

CAPCA ADVISER

FEBRUARY 2022 | VOL. XXV, NO. 1



California Association of
Pest Control Advisers

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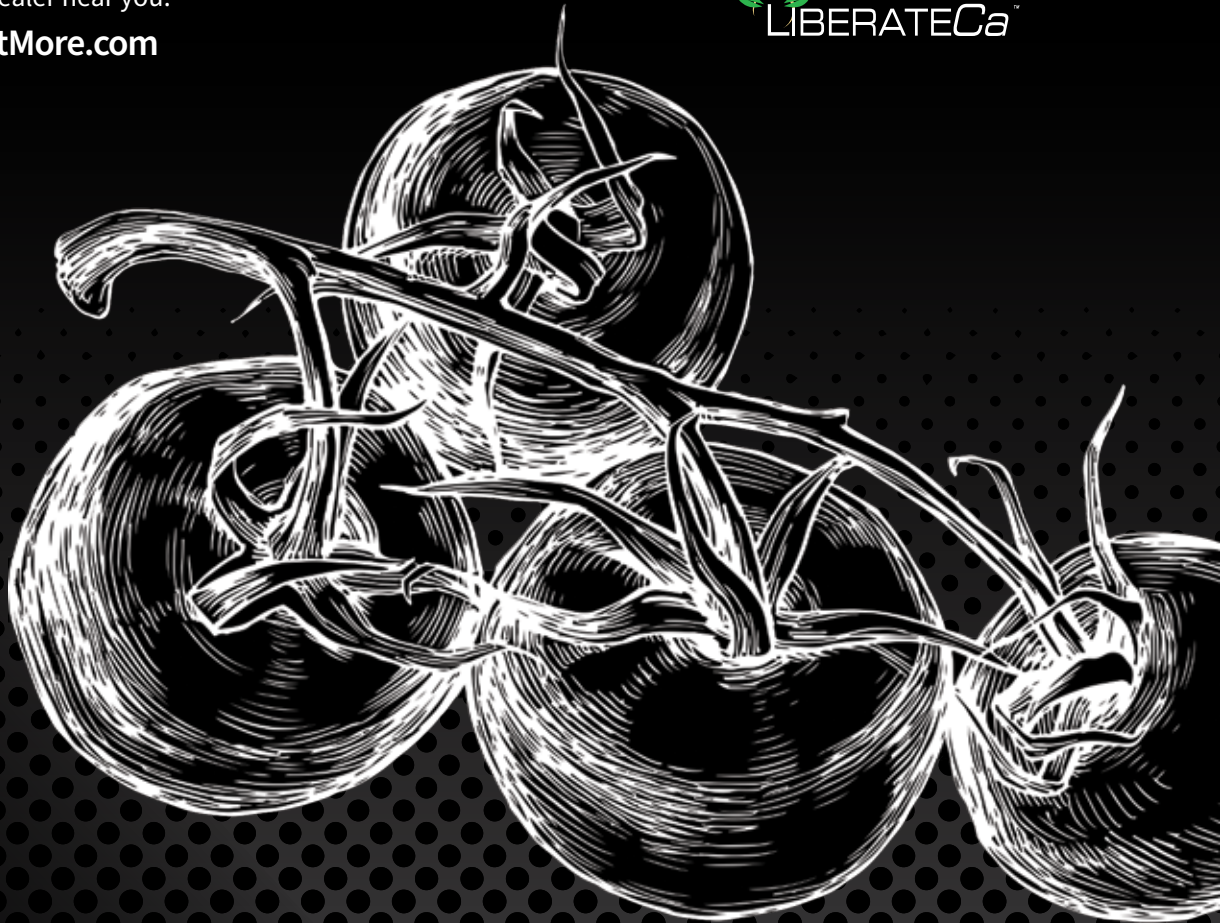
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CAPCA Photo Contest Winners!
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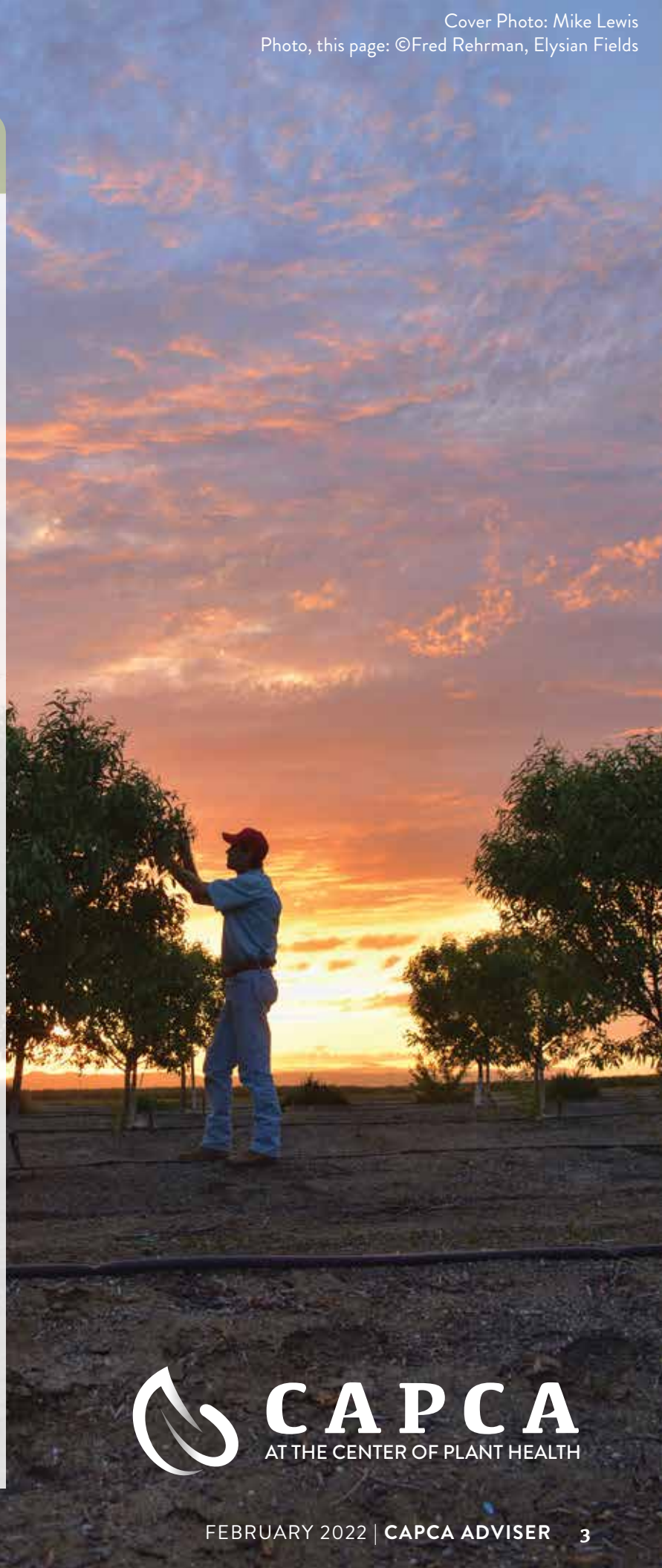
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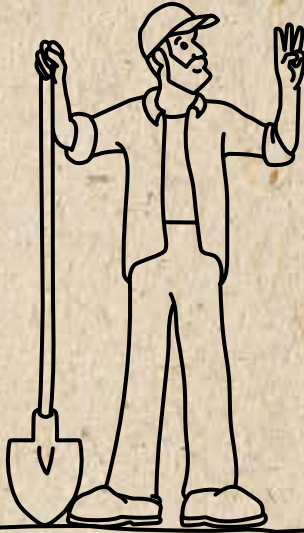
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2022 - PCA License Anniversary

This year marks the 50th anniversary of the PCA license, first introduced under the California Department of Food and Agriculture in 1972. The industry and license has evolved over the years, as licensing has been under the Department of Pesticide Regulation since the 1990's. The tools within the IPM toolbox have progressed and license numbers changed from five to six digits, but at the core, PCAs have always been focused on the applied practices of IPM in the field.

As an organization, CAPCA will be celebrating our 50th Annual Conference in 2024 with the same charge to develop and equip the voice of the PCA. As we look out on 2022, I highlighted some ways we continue to reinvest your membership dollars to support and expand the PCA license as the professional in the field. We look forward to sharing more with you over the next year as we celebrate this milestone:

- PCAs continue to be held up as the expert adviser for growers across California. Within the Chlorpyrifos Alternatives Workgroup findings were recommendations on the need to expand the allowance of IPM CE education for PCA in order to support their role in ushering in new techniques and innovation. Although we have had ongoing talks with state agencies about the necessity of IPM in CE for PCAs, we are optimistic new outcomes are on the horizon as a coalition of support now exists beyond just CAPCA.
- Along with supporting local Chapter CE, CAPCA provides quality in person CE programming through Spring Summit and CAPCA Annual Conferences. While we are looking forward to re-engaging in in-person CE in 2022, we will continue to prioritize on-demand CE options to obtain DPR CE Hours.
- As a key piece of your CAPCA Membership, PCAs receive CE tracking support for streamlined license renewal – an official certificate. Starting in 2020 you could access your hours report directly from your member log in on capca.com making checking your hours and renewing your license one step easier.

The licensing survey members participated in this past fall gave us great insight as we embark on discussions with DPR to enhance the efficiency of licensing renewal without impacting the value of each individual license. The professionalism of your license and renewal is a substantial building block and first line of defense to the safe use of pest control materials in California. We envision any changes only enhancing the past 50-year legacy of the license while ushering in a new era of renewals.

Ruthann Anderson, Editor
ruthann@capca.com

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MISSION & PURPOSE

California Association of Pest Control Advisers (CAPCA) is a non-profit voluntary mutual benefit association that represents 75% of the 4,000 California EPA licensed pest control advisers. CAPCA's purpose is to serve as the leader in the evolution of the pest management industry through the communication of reliable information.

CAPCA is dedicated to the professional development and enhancement of our members' education and stewardship which includes legislative, regulatory, continuing education and public outreach activities.

PUBLISHING INFORMATION

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Who Packs Your Parachute?

by Patrick Dosier, with contribution from Debbie Flanagan

In case you have never heard the story - Captain Charlie Plumb was a US Navy fighter pilot in Vietnam. On his 75th combat mission, he was shot down and parachuted into enemy territory. He was captured and spent the next six years as a prisoner of war in North Vietnam. He is now a motivational speaker, sharing the lessons he learned from his experience.

