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Franz Niederholzer
UCCE Advisor
Colusa, Sutter,
Yuba Counties

Almond Management Considerations: Spring & Early Summer

UCCE Orchard Systems Advisors, Sacramento Valley

So far, this spring is mostly dry, hot, and early. The next few months look to be more of the same. Irrigation, spider mites, leaffooted bug, and red leaf blotch are topics of particular concern in spring 2026. Also, with earlier bloom and spring heat, it's possible that harvest may begin weeks earlier than the last few years.

APRIL

- ◆ **Irrigation:** Maintain adequate orchard soil moisture, avoiding too much or too little irrigation. Soil moisture sensors, ET calculations, and stem water potential help provide a clear path to a solid crop and healthy root system.
- ◆ **Nutrients:** Assess crop size and adjust your nitrogen (N) budget accordingly. Shoot growth will probably be over earlier this year given the early start to the season and so meeting crop N demand (annual demand = 68 lbs N/1000 kernel crop) should be the focus of the N nutrition program for an individual orchard. With the passing of target timing for the UC Early Leaf Sampling protocol (45 days after full bloom), monthly leaf sampling can help deliver adequate N (and potassium) while limiting hull rot. The July leaf N target is 2.4-2.5% to meet crop N demand while helping manage hull rot.
- ◆ **Insects and mites:** Monitor for navel orangeworm (NOW), peach twig borer (PTB), [leaffooted bugs](#), [stink bugs](#), and [spider mites](#). Hang mating disruption dispensers for NOW at biofix or late March or early April according to manufacturer's guidance. See the article in this issue for a NOW management update.
- ◆ **Diseases:** A conservative fungicide program through April for red leaf blotch, especially in sprinkler irrigated orchards, should control that disease as well as the "usual" spring and summer diseases – anthracnose, alternaria, scab, and rust. Check the orchard weekly for disease symptoms.

MAY

- ◆ **Irrigation:** Spring irrigation, especially in a warm spring like this year, is critical to orchard health and yield. Use any monitoring tool that has proven effective in your orchard(s). Both too much and too little water can reduce yield. Using a pressure chamber, maintain trees at 1-2 bars below baseline. [Pressure chamber readings](#) are the most direct way to measure water status of trees and are a powerful tool when used in combination with [ET](#) and [soil moisture sensors](#).
- ◆ **Nitrogen and Potassium:** Almonds use 80% of their annual N budget by June; May is a time of high N use in orchards. See detailed information on [nitrogen management in almonds](#) from The Almond Board of California. Where fall or spring banding of maintenance rates of potassium (K) fertilizer wasn't used, several "shots" of smaller rates of fertigated K can help maintain leaf K levels in an adequate range (>1.4% in July samples) to reduce spur death and crop loss potential next year.

- ◆ **Spray coverage:** In lean years, make sure that the products you're paying for are getting to the part of the tree you want them to hit. Make sure your sprayer is [calibrated and working as intended](#).
- ◆ **Diseases:** Continue monitoring for familiar [foliar diseases](#) and treat as necessary. If you see red leaf blotch symptoms, the damage is already done and spraying will not stop the spread of the symptoms – the infections probably occurred in March or April.
- ◆ **Insects and mites:** Continue monitoring for insect and mite pests and beneficials. Rotate miticides to maintain efficacy of the materials available.
- ◆ **[Gophers/ground squirrels](#):** Monitor closely and apply steady control practices to active mounds/tunnels. Check with your County Ag Commissioner's Office regarding the proper certification for the rodent control practices planned.

