site with high bacterial canker

damage (photo 2). In almond trials and in our recent prune trials, Viking produced a slightly larger tree than Krymsk. At the Butte trial site Viking was slightly more productive than Krymsk, and the reverse was true at Yuba. Viking had zero suckers at either rootstock site in our evaluations. Our understanding from almond rootstock trials is that Viking is more tolerant of salts, high soil pH, crown gall, ring and rootknot nematode but more susceptible to wet feet and *Phytophthora*. Susceptibility to prune brownline is unknown.

Again, no rootstock is flawless. Understand all the qualities of a rootstock ahead of your planting decision. Your local farm advisor is a great resource to talk through your options with.



The “SACRAMENTO 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.

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