One of Capt. Plumb's lessons revolves around the day, after he had safely returned to the US, when he and his wife were dining in a small cafe in rural Iowa. A stranger approached and said, "You're Captain Plumb! You're that guy - you flew jetfighters in Vietnam... You were shot down and spent six years as a prisoner of war." Capt. Plumb was dumbfounded and replied, "How in the world did you know all that?" The stranger smiled, "Because I packed your parachute." The two men shook hands and the stranger continued: "I guess it worked!" Plumb replied, "Indeed it did my friend, and I must say I have said a lot of prayers of thanks for your nimble fingers. But I had no idea I'd ever have the opportunity to express my gratitude in person."

In his motivational speeches, Capt. Plumb goes on to reflect on how, when he was a pilot, he never took note of the sailors on the ship - each one conducting a task essential to the mission. Many of these tasks were not glamorous or noteworthy. Plumb goes on to discuss how we all have parachutes to pack for others: our customers, our family, our employees, and our community. He also suggests that one should take notice of those who pack their parachute, and to express gratitude to these people.

In agriculture, we understand we are blessed by the bounty farmers provide. The variety, safety, and cost of food today is something that would have been unimaginable a few generations ago.

Recently, we have all become acutely aware of who packs our parachutes; we are reliant on complex, fragile, and global supply chains. Many crops are dependent on the back-breaking dedication of migrant workers. Just like food doesn't appear on shelves by magic, inputs and laborers don't arrive on farms without the dedication of many of you.

I assume most CAPCA members are focused on the input side of farming. It's interesting to reflect on parachute packing from a bidirectional aspect: farmers depend on us, as we depend on them. And we both depend on the downstream supply chain to process, pack, ship and sell food to society. Without the marketing side of the equation, we would all be drowning in a mountain of spoiling food!

Now, I'm just as likely as anyone to use the phrase, "Thank a farmer," however, let's not be so myopic and self-serving to think agriculture is the only group serving society daily. Our parachutes are packed by law enforcement, transit workers, teachers, janitors, medical workers, clergy members, utility workers, software engineers, the military... This list gets extremely long as one begins to reflect on it.

Who packs CAPCA's parachute?

This organization's members are backed by the chapters' activities. Plain and simple. Chapters develop relevant, high-quality CE events. Chapters organize entertaining fundraisers which serve three purposes: they are fun, they are networking opportunities, and they fund scholarships and political contributions. Chapters are the first to identify emerging pest and regulatory issues. Chapter members conduct our most impactful advocacy when they engage within a legislator's home district. It's powerful.

The *Chapters Take the Lead* initiative is aimed at recognizing those chapters which are already dedicated parachute-packers. You deserve our recognition. It is also an opportunity for less active chapters to understand which activities deliver Member value and for you to receive support from CAPCA's State Office to get the ball rolling.

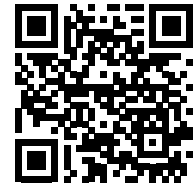
Bottom line: This organization and its members depend on the hard work of chapter leadership and active members who volunteer their time. These PCAs take the lead and look out for what is best for our profession. If you count yourself as one of these members, I am personally very grateful for your contribution and service. Thank you. ■

See Captain Plumb speak to an Ag audience:
https://youtu.be/c_ECWaz-CwY



Annual CAPCA Conference & Agri-Expo

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Reshuffling the Deck

How the 2022 redistricting process impacts political boundaries across the State

Joshua C. Walters

Redistricting Wraps

Every 10 years the nation's political landscape undergoes tectonic shifts in a ritual known as redistricting. This is the process by which political district boundaries at every level of government, from school boards and city councils to the State Legislature and Congress, are redrawn to account for population and demographic shifts that only become apparent after new census data is released by the federal government.

Historically, the process of redrawing state and federal lines had been the purview of lawmakers (and political data nerds) behind closed doors, who could draw boundaries to maximize political advantages and protect incumbent lawmakers by allowing them to choose their own voters. In many states, that is still the case. However, a growing number of states, including California, have moved towards using independent redistricting commissions to draw lines that are – at least on paper – intended to produce fairer maps free from partisan influence.

The California Citizens Redistricting Commission (the “Commission”), created in 2008 through California's initiative process, is comprised of 14 members: five Democrats, five Republicans, and four voters unaffiliated with either major party. For final maps to be approved, at least three commissioners from each category must vote “yes.”

Commissioners hailed from throughout the state, from as far North as Petaluma to as far south as San Diego. Notably, not all regions of California were well represented. With regards to the Central Valley, the only representation on the commission came from the northern cities of Stockton and Tracy.

On December 20, 2021, the Commission unanimously approved new lines for the State Assembly, State Senate, Board of Equalization and Congress. Those lines were certified to the Secretary of State a week later and are now the basis by which incumbents and prospective candidates are deciding whether and where to run. These lines will be used starting in the June 2022 election through the November 2030 election.

Protecting Minority Voting Rights as the Priority of the 2021 Commission

The Commission is supposed to adhere to six ranked criteria laid out in California's constitution when drawing new lines. While I won't go through each criteria here, the one that proved to be most influential in the 2021 process was the Federal Voting Rights Act (VRA), which is second only to population in terms of what the Commission must prioritize. Given that equalizing population among the districts is the entire reason for the redistricting process, this tells us the Voting Rights Act is, legally, a very high priority.

Essentially, the Federal Voting Rights Act requires that, where there is a history of racially polarized voting, districts be drawn to protect minority voters' ability to elect candidates of their choice. So, if a minority community can comprise more than 50 percent of a district, and there is a history of other voters voting against that minority's preferred candidates, then the Commission must draw a district which allows the protected minority to elect candidates of their choice. In the redistricting world, we call this a VRA district.

Ironically, this Commission, which prided itself on transparency and accessibility, never made public the legal analysis for why they decided to draw so many VRA districts. Meaning it was impossible for the public to challenge the basis by which they made critical decisions that had statewide impact. But it's clear they drew many more VRA districts than existed after the 2011 redistricting process (which was also conducted by a Commission under the same legal framework).

There are now 16/52 congressional, 22/80 Assembly, and 11/40 State Senate districts with over 50 percent Latino citizen voting age population. There are also two Assembly districts with over 50 percent Asian voting age population. Comparatively, the 2010 Commission adopted final maps with five Latino VRA seats in the Assembly, and one each in the Senate and Congress. The numbers speak for themselves. This has been a huge shift.

How this Commission was Influenced

The 2021 redistricting process was likely the most transparent

in history, with every meeting streamed online for anyone to see and over 250 hours of recordings posted on the Commission's website to be preserved for all time. But this sunshine was no deterrent for the myriad of organizations, politicians, and political operatives attempting to influence the commission. Through organizing countless hours of public testimony and submitting dozens, if not hundreds of their own maps, groups sought – and were often successful – to see their preferred lines adopted as part of the final maps.

In fact, at times the Commission even loaded maps drawn by various interest groups into their own mapping software, so they could compare them against their own maps before making their final decisions. This certainly surprised many observers of this process as it was viewed as overt recognition by the Commission of the potential influence of these interest groups.

Additionally, the composition of the Commission may have had a substantial impact on where interest groups were most successful in influencing the process. While there were several commissioners from places like Los Angeles and the Bay Area, who were highly familiar with the cities and communities there, there were none from the heart of the Central Valley, from Fresno to Bakersfield. This meant that Commissioners from LA and the Bay Area were evaluating outside testimony and making decisions on how the communities in the Central Valley should be drawn into a district.

Unintended Consequences

Although Republicans led the effort to wrest redistricting powers away from the Democratically controlled Legislature in 2010, it is Democrats who seem to have benefited most since the independent Commission took the reins. As I have written previously, the Republican delegation in Sacramento shrank from 43/120 legislators in 2010, before new lines drawn by the 2011 Commission went into effect, to 29/120 today, now representing less than 25% of total members.

Looking ahead to the next redistricting cycle, in 2031, the importance of having adequate representation on the Commission cannot be overstated. If you are interested in serving and having the opportunity to protect your community from perceived gerrymandering or strange couplings of communities, then get involved, your state needs you. Don't worry, I'll start to remind everyone about this need when we get to 2030!

Back to the more immediate future. In 2022 we will see the first elections under the new lines and their impact on the actual composition of lawmakers in Sacramento and DC will begin to be made clear. No one can know exactly how the votes will shake out, especially going into a mid-term year, when Republicans generally perform well, and with the national mood where it currently stands. The key, as always, will be voter turnout. I will share predictions and insights on voter turnout in the coming months. ■



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A scholarship opportunity is available for students interested in careers in the pest management industry. The scholarship is sponsored by the California Association of Pest Control Advisers (CAPCA) and is administered by the Stanley W. Strew Educational Fund, Inc.

The CAPCA Scholarship will provide \$3,000 to a selected college student actively engaged in a PCA career pathway. The scholarship recipient will be selected by the SWS Board of Directors.

Applications are available for students who are currently attending college in an agricultural/horticultural related field or who are entering or returning to college in an agricultural/horticultural related field in the fall and will have a junior level status.

Nominees should submit a completed application form and copies of their transcripts. **Applications must be postmarked no later than May 6, 2022** and submitted with required letters of recommendation so that the committee can make final selections. The student selected will be notified in July.

For application information please contact CAPCA at (916) 928-1625 or email scholarship@capca.com

<https://capca.com/scholarships-awards/>



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¹California Department of Food and Agriculture 2015 Specialty Crop Block Grant Program Project Abstracts, 2015.
²BCS Internal Demo Trials: Fresno, California, 2017. ³BCS Internal Demo Trials (13 total): San Joaquin Valley, California, 2016-2018.
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Meet SoCal Chapter's Krystal Jenkins

CAPCA Staff

Krystal Jenkins graduated from Cal Poly, San Luis Obispo with a Bachelor of Science degree in Agribusiness Marketing in 2004. She obtained her PCA license in 2016, and also holds a QAL. She consults primarily in Turfgrass and Ornamental Plants.

She began her career after college in the avocado industry in southern California with Sierra Pacific Farms in a marketing role, then the recession and life led her to Yuma, Arizona where she got back into agriculture as a Regulatory Manager for Gowan Co. Building on her experience, she transitioned to the same role with Amvac Chemical Co. relocating back home to southern California. Eventually Krystal went into a field role as a Sales Representative for Target Specialty Products; there she finally had the opportunity to get her PCA license.