JUNE

- ◆ **Irrigation:** Deep root zone soil moisture may slow orchard dry down at harvest, delaying clean shake and risking trunk damage ("barking"). An intentional, moderate water stress for two weeks beginning at 1% hull split will help trees use deep root zone water, where it exists, and set the orchard on a course for a more uniform harvest maturity and manage *Rhizopus* hull rot. This is also called a [strategic irrigation deficit \(SID\)](#).
- ◆ **Fertilizer application:** Apply **potassium** as needed to target 1.4% leaf K in July. Assess K fertilizer need using current crop load, early leaf sample analysis results, and orchard monitoring for deficiency symptoms. Finish **nitrogen** applications by early June unless using continuous feeding strategy (low rates on a daily to weekly basis). Almond orchards use 80% of their annual N demand by the end of May, so applications in June should be tapering off. This matches N supply with N demand and significantly limits the risk of [hull rot](#)
- ◆ **Continue pest monitoring:**
 - [Ants](#): Contact your PCA, check for ants and find a treatment plan. Some application programs start 10 weeks ahead of planned harvest. Apply fresh bait promptly after purchase to dry ground to increase efficiency: products open for 1-2 weeks no longer works.
 - Continue scouting for [spider mites and their predators](#). Predator presence can delay miticide use until hull split.
 - [NOW](#): Check for hull split in the upper southwest canopy of edge trees. Early is better than later for [hull split sprays](#). The first hull split spray should be completed by 1% hull split. See the article in this newsletter for NOW management.
- ◆ **[Hull rot](#):** Recommended control strategy combines adequate, but not excessive, annual N nutrition (targeting 2.4-2.5% N in summer leaf samples), moderate water stress (-14 to -18 bars on the pressure chamber) for two weeks between kernel fill and end of early hull split, and 1-2 fungicides in June or early July. Different hull rot pathogens require different fungicide control timings.
 - ***Monilinia***: For best control of *Monilinia* hull rot (tan lesion on the outside of the hull), spray in early June as this hull rot pathogen can infect the hull directly (no hull split needed to provide a way into the hull).
 - ***Rhizopus***: For orchards with a history of *Rhizopus* (black spores) hull rot, spray a fungicide at first (1%) hull split timing (tank mix with NOW insecticides).
 - ***Aspergillus niger***: Fungicides are more effective once hulls have split.
- ◆ **Harvest preparation:** Time and money can be saved by checking harvest equipment between hull split and harvest. Plan for a [low-dust harvest](#).

Leaffooted bug updates, 2026

Sudan Gyawaly, UC IPM Advisor, Sacramento Valley

Franz Niederholzer, UCCE Orchard Systems Advisor, Colusa and Sutter/Yuba Counties

Many growers in the Sacramento Valley dealt with significant leaffooted bug pressure during the 2025 growing season, with some reporting damage exceeding 10 percent. Given the warm winter and spring conditions this year, leaffooted bugs are again a concern in many orchards. We are monitoring several almond orchards this year for leaffooted bug and have observed their activity as early as mid-March. Multiple PCAs also reported spotting bug activity in their blocks from mid- to late March, raising concern about early-season damage.

Leaffooted bugs are usually early-season pest in almonds and pose the greatest risk from March through May. Their early-season feeding damage includes nut abortion, heavy nut drops, and defective kernels. After shell hardening, leaffooted bug feeding can cause brown spots, wrinkled, or misshapen kernels.

Regular scouting is key to effective leaffooted bug management. Unfortunately, these bugs are difficult to spot during scouting. So, scouting should also include checking gummy nuts, dropped nuts, and for nymphs, or egg masses. Recently, traps and lures for leaffooted bugs have become commercially available, and many PCAs are using them and finding them helpful for early detection. However, in many cases, infested nuts may be the only leaffooted bug damage indicator. If only gummy nuts are present, confirm bug damage by cutting a cross-section of the damaged area and checking for feeding puncture marks. Spray decisions should be based on orchard history and current-season activity, using your judgment of potential risk. Usually, if bugs, egg masses, or fresh damage are detected during March–May, an insecticide spray should help prevent further damage. More information on leaffooted bug management can be found by clicking on this [link](#) or by googling “Managing true bug pests in almond orchards”.