Asked when she knew she wanted to become a PCA, Krystal explains, "I wanted to become a PCA in college after an internship with Leo McGuire. However, since I was putting myself through college and the PCA path would have meant

an additional quarter of school, I put it on hold. Joke was on me though, since years later, needing a PCA license for the job I was in, I had to go back to school and take online and in-person classes to sit for the exam."

In 2017, Krystal began her current position with Corteva Agriscience as a Senior Territory Manager covering CA, NV and HI working to represent her company's turf and ornamental line of products. She works with distribution and end-user customers, as well as providing continuing education, field training and helping troubleshoot troublesome golf, landscape, municipal, sports turf and production nursery issues. She says, "I consider myself so blessed to have worked with some of the best people in this industry. This industry, to me, should be defined by the genuine people within it who still consider a handshake and a smile as their business card."

Relationships within the industry are an important part of why she loves her job: "I have had some amazing colleagues and mentors in this industry, most of whom I



L-R: Ben Hefty, Corteva Territory Manager; Krystal Jenkins; Paul Marquardt, Corteva Field Scientist

"I constantly tell people that I have my dream job and it is truly because of the people that I get to work with. While on social media it may seem that my dream job is best shown off while on a golf course in Hawaii, I am just as likely to brag about loving my job after getting to talk about weed control at a meeting at Hodel's in Bakersfield (... mostly because of their carrot cake! Amiright?)"

Krystal Jenkins and SoCal Chapter
State Director Edgar Tuna

consider some of my dearest friends. Being on lockdown from COVID is especially bad when the people you work with are your friends that you would choose to hang out with even if you didn't work together. In this small industry, the titles between colleagues, competitors, bosses, etc. can change quickly while the faces stay the same." Reflecting on those relationships and her experiences that have shaped where she is today, Krystal acknowledges "Being in a field sales role now, but having the unique experience of having a regulatory background, gives me a different skill set to be able to better partner with my customers in our highly regulated industry. I often make the joke that even if I spent 10 years writing pesticide labels and being able to SPELL a weed, doesn't mean I knew how to identify it in the field. I continue to learn every day from the "boots on the ground" that have more experience than I do and who are always willing to share the career capital they have."



One thing that she is proud of is the opportunity to help others: "Successfully killing weeds isn't the most glamorous of accomplishments so I would say that I am proud of the people that I have helped to either get involved in this industry or to be more successful in their role in this industry."

When talking about the value of her CAPCA membership, Krystal is totally honest about why she initially joined, "I decided to become a member of CAPCA for the same reason a lot of us do: to track those

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CEU hours. But then I discovered membership comes with a wealth of information, networking opportunities, and helpful relationships. I will always stay a member.” She currently serves as the SoCal Chapter President and says that she’s looking forward to a number of their plans for 2022. “One event, Edgar Tuna, our Chapter’s State Board Director, and I started is to partner with a local FFA chapter to take their education beyond the classroom. Instead of us presenting what we do as PCAs to their classroom, we are going to have a few students complete a field trial that we would normally do and report back to their fellow students what the job is like and what they learned. Having them go with us to a golf course and learn how to measure out an area, calculate a pesticide rate, calibrate equipment and then make a faux application will give them hands-on experience correlating various classroom learnings with real world applications. Additionally, agriculture in California is not just about production farming so we hope them seeing the various roles on a golf course may help to spark some interest in the turfgrass industry.”

Asked what involvement with CAPCA has to offer PCAs, Krystal says, “CAPCA is a wealth of information and resources to PCAs way beyond just CEU hours. The networking and relationships gained from local involvement will surely help any PCA in their day-to-day activities. We

are fortunate that we have two of our county ag commissions in regular attendance at our meetings so having an open discussion with them about their struggles helps to be able to have a deeper understanding of the many challenges in our industry at large as well as on a local scale.”

Krystal lives with boyfriend Ryan, daughter Annie (6) and son Mars (4). When she’s not working, Krystal enjoys horseback riding, hiking, and traveling. “Recently, we went to Alaska to see the northern lights and go dog sledding, only to have the kids complain on the way home, requesting that our next vacation be back to Hawaii!” ■



“It was no small feat to even be able to TAKE the test, despite passing it. Having a degree in business, albeit agriculture business, I was still tasked with taking a number of science classes in order to be able to sit for the PCA test. I was eight months pregnant with my son and drove two hours away once a week to take an IPM class at Mt Sac. I missed two weeks of classes to give birth, then went back while nursing an infant. Pro tip to the moms out there: If there’s a will, there’s a way! I can share many tips for managing being a working mom in our industry.”

PCA PHOTO CONTEST GRAND PRIZE WINNER

“Turnip,” by PCA Rachael Wilson



PCA PHOTO CONTEST WINNERS

First Prize: PCA Krista Tavares
Lacewing Love





Second Prize: PCA Kasey MacInnes
Harvest Clouds Over Spanish Springs Vineyard

Honorable Mention: PCA Nic Steeneken
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ABIGAIL SANCHEZ

Student Division

Grand Prize: "Three Big Helpers"

**AG STUDENT
PHOTO
CONTEST
WINNERS**

JALIE GRUNDT

Student Division

1st Place: "Working Llama"



CAPCA on



CAPCA is working hard to build out a robust social media platform to connect with members, and to bring them additional industry-focused content. For more, follow CAPCA on Social Media at the following:



Facebook - *@California Association of Pest Control Advisers (CAPCA)*



Instagram - *@capca_plant_health*



Twitter - *@CAPCA3*



LinkedIn - *@California Association of Pest Control Advisers (CAPCA)*



2022 CAPCA SPRING SUMMIT

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Spring

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Onsite registration for 2022 CAPCA Members only
Renew your CAPCA Membership: capca.com/membership/

For program, registration, rates and hotel accommodations:
capca.com/spring-summit/



PROGRAM

TUESDAY, FEBRUARY 1, 2022

1:00 pm - 5:00 pm | Label Update Hour & General Session

5:30 pm - 7:00 pm | Exhibitor Reception

WEDNESDAY, FEBRUARY 2, 2022

6:30 am - 8:00 am | Breakfast and Exhibit Hall

8:00 am - 12:00 pm | General Session

12:00 pm - 12:30 pm | Lunch Break

12:30 pm - 3:30 pm | Breakouts

- Product Profile Presentations

- Advocacy Presentation

3:30 pm | Program End

Summit

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CAPCA Members: Get involved in 2022

Crystelle Turlo, Chief Operations Director

The truth is that CAPCA is only as strong as its members' involvement in the Association.

CAPCA's mission is to facilitate the success of the licensed pest control adviser, and our purpose is to serve as the leader in the evolution of the pest management industry through the communication of reliable information. CAPCA supports and represents more than 2,800 licensed PCAs. To support its members, CAPCA maintains 16 local chapters throughout the State of California.

Many members see their membership in CAPCA as only a vehicle to track their continuing education hours. While hours tracking is a very valuable benefit, CAPCA offers other benefits that members may find even more valuable if they were utilized. One of the main benefits of CAPCA is to become an active volunteer of the Association and/or local Chapter.

Local Chapters provide in-person continuing education, communications, networking opportunities and are run by volunteers that are CAPCA members. The State office receives calls weekly from members that express concerns that their CAPCA Chapters are not active. We work hard to provide support to Chapters, but what they really need is you, the member to get involved. They need you to step up and bring your unique skill set to the meetings and perhaps

even become part of the Chapter leadership. If you see your Chapter not providing what you need as a CAPCA member, the odds are that you are not the only one. Reach out to your fellow PCAs and go to a Chapter meeting. If you are not sure when your Chapter is meeting or maybe they are not meeting often, let the State office know and we will be happy to support you in becoming an active Chapter member. Members really do develop and create Chapter success.

CAPCA also has a variety of committees that Active Members are encouraged to join to provide professional insight to the Association. Committees cover all aspects of CAPCA including Conference, Spring Summit, Finance and Advocacy. The State office receives many calls and some emails from members that are not always happy with a particular event or decision. While we recognize we can't please everyone, our committees try their very best to make decisions for the better good of the Association. Committees have generally low volunteer commitments, but provide you, the member, the opportunity to truly have a say in how CAPCA evolves and what it looks like in the future.

What we are asking of our membership for 2022 is to consider volunteering on a committee and/or at your local Chapter. To truly have an impact on the evolution of CAPCA and ensure success for future PCAs, it is essential that our members use their voice. ■



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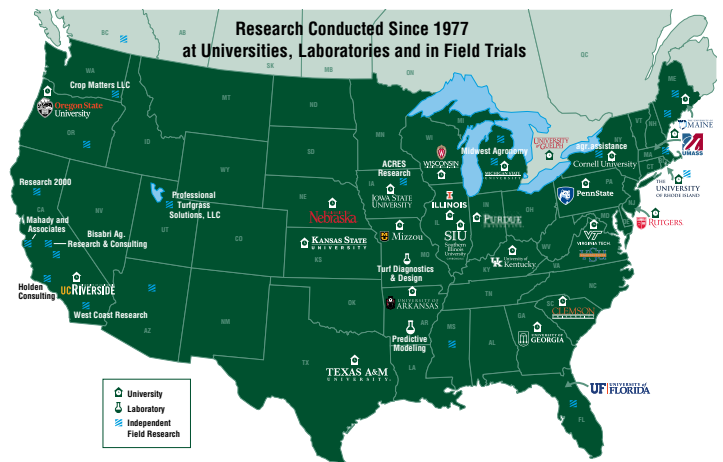
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BeeWhere - Bringing beekeepers and pesticide applicators together by tracking and safeguarding hive locations across California using innovative mapping tools

Ruben J Arroyo - County of Riverside Agricultural Commissioner Ruarroyo@rivco.org

Hopefully you have at least heard the term BeeWhere... both Ruthann Anderson and I have been doing a road show of sorts for the last four years speaking to a wide range of industry folk and regulators. Each year, we run into some speed bumps (complaints, comments, suggestions, etc.). We take notes, gather the wagons, and relay all the messages to the folks that make the computer magic happen, and “poof” we have change. It doesn’t happen overnight, but we do try to improve the program.

If you haven’t heard of BeeWhere here is the down and dirty. BeeWhere literally evolved out of a simple idea – to further facilitate communication between beekeepers and applicators by using modern technology to follow California law. Mrs. Anderson put together a coalition of stakeholders and County Agricultural Commissioners to create a model for beekeepers to easily register their hives and a system for applicators to conduct a bee check. The coalition, California Association of Pest Control Advisers (CAPCA), the California Department of Pesticide Regulation (CDPR), the California Department of Food and Agriculture (CDFA), and the California Agricultural Commissioners and Sealers Association (CACASA) all played a part in the finances and planning of the program.

THE PROGRAM

This system is simply broken down into two components - **Registration** and **Notification**. Both are based on a California law or regulation:

FAC DIV13 ART4 29042 – 29043: (Registration)

Every person who moves bees into the state or otherwise comes into possession of an apiary that is located within the state after the first day of January, shall register the name of the owner and the number and location of colonies moved into the state or so acquired within 30 days after coming into possession of the apiary. Registration of an apiary shall be filed with the commissioner of the county in which the apiary is located, or with the director if there is no commissioner in the county. The director shall adopt a form of registration to be used statewide, which shall include a request for

notification of use of pesticide in accordance with Section 29101. All commissioners shall use the same form.

3 CCR 6654 (a-b): (Notification)

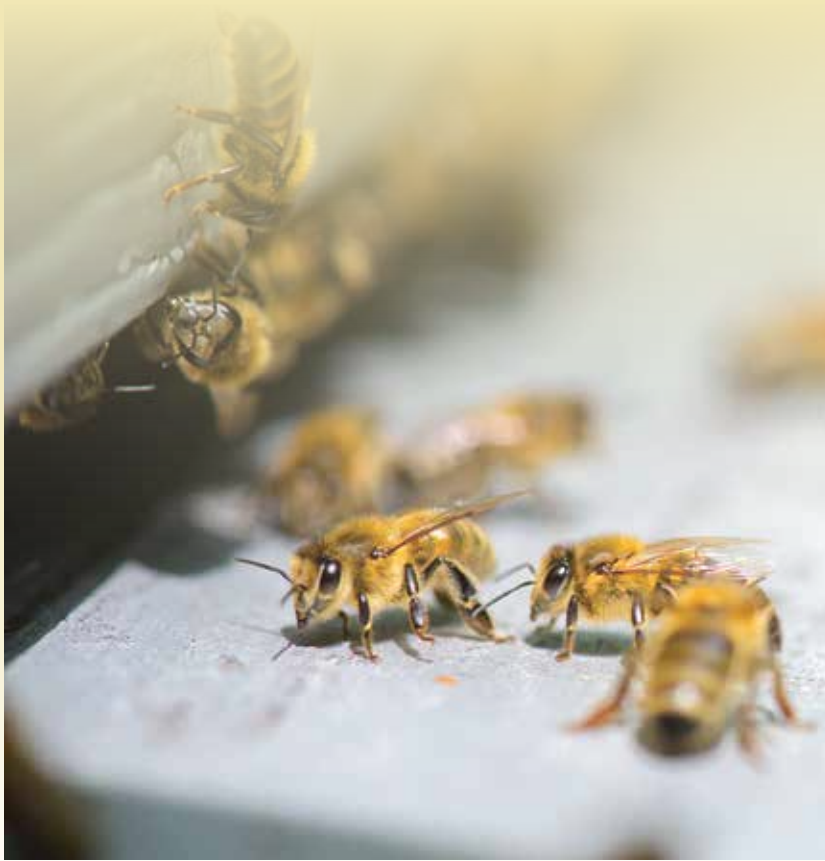
(a) Each person intending to apply any pesticide toxic to bees to a blossoming plant shall, prior to the application, inquire of the commissioner, or of a notification service designated by the commissioner, whether any beekeeper with apiaries within one mile of the application site has requested notice of such application.

(b) If the person performing pest control is advised of a request for notification, he or she shall notify the beekeeper, at least 48 hours in advance of the application, of the time and place the application is to be made, the crop and acreage to be treated, the method of application, the identity and dosage rate of the pesticide to be applied and how the person performing pest control may be contacted by the beekeeper. This time may be increased or decreased by the commissioner, or by an agreement of both the beekeeper and the person performing the pest control work.

The registration and mapping data is collected and used to help with the bee check (notification) for applicators. BeeWhere works in conjunction with the CalAgPermits system used by pesticide businesses, farmers, and Ag Commissioners when they plan to apply a pesticide during bloom that may be toxic to bees. BeeWhere alerts pesticide applicators if any beehives are located within one mile of a planned pesticide application and requires them to notify the beekeeper directly. All information on the location of beehives is confidential (by law) and available only to the applicators and the county Ag Commissioners. Not to muddy the waters, but there is a second system that the coalition funds to help in the registration arena called Fieldwatch.

There are other regulations that pertain to bees, and if you need more information or have some suggestions on the program, please stop in at your local Agricultural Commissioner or you can always send me an email.

Continued next page



2022 INNOVATIONS

- Grower/Applicator bee check reports now include apiary location maps.
- Pest Control Advisers can legally log in as the grower (with permission) to conduct a bee check on behalf of the grower.
- Law change under AB2468 granted commissioners civil penalty authority for violations under registration, branding and relocation of hives. Commissioners can now enforce those provisions.
- Planned addition of tabular interface as an alternative to the Map View for beekeepers with many apiaries.
- Planned addition of download/upload feature to allow beekeepers to submit updates in bulk using Excel and release of Bee Broker user role allowing a single user account to manage multiple beekeepers.

As the 2022 pollination season approaches, beekeepers from California and around the country will prepare to bring millions of beehives to California farms. Growers, Applicators, and Pest Control Advisers will be working in orchards and fields with bloom. Let us all work together to make this a stellar year of good communication through the BeeWhere program. ■





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Environmental Justice groups push CARB to regulate pesticides in State climate plan

Brad Hooker, Agri-Pulse

Pesticides help protect public health and safety in both conventional and organic farming, but you'd never know that by listening to some of the current dialogue from the environmental community.

Now, environmental advocates are framing conventional pesticide use in California as an environmental injustice that creates greenhouse gas (GHG) emissions in vulnerable communities.

They are encouraging the California Air Resources Board (CARB) to adopt protocols supporting organic farming practices in the next update to the AB 32 Climate Scoping Plan, which governs the state's climate policies.

"Just because we have a lot of regulation in place does not necessarily equate to robust health protections," said Angel Garcia, an organizing director for Californians for Pesticide Reform and member of CARB's Environmental Justice Advisory Committee, or EJAC, during a recent meeting for the committee. "It's very alarming when we start looking at who lives in these regions, and we start to see a disproportionate concentration."

Garcia's group fears synthetic pesticide use is likely to increase under a changing climate due to rising pest pressure and decreased pesticide efficacy. Under the current Scoping Plan, they argue, CARB is incentivizing more herbicide use, which disproportionately impacts low-income communities of color by adding more air pollution.

In the scoping plan, CARB identifies two pesticides that contribute to GHG emissions: methyl bromide and sulfuric fluoride. Californians for Pesticide Reform is pushing CARB to go further and enact measures addressing emissions from the two pesticides and to investigate more than a thousand other active ingredients. They are calling for a targeted focus on fumigants, which release volatile organic compound (VOC) emissions. Synthetic pesticides also inhibit the ability of soils to capture and store carbon, they argue.

The Pesticide Action Network of North America recommends CARB slash all conventional pesticide use in half over the next seven years and push 30% of all agriculture to be organic within the same timeline.

This echoes the desire of Jared Blumenfeld, secretary of the California Environmental Protection Agency, to see 75% of agriculture convert to organic by 2050. According to the agency, CalEPA has been "working to identify data gaps related to the pesticide-GHG nexus and identify additional research needs" in partnership with the California Department of Pesticide Regulation (DPR).

"The state recognizes pesticide use is a key public health issue," said CARB manager Carey Bylin. "But the impact of pesticide use from a climate impacts perspective is less clear."

Bylin noted that some policy recommendations related to pesticides could arise through ongoing efforts across agencies to develop climate strategies for natural and working lands.

The California Farm Bureau and other farm advocacy groups have been quick to push back on state officials and lawmakers seeking to prescribe certain farming practices in hopes of producing environmental benefits.

"The ag community engages in earnest on this," said California Farm Bureau policy advocate Taylor Roschen during the meeting. "The agricultural community wants to pursue collective action with the environmental justice community and academia to fill these data gaps to really guide growers to do the best for our industry and to better protect the public health."

Roschen encouraged EJAC to work with DPR and the California Department of Food and Agriculture to understand the current requirements for pesticide applications, including approvals for products and air quality considerations. She added that any recommendations

LOOK FOR THE MARK



for transitioning to organic, reducing pesticide use or implementing new management practices should be guided by additional and conclusive research.

Roschen has shared similar concerns about a topic likely to return to the Legislature this year, which is promoting on-farm carbon sequestration practices. A prominent and controversial carbon neutrality measure failed to gather enough votes to advance to the governor last year. Critics were uncomfortable with how much the bill would expand CARB's authority over natural and working lands.

Roschen pointed out in a hearing last fall that the state has been scaling up spending on incentives grants through initiatives like the Healthy Soils Program, which now includes an option for funding the transition to organic farming. After Gov. Gavin Newsom committed to preserving 30% of the state's land and coastal waters by 2030, known as a 30x30 goal, Roschen and other ag lobbyists emphasized that incentives are more effective than mandates and that farmers need consistent funding—rather than the “feast and famine approach” through annual appropriations—in order to establish long-term climate-smart practices, especially ones that do not improve yield or crop quality.

CARB extended the period for EJAC to provide initial recommendations to inform the Scoping Plan update. The board plans to consider a draft update in June. ■

The “**CE Hours Reported**” mark was created in an effort to help CAPCA members register for education with confidence that their completed CE hours will be reported and appear on their official print out in a timely manner. Your hours and timely renewal are important to CAPCA, you will start to see this mark appear for meetings whose sponsors have committed to report your attendance within 7 business days of the meeting/online CE completion. We hope this allows you to register with assurance that your Official Cert will include all your CE hours when you are ready to renew.

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Priority Placement for Conference Exhibit Booth***	6 th	5 th	4 th	3 rd	2 nd	1 st
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CAPCA Online CE Host or Collaboration Discount			\$250	\$500	\$500	\$750
Spring Summit Complimentary Registration***	1	1	1	1	2	2
Spring Summit Table-top Exhibitor Discount***	\$50	\$50	\$100	\$250	\$250	\$250

* October issue fills quickly, first come, first served

** October issue guaranteed if booked by March 31, 2022

*** Pending the availability of hosting in-person events in 2022. CAPCA reserves the right to limit benefits and/or adjust to online programming value due to unknown gathering and spacing restrictions.