Adult leaffooted bug on an almond nut, observed March 16 in Orland, CA



First report of *Carpophilus truncatus* detection in the Sacramento Valley

Sudan Gyawaly, UC IPM Advisor, Sacramento Valley

Carpophilus truncatus is an invasive beetle in California that has potential to cause serious economic damage to nut crop industries. The pest was first detected in the San Joaquin Valley almonds in 2023 and is causing economic damage in some orchards there. However, the status of its spread and impact in the Sacramento Valley remained unclear, although some PCAs and consultants have reported observing almond damage resembling that caused by this pest (a visual guide is available to identify carpophilus beetle damage that can be accessed by clicking on the link or googling “visual guide to identify carpophilus beetle damage”).

As part of research on carpophilus beetle led by Houston Wilson, I have been conducting surveys to understand its distribution in the Sacramento Valley and support the development of monitoring and management tools.

During the 2025 season, I conducted season-long surveys in two almond orchards and one pistachio orchard, as well as detection surveys in three additional almond orchards. At each site, three bucket traps baited with an experimental pheromone lure and co-attractant were deployed and checked biweekly. Over the course of these surveys, several thousand beetles were collected. Most of the trap catches were other dried fruit beetles that are not known to damage almonds. However, a very low number of carpophilus beetles were detected in one almond orchard in Colusa County, representing the first confirmed detection of this pest in the Sacramento

Valley. These findings suggest that the invasive *Carpophilus truncatus* beetle is already present in the Sacramento Valley, even though widespread damage hasn't been observed yet. The beetle relies on mummy nuts in trees and on the ground to survive the winter. Because of this, removing and destroying mummy nuts, which is already a common practice for managing navel orangeworm, can help growers reduce the risk of this pest while we continue developing monitoring and management tools.



Spider mite control, 2026.

Sudan Gyawaly, UC IPM Advisor, Sacramento Valley
Franz Niederholzer, UCCE Orchard Systems Advisor, Colusa and Sutter/Yuba Counties

In IPM review sessions following the 2024 and 2025 seasons, many PCAs from all around Sacramento Valley mentioned how difficult and expensive spider mite control has become. For many PCAs, effective “go-to” miticides no longer worked as before and expensive tank mixes were needed to get the expected control. In an effort to better understand the problem, we did some digging. Here's what we learned.

Repeated use of the same miticide in an orchard will encourage resistance to the miticide in the spider mite population. Frank Zalom, retired UC IPM Extension Specialist and Distinguished Professor of Entomology at UC Davis, was not surprised by reports of reduced efficacy of miticides based on his recent experience with miticides in strawberry production. He emphasized the need to rotate miticide chemistries and use/support biological control (beneficial insects and mites feeding on pest mites) wherever possible for best spider mite management results. Using biological control includes pesticide selection that doesn't harm beneficials. Rotational miticides can be more expensive than the familiar choice, but as Bill Olson, retired UCCE Orchards Advisor in Butte County, used to say, “The most expensive spray is the one that doesn't work”.

David Haviland, UCCE Entomology Advisor in Kern Co, has worked extensively with biological control of spider mites, using natural enemies of spider mites and especially focusing on six-spotted thrips. A short (less than 5 minute) YouTube video on monitoring for six-spotted thrips from UC IPM and featuring David can be found by clicking on the link or googling “monitoring for six spotted thrips”.

Also, for mite control, as with navel orangeworm, the best possible spray job is needed to get the job done right the first time. Slow sprayer speeds are very important for the best spray coverage and pest control, while high spray volumes are not as critical for miticides as for NOW -- as long as the material reaches throughout the canopy. Directing two-thirds of the spray volume spray into the upper half of the canopy helps get good coverage in the most difficult part of the tree to reach – the upper quarter.

Careful monitoring for pests and natural enemies and, where needed, careful miticide selection and application should help keep almond canopies healthy and supporting nut growth and fill in a dry spring and summer.



Exciting Almond Varieties in the Spring of 2026

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

It feels like we are in a transformational time with new almond varieties in the Sacramento Valley. We are starting to see some adoption of self-fertile varieties following a painful false start with Independence and Shasta on Krymsk 86. The most experimental of these self-fertile varieties being planted by a limited number of growers in fall 2026 is Nonpareil ([Nonpareil+](#) or [FruitionOne](#)). However, other growers burned by an earlier experience with Independence/Krymsk 86, Shasta/Krymsk 86, Bennett-Hickman, or Monterey are opting for conservative Nonpareil-based plantings. They are choosing their pollinators for Nonpareil from older varieties that they have the most experience and confidence in.

- Want to see the latest advances in almond varieties and rootstocks? At **9 AM on Thursday, June 11** there will be a variety and rootstock presentation at the CSU, Chico Farm (large conference room next to the new farm shop). After the presentation interested folks can head out with me to brave the heat and look at test varieties planted on the farm. If you can't make that event, we will have a field-only event at **9 AM on Thursday, June 25**. Registration and further details on both events will be forthcoming at sacvalleyorchards.com/events/list.
- I am fielding lots of questions about [Yorizane \(Y116-161-99\)](#). I still don't know what to think about this variety. On the one hand, it had good yields in the [third generation Madera site](#), and [astounding second](#) and third leaf yields in the fourth generation Stanislaus site. Both sites were planted very tight (12' x 21' in Madera and 10' x 20' in Stanislaus), and on the very vigorous peach-almond hybrid rootstock Hansen 536. Conversely, at 18' x 22' on Krymsk 86, Yorizane only yielded an average of 2,000 pounds through nine harvests in Chico. In part its low yields were due to being shaded out in recent years by towering Nonpareil on either side. I am also concerned with what appears to be the variety's abbreviated spur longevity, with canopies quickly displaying extensive small dead wood in their interior.
- A new self-fertile variety, [Parpareil \(Y117-91-03\)](#) from USDA was released in summer 2025, and made available to nurseries for propagation later that fall. This variety was the highest yielding self-fertile variety in the generation three regional almond variety trials. The variety appears to have more inherent tree vigor compared to earlier self-fertile varieties released in California (comparable in size to Nonpareil). It had very few quality defects, although it has a slightly smaller kernel compared to Nonpareil, the [USDA believes](#) it could receive a Nonpareil classification. However, kernel classification is up to processors and is also subject to change over time (e.g. Independence). I currently consider this to be the most promising new variety in the third-generation trial. Learn more: [Fact sheet](#); call your nursery to inquire about availability.
- Booth is a large, high-yielding self-sterile variety with average kernel quality, excellent bloom overlap and good harvest separation with Nonpareil (mid-harvesting). Its Achilles heel is very high doubles in some years (e.g. 19, 22, and 30%), which would result in a reduced price from some processors. Despite the risk of high doubles, this is the self-sterile variety coming out of the third-generation variety trials with the strongest case to land a spot as a nonpareil pollinizer.
- Of the 30 initial varieties in the latest generation four variety trials in Butte County, five have already been dropped from consideration (Figure 1). Identifying poor performing varieties before they are planted in growers' fields is arguably the most important mission in almond variety evaluation. Five varieties (B3, B6, Pyrenees, Lassen, and P10.023) are being dropped from consideration because of environmental bud failure (B3, B6), or low vigor and symptoms of compatibility problems with the Krymsk 86 rootstock (Pyrenees, Lassen, P10.023).
- In December – the EU made [movement towards de-regulating](#) crops made through CRISPR technology (i.e. the new self-fertile Nonpareil releases from Sierra Gold and Burchell). If this ruling is finalized, almonds from these trees could be sold in the EU without special labeling. Stay tuned for confirmation.
- Many orchards with Independence or Shasta on Krymsk 86 have been removed in the Sacramento Valley. If you're still farming one of these combinations, please reach out, I'm eager to learn what you're doing and seeing.
- Growers in Australia are also suffering from leafing failure with many of their Monterey almond trees. A group of Australian growers visited with northern Sacramento farmers in early March, establishing several similarities between what is being seen in California and Australia. A solution to the problem remains elusive, as does the question of whether it's possible to rehabilitate badly affected trees. However, growers in both countries agree that careful irrigation management (avoiding excess and drought) is likely helpful.
- If you're a big almond variety nerd like me, you won't want to miss the Almond Board's [Crack Out Event on Wednesday June 17 at Merced College](#).