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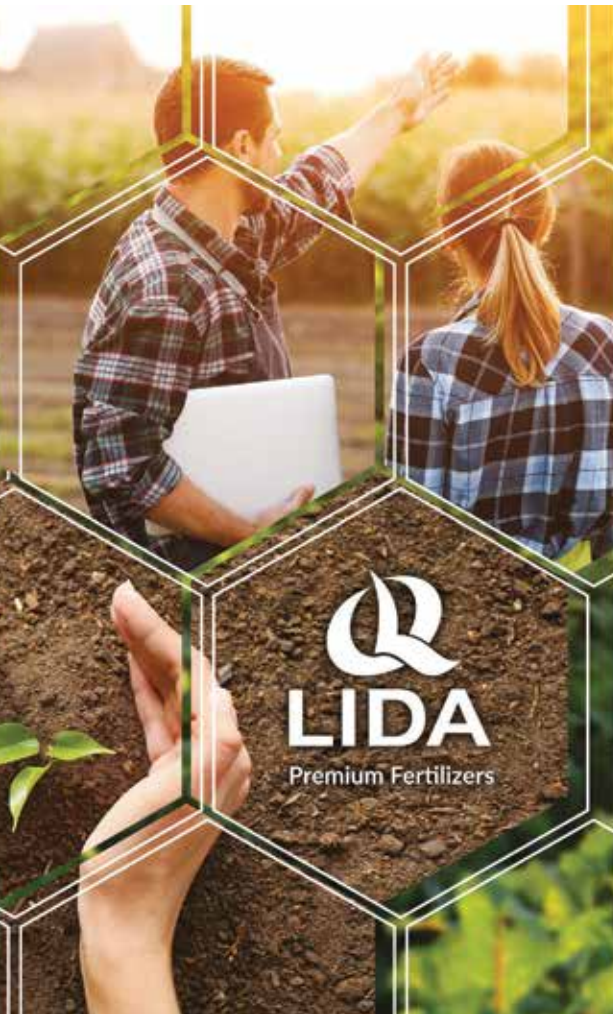
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Alfalfa weed control:

Exploring alternatives to paraquat in the intermountain region

Tom Getts, University of California Cooperative Extension, Lassen County

Introduction/Background

Weed control in alfalfa is an ongoing challenge for producers who are tasked with growing high-quality hay for the California dairy market. The price premium, high quality, high testing, weed free hay brings on the market makes it worth implementing adequate weed control measures and cutting at the appropriate time. In the Intermountain Region, first cutting alfalfa hay typically has the highest quality and is the most profitable for producers. Cold nights and cool days allow for the alfalfa to grow with a high leaf-to-stem ratio, resulting in better forage value. There is more lignin and fiber in the alfalfa stem, so the more leaves in the hay the better. Controlling both winter annual grasses and forbs are essential for clean hay in first cutting. Conventional hay production practices in established alfalfa utilize a dormant season application of a pre-emergent herbicide like hexazinone or metribuzin mixed with paraquat as a burn down partner to control emerged weeds. Paraquat controls emerged annual grasses and broadleaf weeds while the residual products prevent further weed germination.

Paraquat is a commonly used herbicide for alfalfa production in California. However, increasing regulations by both the state and U.S. Environmental Protection Agency (EPA) may limit the amount producers choose to utilize for their weed control operations. There has been a lot of paraquat used on alfalfa in California. During the 2000's there were approximately 250,000 acres per year being treated in California, and paraquat-metribuzin is a standard treatment for conventional producers up in the Intermountain Region.

Paraquat is a photo system one inhibiting herbicide that works by scavenging electrons during photosynthesis creating free radical oxygens, which in turn wreak havoc breaking apart cell membranes. It is a "contact" product that essentially disintegrates cells causing death of the plant. It also scavenges electrons during the respiration process that will also destroy human cells. It is a very acutely toxic pesticide and between 1998 and 2009 there were more than 1,400 cases of accidental paraquat poisonings in the U.S.

Recently the EPA has been changing regulations regarding paraquat to limit exposure and poisonings. Many changes came into effect during November of 2019 with label changes, supplemental warnings, and only allowing certified applicators who had taken paraquat specific training to use the product. Further regulations were implemented in July of 2021 limiting the number of acres aerial applicators could apply each day, prohibiting backpack applications, and requiring closed cabs for ground applications exceeding 80 acres. While not prohibiting use, all of these regulations may make smaller growers seek other options for weed control.

Over the past years we have implemented various herbicide trials in the Intermountain Region of California. We are evaluating crop safety and weed control efficacy for various herbicide tank mixes compared to paraquat. In addition, these trials contained some experimental residual products, and we compared their efficacy to metribuzin. As it is often wet in the late winter, it is not always possible to get in the fields with ground equipment. When aerial applications are not available, growers often push applications until after the crop has broken dormancy, which increases the likelihood of damage from the burndown products applied to an actively growing crop. We also tested applications as a delayed treatment in one of the trials.

Methods

Two trials were implemented, one in March of 2019 and one in March of 2020. Each trial was laid out in a randomized complete block design replicated four times with 10 by 20 ft. plots. Applications were made with a carbon dioxide pressured backpack sprayer using 11002 flat fan nozzles at 20 gal./acre. Crop injury and weed control were assessed 1, 2, and 4 weeks after treatment as well as before harvest. The 2019 trial consisted of 16 herbicide treatments and an untreated check all applied at dormancy. In 2020, a 15-treatment trial was implemented at a different field site with the same methodology. However, the 2020 trial had an additional treatment timing after the crop had broken dormancy in April of 2020. Crop injury and weed control assessments were conducted 1 and 2 weeks after each application timing and then again before harvest.

University Research Confirms CheckMate® CRS Mating Disruption Reduces Pest Damage

Leading University experts recently published results from research conducted from 2015 to 2019 in commercial citrus orchards in central California (Grafton-Cardwell et al. 2021). Through these studies, the researchers demonstrated that CheckMate® CRS can be extremely effective at reducing California Red Scale (CRS) pest populations and damage.

The research concluded with several key findings demonstrating how truly effective mating disruption can be at reducing the impact of CRS:



Mating disruption using CheckMate® CRS was effective in reducing California Red Scale populations in every generation and can potentially reduce or even eliminate pesticide applications altogether, depending on pest density.

Significant trap suppression, population and damage reductions were observed in blocks treated with CheckMate® CRS dispensers.

In CheckMate® CRS treated blocks, cumulative male trap capture was reduced by an average of 90%, twig and leaf infestations by 95%, and highly scale-infested fruit by 75%.

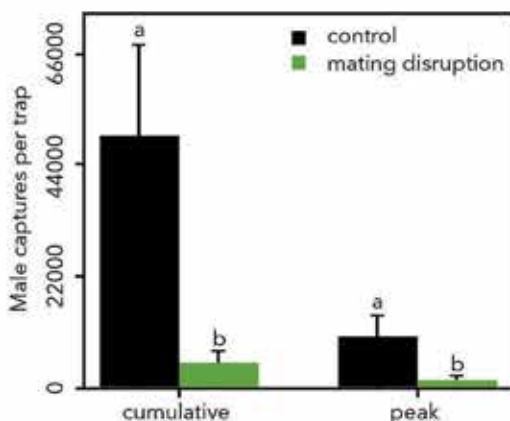
The percentage of highly infested fruit was less than 0.5% in 9 of the 10 mating disruption blocks in 2018 and 2019.

Keeping CRS populations under control is imperative for growers looking to produce high-quality, cosmetically appealing fruit. CRS affects the marketability of citrus fruit and can be difficult to manage with conventional pesticides alone. Growers and PCAs can't control certain factors that drive pest populations such as weather, but they can minimize CRS damage by using CheckMate® CRS.

CheckMate® CRS is Sutterra's season-long mating disruption dispenser solution for control of California red scale (CRS) in citrus and other crops where CRS is present. This product utilizes Sutterra's proprietary technology for continuous release throughout the season. Easy to deploy, the dispensers penetrate inside the canopy and are compatible with all integrated pest management (IPM) tools and are suitable for organic production.

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Mean (± SE) number of male scale caught on pheromone-baited traps, cumulative for entire season and during peak capture, at 10 sites in 2018 and 2019. Mating disruption that reduced trap capture by 90% or more (as shown), provided more than 95% reduction in highly infested scale fruit.

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2020 trial picture of industry standard metribuzin (0.5 lb a.i.) plus paraquat (0.5 lb a.i./acre) before harvest. Plot looks clean of weeds, and good control of both tumble mustard and cheatgrass was achieved. Credit: Tom Getts, UC Agriculture and Natural Resources



2020 trial picture of metribuzin (0.5 lb a.i.) plus saflufenacil (0.044 lb a.i./acre) before harvest. Tumble mustard was effectively controlled in this treatment, but unlike paraquat the cheatgrass escaped control contaminating the hay. Credit: Tom Getts, UC Agriculture and Natural Resources.



2020 trial untreated check before harvest. Cheatgrass, foxtails and tumble mustard are all left uncontrolled contaminating the hay where no herbicide applications were made. Credit: Tom Getts, UC Agriculture and Natural Resources.

Results

In 2019 there was significant crop injury from most of the burn down treatments tested with paraquat, carfentrazone, and saflufenacil 1 and 2 weeks after treatment (Table 1). The crop was able to grow out of this initial injury, and there were no visual crop injury differences between treatments before harvest. There were two weeds consistently growing throughout the plot, shepherd's purse and cheatgrass. Initial burndown of shepherd's purse 2 weeks after treatment was good in most of the treatments tested, giving better than 80% control (Table 2). Imazamox was one treatment that initially did not provide good burn down of either species. Eleven weeks after treatment carfentrazone and saflufenacil offered comparable control of shepherd's purse to paraquat when tank mixed with metribuzin. Cheatgrass control was much more inconsistent in the 2019 trial and good burndown of

Table 1. 2019 trial. Alfalfa percent injury 1, 2, 4 and 11 weeks (Wk) after application. VCX-3425 is an experimental residual herbicide. Letters indicate Tukey pairwise comparisons for statistical differences at 95% confidence (each timing analyzed separately). Data is colorized to help visualize the numbers: red indicates more injury, where green indicates a healthy crop. Herbicides listed in pounds of active ingredient per acre (lb a.i./acre).