The Bottom Line:

Although there's plenty of exciting varieties in the spring of 2026, your next planting should not be based on current hype. Instead, make a cold, calculated, and informed decision after consulting numerous resources, including your processor.

There's nothing more I like to talk about than almond varieties and rootstocks, if you would like to chat or arrange a private tour of the regional almond variety trials at the CSU, Chico Farm, give me a call at: **(530) 828-9666**.

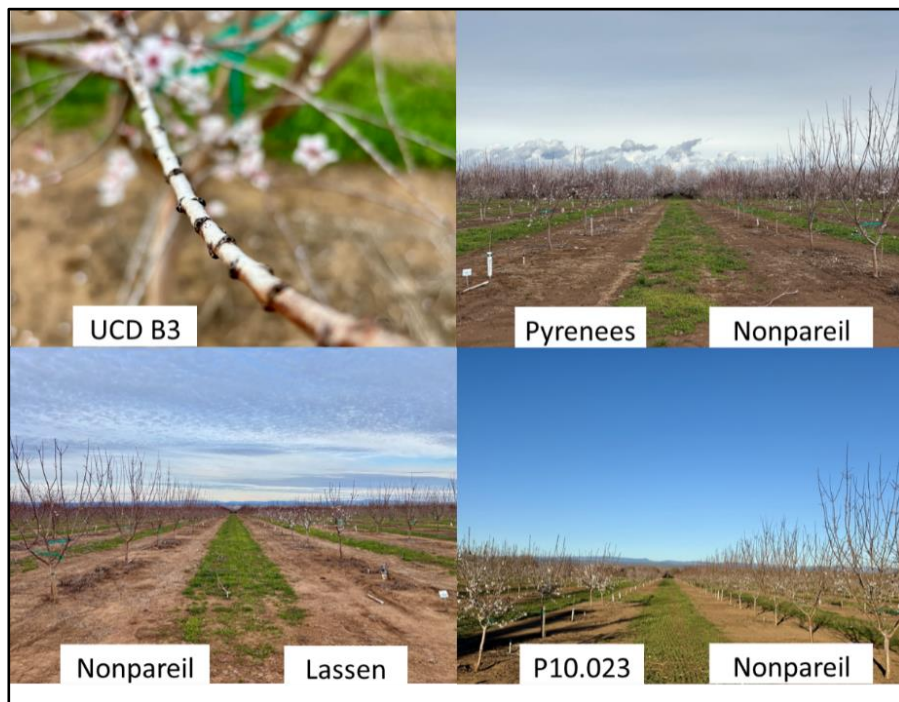


Figure 1. Identifying poor performing varieties before they are planted in growers fields is the most important mission in almond variety evaluation. These four varieties (B3, Pyrenees, Lassen, and P10.023) were the first to be removed from the regional variety trial in Butte County (2025) because of environmental bud failure (B3), or poor vigor and symptoms of compatibility problems with the Krymsk 86 rootstock (Pyrenees, Lassen, P10.023).



Aerial Phytophthora (Phytophthora pruning wound canker) in 2026

Jaime Ott, UCCE Tehama, Shasta, Glenn, and Butte Counties

Given our heavy periods of rain this winter, we might see some aerial Phytophthora cankers this spring. Keep an eye out for gumming around pruning wounds, and for shoot dieback leading to gumming in larger branches. However, our March temperatures have been very warm, which kills the pathogen. At this point, treatment for aerial Phytophthora is likely to be unnecessary—any damage is already done, and the pathogen is likely already dead.

The Bottom Line:

- Aerial Phytophthora (caused by *Phytophthora syringae*) is a sporadic problem, frequently occurring years with extended heavy rain in winter.
- While this disease can lead to shoot/branch dieback, it does not generally lead to tree death.
- The pathogen does not tolerate heat, and dies out in tissue as temperatures climb above 80°F.
- Based on the hot weather this spring we might see residual damage from *P. syringae* infections over the winter, but treatment is likely unnecessary.

The Details:

Aerial Phytophthora, also known as Phytophthora pruning wound canker, is caused by *Phytophthora syringae*. As the name suggests, this disease is generally associated with pruning wounds and is characterized by amber-colored gumming near or below the pruning wound. In 2023, we also saw infections by *P. syringae* in small shoots, leading to shoot death and a gumming canker moving into larger branches (Figure 1). Infections happen during periods of heavy rainfall in the winter, and are most commonly seen in El Niño years, or in years with major atmospheric rivers. Cankers grow rapidly, and this growth is favored by cool temperatures: *P. syringae* grows best at 59-68°F, and growth stops at 73°F. The pathogen dies in tissue above 80°F. Unlike other Phytophthora infections, aerial Phytophthora is rarely fatal. This disease causes dieback of affected shoots and branches, but since the pathogen dies in late spring/summer heat these infections rarely progress far enough to kill a mature tree. Infections can be very damaging or fatal in young trees.

Integrated management for aerial Phytophthora includes using both chemical and cultural controls. Pruning wounds are susceptible to *P. syringae* infection for 4 weeks, so in many cases this disease can be avoided by pruning after harvest in the early fall or during dry weather in late winter and early spring. If infection occurs, phosphonate products (e.g. Kphite®7LP, Fungi-Phite®) can be used in either a foliar application or a chemigation.

Mefenoxam (Ridomil

Gold® SL) is effective when applied by chemigation. However, oxathiapiprolin (Orondis®) is not effective, as it is applied by chemigation and does not move far enough in the tree to reach the branches. If you choose to apply a product by chemigation, try to time your application to coincide with the spring root flush (mid-March through mid-May).

This year our periods of heavy winter rain would have contributed to infection by *P. syringae*, but the hot weather over the last few weeks has likely stopped any infections in their tracks. While we may see gumming and damage from winter *P. syringae* infections as the trees push new growth, it is unlikely that treatment will be helpful—the *P. syringae* in the tissue has died off due to the heat, and the cankers will not be expanding. What damage will be done has already happened.

For more detailed information on aerial Phytophthora, check out the article [Wet years can lead to aerial Phytophthora outbreaks in almond orchards](http://www.sacvalleyorchards.com) at www.sacvalleyorchards.com.



Image 1 caption: Symptoms of aerial Phytophthora initiated in small shoots. Left: Dead (upper arrow) or flagging (lower arrow) shoots visible in the canopy. Right: close-up of a branch showing amber-colored gumming. The bark is partly peeled away to show the *Phytophthora syringae* canker underneath.



Navel Orangeworm Management, 2026

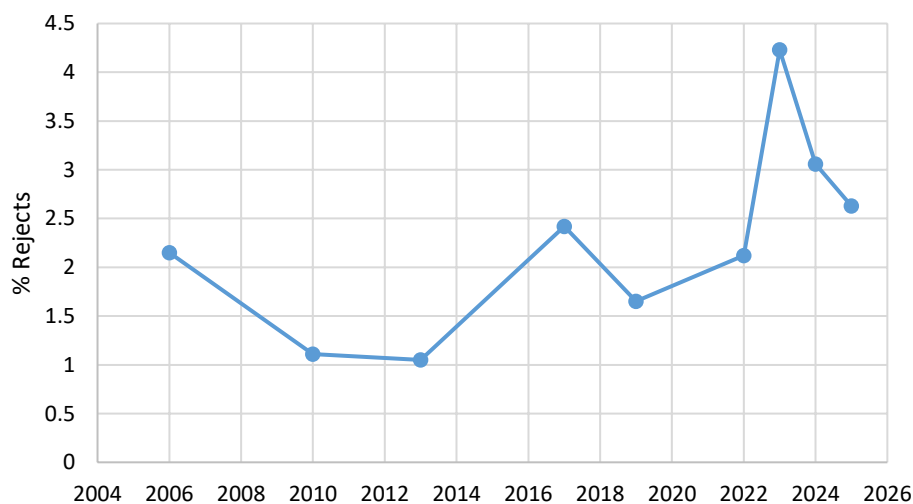
*Franz Niederholzer, UCCE Orchard Systems Advisor, Colusa and Sutter/Yuba Counties
Sudan Gyawaly, UC IPM Advisor, Sacramento Valley*

High reject levels continue to collectively cost California almond growers hundreds of millions of dollars a year in lost crop and quality incentives. The last three years have seen the highest damage levels in more than 20 years (see graph). Kernel damage from navel orangeworm (NOW) feeding is a major portion of reject numbers. Unfortunately, the current strategy to reduce rejects from NOW damage is to spend \$500+/acre in NOW control practices to avoid the risk of losing \$1000+/acre at harvest.