2019 Trial: Alfalfa Percent Injury								
Treatment	Wk 1	Letter	Wk 2	Letter	Wk 4	Letter	Wk 11	Letter
metribuzin 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	83	ab	58	abcd	8	ab	0	a
metribuzin 0.5 lb a.i. + paraquat 0.5 lb a.i.	55	abc	45	bcde	10	ab	8	a
metribuzin 0.5 lb a.i. + saflufenacil 0.044 lb a.i.	86	ab	69	abc	13	ab	0	a
hexazinone 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	80	ab	59	abcd	11	ab	3	a
hexazinone 0.5 lb a.i. + paraquat 0.5 lb a.i.	56	abc	39	cde	10	ab	3	a
hexazinone 0.5 lb a.i. + saflufenacil 0.044 lb a.i.	75	ab	56	abcd	8	ab	0	a
carfentrazone 0.029 lb a.i. + clethodim 0.166 lb a.i.	80	ab	84	a	21	a	8	a
carfentrazone 0.029 lb a.i. + pendimethalin 1.9 lb a.i.	88	a	85	a	15	ab	0	a
carfentrazone 0.029 lb a.i. + clethodim 0.166 lb a.i. + pendimethalin 1.9 lb a.i.	88	a	74	abc	10	ab	0	a
saflufenacil 0.044 lb a.i. + clethodim 0.166 lb a.i.	84	ab	81	ab	13	ab	0	a
saflufenacil 0.044 lb a.i. + pendimethalin 1.9 lb a.i.	81	ab	79	ab	10	ab	0	a
saflufenacil 0.044 lb a.i. + clethodim 0.166 lb a.i. + pendimethalin 1.9 lb a.i.	89	a	75	abc	15	ab	5	a
imazamox 0.039 lb a.e. + pendimethalin 1.9 lb a.i.	29	cd	15	ef	10	ab	5	a
imazamox 0.039 lb a.e.	46	bc	26	def	6	ab	11	a
saflufenacil 0.044 lb a.i. + VCX-3425	91	a	84	a	13	ab	1	a
paraquat 0.5 lb a.i. + VCX-3425	78	ab	53	abcde	9	ab	0	a
Untreated	0	d	0	f	0	b	0	a



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2019 Trial: Percent Weed Control								
Treatment	Shepherd's Purse				Cheatgrass			
	Wk2	Letter	Wk 11	Letter	Wk2	Letter	Wk11	Letter
metribuzin 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	73.75	a	95	a	0	e	11	bc
metribuzin 0.5 lb a.i. + paraquat 0.5 lb a.i.	73.75	ab	88	abc	86	a	44	abc
metribuzin 0.5 lb a.i. + saflufenacil 0.044 lb a.i.	86.25	ab	95	a	5	de	0	c
hexazinone 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	88.75	ab	95	a	0	e	19	abc
hexazinone 0.5 lb a.i. + paraquat 0.5 lb a.i.	62.5	ab	73	abc	88	a	65	ab
hexazinone 0.5 lb a.i. + saflufenacil 0.044 lb a.i.	86.25	ab	95	a	3	de	0	c
carfentrazone 0.029 lb a.i. + clethodim 0.166 lb a.i.	80	ab	40	bcd	38	abcde	76	a
carfentrazone 0.029 lb a.i. + pendimethalin 1.9 lb a.i.	86.25	ab	66	abc	8	de	0	c
carfentrazone 0.029 lb a.i. + clethodim 0.166 lb a.i. + pendimethalin 1.9 lb a.i.	88.75	abd	88	abc	48	abcde	55	abc
saflufenacil 0.044 lb a.i. + clethodim 0.166 lb a.i.	80	abc	49	abc	55	abcd	68	ab
saflufenacil 0.044 lb a.i. + pendimethalin 1.9 lb a.i.	87.5	abc	90	abc	13	cde	0	c
saflufenacil 0.044 lb a.i. + clethodim 0.166 lb a.i. + pendimethalin 1.9 lb a.i.	91.25	abc	73	abc	61	abc	66	ab
imazamox 0.039 lb a.e. + pendimethalin 1.9 lb a.i.	26.25	bc	94	ab	5	de	19	abc
imazamox 0.039 lb a.e.	27.5	c	84	abc	22	bcde	39	abc
saflufenacil 0.044 lb a.i. + VCX-3425	87.5	de	84	abc	23	bcde	9	bc
paraquat 0.5 lb a.i. + VCX-3425	58.75	de	36	cd	69	ab	40	abc
Untreated	0	e	0	d	0	e	0	c

Table 2. 2019 trial weed control of shepherd's purse and cheatgrass 2 weeks (Wk) after application and 11 weeks after application (before harvest). VCX-3425 is an experimental residual herbicide. Letters indicate Tukey pairwise comparisons for statistical differences at 95% confidence (each timing analyzed separately). Data is colored to help visualize the numbers: red indicates less control, where green indicates good control. Herbicides listed in pounds of active ingredient per acre (lb a.i./acre).

2020 Alfalfa Crop Percent Injury Rating										
Treatment	1 wk		2 wk		2 inch 1 wk after		2 inch 2 wk after		Before Cutting	
Control	0	b	0	b	0	b	0	c	3.33	a
metribuzin 0.5 lb a.i.	0	b	12.5	ab	0	b	0	c	2.5	a
CNV2243	0	b	12.5	ab	0	b	0	c	5	a
metribuzin 0.5 lb a.i. + paraquat 0.5 lb a.i.	50	ab	10	ab	0	b	0	c	2.5	a
metribuzin 0.5 lb a.i. + saflufenacil 0.044 lb a.i.	45	ab	12.5	ab	0	b	0	c	2.5	a
metribuzin 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	46.7	ab	7.5	ab	0	b	0	c	0	a
CNV2243 + paraquat 0.5 lb a.i.	32.5	ab	13.8	ab	2.5	b	0	c	0	a
CNV2243 + saflufenacil 0.044 lb a.i.	42.5	ab	20	a	0	b	0	c	5	a
CNV2243 + saflufenacil 0.044 lb a.i. + clethodim 0.166 lb a.i.	65	a	10	ab	17.5	b	0	c	13.8	a
CNV2243 + carfentrazone 0.029 lb a.i.	37.5	ab	10	ab	0	b	0	c	0	a
2 in metribuzin 0.5 lb a.i. + paraquat 0.5 lb a.i.	12.5	b	0	b	67.5	a	25	b	2.5	a
2 in metribuzin 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	0	b	0	b	82.5	a	37.5	ab	2.5	a
2 in CNV2243 + paraquat 0.5 lb a.i.	0	b	0	b	71.3	a	32.5	ab	2.5	a
2 in CNV2243 + carfentrazone 0.029 lb a.i.	0	b	0	b	82.5	a	47.5	ab	25	a
2 in CNV2243 + carfentrazone 0.029 lb a.i. + clethodim 0.166 lb a.i.	0	b	0	b	82.5	a	55	a	3.75	a

Table 3. 2020 trial. Alfalfa percent injury 1 and 2 weeks (wk) after dormant application, 1 and 2 weeks after the 2-inch application (2 in), and before cutting. CNV2243 is an experimental residual herbicide. Letters indicate Tukey pairwise comparisons for statistical differences at 95% confidence (each timing analyzed separately). Data is colored to help visualize the numbers: red indicates more injury, where green indicates a healthy crop. Herbicides listed in pounds of active ingredient per acre (lb a.i./acre).

2020 Trial: Percent Weed Control Before Harvest						
Treatment	Tumble Mustard		Prickly Lettuce		Cheatgrass	
metribuzin 0.5 lb a.i.	91	a	83	ab	75	a
CNV2243	35	bc	30	abc	14	bc
metribuzin 0.5 lb a.i. + paraquat 0.5 lb a.i.	94	a	95	a	95	a
metribuzin 0.5 lb a.i. + saflufenacil 0.044 lb a.i.	95	a	95	a	48	abc
metribuzin 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	95	a	95	a	46	abc
CNV2243 + paraquat 0.5 lb a.i.	88	ab	91	a	88	a
CNV2243 + saflufenacil 0.044 lb a.i.	93	a	94	a	41	abc
CNV2243 + saflufenacil 0.044 lb a.i. + clethodim 0.166 lb a.i.	93	a	95	a	94	a
CNV2243 + carfentrazone 0.029 lb a.i.	89	ab	64	abc	3	c
2 in metribuzin 0.5 lb a.i. + paraquat 0.5 lb a.i.	90	a	89	ab	43	abc
2 in metribuzin 0.5 lb a.i. + carfentrazone 0.029 lb a.i.	94	a	46	abc	5	c
2 in CNV2243 + paraquat 0.5 lb a.i.	71	ab	90	a	63	ab
2 in CNV2243 + carfentrazone 0.029 lb a.i.	71	ab	68	abc	10	bc
2 in CNV2243 + carfentrazone 0.029 lb a.i. + clethodim 0.166 lb a.i.	68	ab	70	abc	64	ab
Control	0	c	0	c	0	c

Table 4. 2020 trial weed control of tumble mustard, prickly lettuce, and cheatgrass 11 weeks after application (before harvest). CNV2243 is an experimental residual herbicide. 2 in = 2-inch application. Letters indicate Tukey pairwise comparisons for statistical differences at 95% confidence (each timing analyzed separately.) Data is colored to help visualize the numbers: red indicates less control, where green indicates good control. Herbicides listed in pounds of active ingredient per acre (lb a.i./acre).



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cheatgrass was only achieved where paraquat was in the tank. Cheatgrass suppression was achieved where clethodim was included.

In the 2020 trial there was crop injury after burndown treatments were applied in the dormant season but by April there was no crop injury visible (Table 3). Crop injury was much more significant from the April application timing ranging from 67 to 82% 1 week after burndown herbicides were applied. Two weeks after the post dormancy treatment, the alfalfa was growing rapidly and began to outgrow the injury. No visual crop injury was present between either timing before first cutting. Three major weeds were present in the 2020 trial: tumble mustard, prickly lettuce and cheatgrass (Table 4). Tumble mustard was controlled effectively in all labeled treatments. The experimental residual product applied with a burndown herbicide at the two-inch growth stage did not control tumble mustard. Carfentrazone and saflufenacil provided similar control of tumble mustard as paraquat at both application timings when mixed with metribuzin. Prickly lettuce was effectively controlled with all dormant season applications that included a burndown herbicide. Control of prickly lettuce was more variable at the April application timing. Cheatgrass was only effectively controlled in treatments that included paraquat or clethodim applied as a dormant season application.

Discussion/Implications

Generally, while all burn down applications of paraquat, saflufenacil and carfentrazone caused significant crop injury shortly after treatment, the crop was able to outgrow this injury by harvest. Unsurprisingly, applications made after the crop had broken dormancy in the 2020 trial caused more injury than the dormant season applications. However, again the crop was able to outgrow this injury, but outgrowing injuries may not always occur.

Weed control of the broadleaf weeds: shepherd's purse, tumble mustard and prickly lettuce appeared similar between the three burndown herbicides. For dormant season applications on these broadleaf weeds, data suggests either saflufenacil or carfentrazone could be substituted for paraquat. Cheatgrass was not adequately controlled in any of the treatments in the 2019 trial, where only applications of paraquat or clethodim offered suppression. This may have been due to the large size of the winter annual cheatgrass at time of the applications. In the 2020 trial only, dormant season applications of paraquat or clethodim provided adequate control of cheatgrass. The other treatments, including the delayed application, offered only suppression. As expected, neither saflufenacil or carfentrazone controlled cheatgrass and cannot be relied upon for burn down control

where grass weeds are present.

Dormant applications of either saflufenacil or carfentrazone mixed with clethodim offered similar control of all weeds compared to metribuzin plus paraquat. However, these combinations are significantly more expensive (Table 5). In 2020 a quart of paraquat cost \$8 per acre, where the combination of saflufenacil or carfentrazone plus clethodim ranged from \$32 to \$37 per acre respectively. This is a significant increase in price for similar burn down control achieved with paraquat alone. Growers will have to make the choice of jumping through extra regulations to use paraquat, ponying up the money for a tank mix, or shifting to selective postemergence treatments like imazamox, or a glyphosate tolerant alfalfa production system. ■

Cost of Herbicides Tested in 2020	
metribuzin 0.5 lb a.i.	\$13.59
paraquat 0.5 lb a.i.	\$8.10
saflufenacil 0.044 lb a.i.	\$13.00
carfentrazone 0.029 lb a.i.	\$18.00
clethodim 0.166 lb a.i.	\$19.25
imazamox 0.039 lb a.e.	\$20.33
pendimethalin 1.9 lb a.i.	\$33.00

Table 5. Relative cost of herbicides tested per acre in late 2020. Herbicides listed in pounds of active ingredient per acre (lb a.i./acre).



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Avocado lace bug is on the move

Mark S. Hoddle, Department of Entomology, UC Riverside; mark.hoddle@ucr.edu

In 2004, reports of unusual damage to avocado leaves on backyard trees in the Chula Vista and National City areas of San Diego (SD) County were being reported. In response to these phone calls and emails, Dave Kellum (SD County Entomologist with the Agricultural Commissioner's Office), Guy Witney (California Avocado Commission), Gary Bender (UCCE Farm Advisor), and Mark Hoddle (UCR Entomology) got together to investigate. This field trip resulted in the first collections of avocado lace bug

Fig. 1. An adult avocado lace bug on a US penny.
Photo: Mike Lewis, UC Riverside



(ALB), *Pseudacysta perseae* (Hemiptera: Tingidae), in California. A significant concern was that this pest, which is very destructive in parts of Mexico and the Caribbean, would invade commercial Hass avocado orchards, cause substantial damage, and require management. Curiously, in urban areas in SD, this pest preferred infesting the avocado variety Bacon and reports of infestations on Hass were rare. ALB colonies used for experiments described below were maintained on Bacon as we could not rear ALB on Hass.

ALB was first described from specimens collected from avocados growing in Florida in 1908. Adult bugs (Fig. 1) and immature stages, referred to as nymphs, live and feed on the undersides of leaves. Lace bugs have needle-like mouthparts that are used to puncture leaf tissue which enables feeding bugs to suck up the juice contained within perforated cells. This feeding damage results in necrotic brown islands (Fig. 2) that typically form within the central regions of the leaf. It's possible that feeding damage is exacerbated by opportunistic pathogenic fungi, like *Colletotrichum* spp., which may enter the leaf through feeding wounds and then proliferate thereby causing more damage.

Female ALB lay eggs (Fig. 3) on the undersides of leaves, often in clusters or trails that are usually covered in a black, tar-like substance which could be an excretory waste product. This covering may help protect eggs from desiccation or attacks by natural enemies.

*Fig. 2. Avocado lace bug feeding damage on a Hass avocado leaf. ALB feed on the undersides of leaves.
Photo: Mark Hoddle, UC Riverside*



Where Did California's ALB Come From?

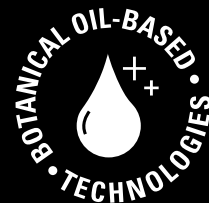
Where and how ALB got to California in 2004 was a mystery that needed investigating, and molecular analyses, similar to those seen in TV programs like CSI, were used to figure out where the invading ALB population may have originated. Phil Phillips (UCCE Ventura County) and Mark Hoddle undertook foreign exploration efforts throughout the presumed native range of ALB (i.e., the SE USA, the Caribbean, and Mexico). There were two goals to these collecting trips: (1) collect ALB eggs to rear out parasitoids for possible use in a biological control program in California, and (2) collect adult ALB for DNA analyses to figure out where the population in California had come from. Phillips and Hoddle made extensive collections of ALB throughout Mexico, the Caribbean, and parts of Central America. Colleagues provided additional specimens from Florida, Texas, and South America for use in DNA analyses.

The molecular work was done by Paul Rugman-Jones in Richard Stouthamer's Lab at UC Riverside and the results



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strongly suggested that the invading ALB population in SD County had likely originated from Nayarit in México, and more specifically, possibly Las Vivasas, which is part of the “Mexican Riviera,” a popular destination for tourists. We speculated that a small ALB-infested avocado tree may have been purchased at one of the commonly seen roadside stalls, put in the back of a RV, and driven approximately 1,300 miles up the Pacific Coast to San Diego County where the tree was planted in a residential backyard and its associated ALB hitchhikers were unintentionally cared for.

Another interesting find from the molecular work was the possibility that ALB was not native to the SE USA, eastern México (e.g., Yucatán), and the Caribbean, as originally thought. ALB may be invasive in these areas too, possibly having originated from native populations in western parts of México. As for the biological control program, unfortunately it didn’t get off the ground, as no natural enemies, specifically egg parasitoids, were found attacking ALB eggs in the areas surveyed.

Management of Avocado Lace Bug

Research by Eduardo Humeres, Frank Byrne, and Joseph Morse in the Entomology Department at UC Riverside indicated that several insecticides were effective at killing ALB. Imidacloprid, for example, applied through chemigation to the soil, provided good control of this pest. Small scale trials indicated that contact insecticides like fenprothrin, a pyrethrin mixture, petroleum oil, and potash also killed ALB. Interestingly, abamectin and spinosad did not appear to have significant negative impacts on ALB. Natural enemies associated with ALB in California avocado orchards include predatory adult and larval thrips, primarily *Franklinothrips orizabensis* (Thysanoptera: Aeolothripidae), and lacewing larvae, *Chrysoperla* sp. (Neuroptera: Chrysopidae). Laboratory trials indicated that these natural enemies would attack and feed on ALB nymphs. However, their impacts in orchards has not been studied and its unknown if natural enemies can provide sufficient levels of biological control for suppressing damaging pest levels. Another group of natural enemies, predatory phytoseiid mites, should be studied to determine if they can attack and feed on ALB eggs.

What’s Happening with Avocado Lace Bug Now?

There is a standing joke amongst applied entomologists that the best way to quickly solve an invasive pest problem is to get grant money to research control solutions. Sometimes, after going to a lot of trouble to get research funds, the pest problem unexpectedly fizzles out, and as the joke goes, voilá, problem solved! This is what happened with ALB in SD County. As research into management options was being conducted in anticipation of the pest moving out of urban areas, it turned out that ALB didn’t spread rapidly and there



Fig. 3. Avocado lace bug eggs are often covered with a black protective substance. Photo: Mark Hoddle, UC Riverside

were no reports of infestations in commercial Hass orchards. Consequently, the ALB program ended when the grants finished, as there was no urgency to continue this work.

This situation changed in 2017 when reports of ALB damage in commercial Hass orchards was being reported by growers and PCAs in the Oceanside-Bonsall-Fallbrook (SD County)-Temecula (Riverside County) area. Emails with photos supported observations that ALB was causing leaf damage, and field collections confirmed this. Around the same time, reports of ALB infestations of backyard avocados in Culver City and Long Beach in LA County were received and confirmed by field inspection. So, the questions now were, “Where did these new infestations come from?” “Had the SD population finally started moving after 13 years of doing nothing?” “Why was ALB now infesting Hass?”

Molecular analyses by Rugman-Jones and Stouthamer indicated that these 2017 ALB infestations had a different genetic fingerprint to the original SD infestation from 2004. The new populations were genetically more similar to ALB

from the eastern areas of the pest's distribution (i.e., SE USA, eastern Mexico and the Caribbean). We currently think that these new, more aggressive, ALB populations infesting Hass may have originated in Florida. So, it looks like California has been invaded twice by ALB, the first time was around 2004 with bugs from Mexico and the second time was around 2017 with bugs from Florida. In 2019, the first reports of ALB infesting avocados were reported from O'ahu Hawai'i, a significant range expansion for this pest.



What's Being Done Now for Avocado Lace Bug in California?