Reducing NOW damage can significantly improve grower returns. However, no single practice now available controls NOW. An effective NOW management program requires using several tactics including winter sanitation, mating disruption, insecticide sprays, and timely harvest. Growers must decide what combination of these practices fits their budget and reject tolerance. Late spring is a key time for two of these practices: mating disruption (MD) and insecticide sprays.

Mating disruption is a relatively new NOW management practice gaining traction in the Sacramento Valley. Season long dispensers, active aerosol or passive strips, should be up at biofix or ASAP, which was in late March for many local orchards. This practice is not a stand alone approach, but cut NOW damage in half in a UC trial in orchards (40 acre plots) with effective winter sanitation (<2 mummies per tree on Feb 1) plus 2 hull split sprays. At the Nickels Soil Lab in Arbuckle, regular NOW MD has generally reduced Nonpareil damage but not lowered pollinizer rejects, except where immediate neighbors also use MD.

Insecticide sprays can generally cut NOW damage in half with good spray timing and coverage. The first hull split spray should be completed by 1% hull split. In vigorous orchards, slow sprayer speed (2 MPH) and high spray volumes (150-200 gallons per acre) delivers the best NOW control.



Percent reject level trends in California almond production, 2006 through 2025.
Data source: Almond Board of California’s Position Reports



NICKELS SOIL LAB ANNUAL FIELD DAY

Tuesday, May 19, 2026

6521 Green Bay Ave, Arbuckle, CA

PCA CE credit hours and CCA CE hours requested.

8:30 am — Registration

Coffee and Donuts provided by **Farm Credit Services of Colusa-Glenn, ACA**

Cycle I: 9:20-10:45 am

1) 13 years of yield comparison: Independence & Nonpareil/pollinizers

Franz Niederholzer, Orchards Advisor, UCCE Colusa and Sutter/Yuba Counties

2) Advances in table olive harvesting

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

3) Protecting young trees from herbicide-induced trunk injury: recent research

Ryan Hill, UCCE Agronomy and Weeds Advisor, Tehama, Glenn, and Shasta Counties

4) Updates on almond Red Leaf Blotch epidemiology and management

Renaud Travadon, Project Scientist, Department of Plant Pathology, UC Davis

Cycle II: 10:45 am -12:10 pm

5) Understanding orchard variability: Making the most per acre

Patrick Brown, Distinguished Professor, Plant Sciences Department, UC Davis

6) New advances in soil mapping

Dan Rooney, CEO LandScan, LLC

7) Leaf-footed plant bug monitoring tools

Sudan Gyawaly, UC IPM Advisor, Sacramento Valley

8) Walnut rootstock update and availability of test plants

Andreas Westphal, Professor, Nematology Department, UC Riverside

12:15 pm – **BBQ Tri-Tip Lunch** (Pierce H.S. FFA fundraiser) by reservation.

----- Luncheon Talk -----

TBA

Nickels Field Day Luncheon Reservation Form

All proceeds benefit Pierce High School FFA Program

Cost: \$20.00 per person

Make checks payable to: Pierce High School
Mail to: Cooperative Extension
 P.O. Box 180
 Colusa, CA 95932

Or, pay at the door (cash or check only)
*Reserve you lunch spot today by calling,
 530-458-0570. Thanks!*

Name:		
Address:		
City:	State:	Zip:
Email:		Phone:
Name(s) of Attendees(s):		
Total Amount Enclosed:		\$

Please call our office
 530-458-0570 to reserve your lunch
 spot by May 9nd.