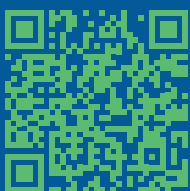
With support from the California Avocado Commission, the research program into ALB has been resurrected. Work is currently investigating the phenology of this pest in commercial Hass orchards in Oceanside-Bonsall, and surveys for natural enemies associated with pest populations is underway. In the lab, we are investigating the effects of temperature on ALB egg and nymph development and survivorship rates, and adult longevity and egg laying by females. These data may help us understand if heat waves and Santa Ana winds can knock back ALB populations, which we should be able to corroborate via the phenology studies. Also of interest is understanding what has happened to the original ALB population in Chula Vista-National City. Has this been replaced by the more aggressive Florida strain of ALB? Also we want to figure out what is going on in Hawai'i. Was Hawai'i invaded by the original SD ALB population from Mexico, did California accidentally export the more aggressive Florida strain to Hawai'i, or importantly, from California's perspective, did the Hawai'i population come from somewhere else and now poses an invasion risk to California avocado growers? Molecular studies are planned to answer these questions and as our research progresses there will be a lot more to report and to read about. ■

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How to control fungal canker diseases

Florent P. Trouillas, Assistant Cooperative Extension Specialist, Department of Plant Pathology, UC Davis

Fungal canker diseases are common problems in almond orchards. Infections caused by canker pathogens often result in bark and wood cankers, leading to profuse gumming near the affected area and eventual girdling and loss of an entire scaffold branch or tree. Our laboratory recently investigated fungal canker diseases affecting California almonds, with the major canker diseases recognized including *Botryosphaeriaceae* canker (commonly known as band canker) and *Ceratocystis* canker, as well as *Cytospora* canker and *Eutypa* canker. For more information on symptoms, causal agents and infection processes associated with these diseases, please see <https://www.almonds.com/almond-industry/industry-news/main-fungal-canker-diseases-affecting-california-almonds>.

With continued support from the Almond Board of California (ABC), we conducted additional research and field trials that aimed to develop control strategies against almond canker diseases. Recently, we established management guidelines to help growers limit the incidence of fungal canker diseases in almond and promote tree health in the orchard.

Infection pathways, cultural and environmental risk factors

A common lifecycle of fungal canker pathogens involves spores being released from fruiting structures (pycnidia or perithecia) on the dead wood of infected plant hosts during rain events and then being spread via rain or wind to fresh wounds and openings in the bark. In almonds, fungal canker diseases usually originate at pruning wounds or wounds resulting from mechanical injuries from field equipment to trees' trunks and branches. Cracks at the tree crotch or on the trunk can also serve as additional entry points for canker pathogens.

A critical operation in almond production that presents a high risk of infection is pruning, especially pruning associated



An example of Botryosphaeria canker developing at a pruning wound made for secondary scaffold selection. Photo courtesy of Florent P Trouillas

with the selection of primary and secondary scaffolds that will provide the future tree shape and structure. Scaffold selection occurs soon after planting and limbs not selected for the tree framework are cut away, leaving large pruning wounds on trees. Large wounds near the trunk make trees particularly vulnerable to infection, and any infection of the trunk by a canker pathogen can lead rapidly to tree death. Similarly, maintenance pruning of mature trees – made to

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improve light interception and air circulation in the canopy, or to facilitate the passage of field equipment – can also lead to large pruning wounds on trees.

Pruning of almond trees often takes place during the winter months when trees are dormant, which also coincides with the rainy season in California and thus the time when spores of fungal pathogens are most prevalent. As pruning wounds are highly susceptible to infection and early infection of young trees could challenge the good establishment of almond orchards, protection of pruning wounds with a fungicidal product or a biological control agent is recommended to reduce infection by canker pathogens.

Wound protection can reduce risk of infection

Once a tree is infected with canker diseases, it generally cannot be cured, thus; prevention is key. Wound protection is recommended particularly following major pruning events such as primary and secondary scaffold selection and maintenance pruning if performed during the fall, winter or spring in California.

Three years of field experiments spent investigating pruning wound protection using various fungicidal products –Thiophanate-methyl (FRAC 1) and the biological *Trichoderma atroviride* SC1– demonstrated excellent disease

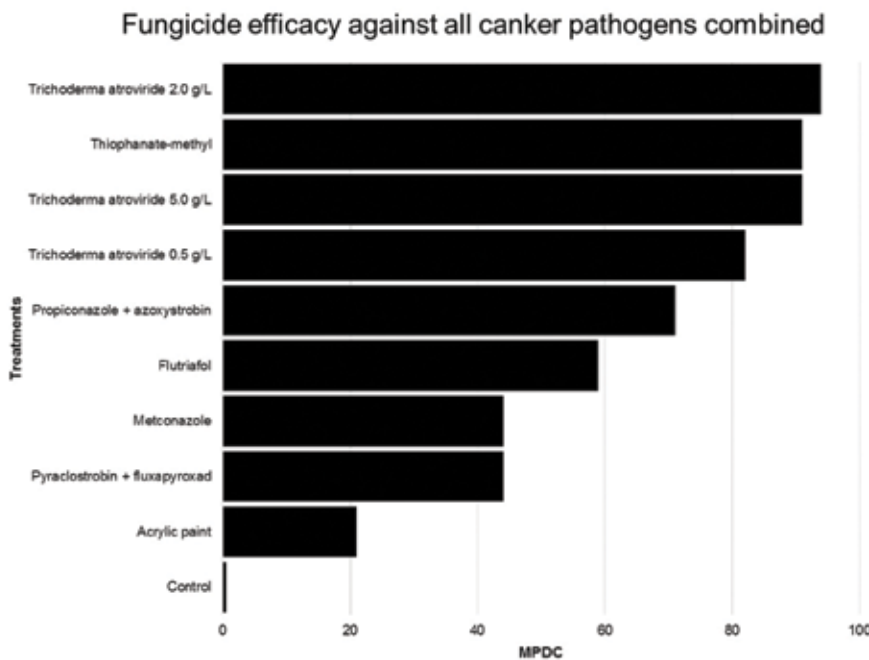
control of 80-100% when those products were applied to fresh wounds immediately after pruning. Fungicides such as Metconazole (FRAC 3), Propiconazole/Azoxystrobin (FRAC 3 & 11), Pyraclostrobin/Fluxapyroxad (FRAC 7 & 11), and Flutriafol (FRAC 3) provided moderate disease control, with efficacy ranging from 40% to 70%. Acrylic paint was shown as being poorly effective overall as a pruning wound protectant against all the various canker pathogens, achieving only 20-40%.

Pruning wound susceptibility

Recent research conducted in our laboratory investigated the susceptibility of almond pruning wounds to fungal canker pathogens according to the month of pruning, i.e. September, October, November, December and January.

While pruning wounds are susceptible to infection during all months between September and January, pruning wounds appear to heal faster when pruning is performed in late January versus sometime between September and December. Also, pruning wounds are most susceptible to infection by canker pathogens immediately after pruning through the first two weeks following pruning; a steady decrease in pruning wound susceptibility is observed two weeks post-pruning. It is also important to note that in the absence of rain (for example, in September), chances of

This graph demonstrates the efficacy of various fungicides in protecting pruning wounds against main fungal canker pathogens, as illustrated by Mean Percent Disease Control (MPDC). Courtesy of Florent P Trouillas.



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- Define your strategy by selecting from various strategic goals. You can strive for maximum yield or to ensure paramount crop quality. 2022 may warrant a shift towards increasing nutrient use efficiency or minimizing the total program cost. Of course, you can always select a balanced approach.
- Instantly sync NutriScription soil, water, and tissue data with Qortex to enhance fertility programs and save time. This creates a seamless flow from field sampling to program planning and maintenance.
- Allow QualiTech's agronomists to do your initial block set up, so that you can focus on the areas of your business where you add the most value.
- Trust in the fact that Qortex programs are evidence-based and backed by an expert team of agronomists.



Maximize ROI with Foliar Nutrition

Nitrogen

With skyrocketing costs, precise application and efficient uptake is more important than ever:

- Take advantage of the N that's already in your system. Collect spring soil and water samples for N levels to address demand and maximize application payoff.
- Carbohydrate-complexed QMIN™ N-Gain™ facilitates highly efficient foliar application of essential N. The ideal timing is when cold soils prevent adequate root uptake to satisfy high N demand.
- Foliar N reduces the environmental impact of nitrate leaching to preserve soil and water quality.
- Combat rising N costs, and improve N use efficiency, with micronutrient applications.

Micronutrients

Early foliar nutrition (Ca, B, Zn, Mo, Cu) is important for flowering, pollination, and yield:

- Soft tissue in flower buds facilitate effective nutrient uptake and indicates strategic application timing.
- Foliar-applied QMIN™ technology facilitate micronutrient uptake, movement, and storage.
- Flowering and leaf emergence are dependent on stored nutrients and can be supplemented by foliar application.
- Micronutrients, including B, are essential for pollen tube elongation. Deficiencies hinder pollination and fertilization.
- Good pollination, and thus micronutrient application, supports high yields.

Key Advantages of QMIN™ Technology

- **Effective.** Across a wide variety of cropping systems, QMIN technology has shown consistent nutrient uptake.
- **Translocates.** Because plants naturally store polysaccharides for energy, they readily absorb QMIN™'s polysaccharide protected nutrients and transport them to areas with the highest metabolic demand.
- **Compatible.** Blend QMIN™ with most fertilizers and pesticides, in both foliar and soil applications. This broad compatibility is backed by our agronomists' extensive blending knowledge.
- **Safe.** Plant-derived polysaccharide complexation helps to eliminate phytotoxicity, even at sensitive application windows.

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pruning wound exposure to fungal inoculum are reduced, limiting the risk of infection.

The high susceptibility of pruning wounds immediately following pruning and up to two weeks after stresses the need for protecting these wounds right after pruning. Interestingly, the two-week susceptibility window of pruning wound overlaps with the two-week residual activity of most chemical fungicides. This suggests that a single application of a pruning wound protectant right after pruning suffices to reduce infection. In comparison to chemical fungicides and physical barriers such as paint, biological control agents such as *Trichoderma*, when applied on the surface of a pruning wound, can colonize wood and establish durably in the host tissues, providing long-term protection of trees against canker pathogens.

Avoid stress: adopt cultural practices to reduce risk of diseases

It is common knowledge that trees subjected to any type of stress become more susceptible to infection by canker pathogens. Conversely, maintaining good nutrition and water status in trees generally minimizes tree stress and can help trees overcome canker pathogens. Also, proper training of young trees will create strong branch attachment and help ensure branches will not split as the tree matures, which can help reduce infection.

When pruning, growers should avoid making horizontal pruning cuts as they may allow for an accumulation of water. Overall, pruning should not be conducted during or following rainfall, as doing so would permit the release of fungal spores. As for *Ceratocystis* canker, the disease may be managed by avoiding bark injuries from mechanical shakers. Ultimately, if the bark is injured, the damaged tissue should be removed to the edge of the injury to promote callus formation. Dead almond trees, including stumps, as well as dead wood from other susceptible woody crops such as apricots, grapevines, pistachios, prunes, sweet cherries, and walnuts next to commercial almond orchards should be removed and destroyed to reduce inoculum. Finally, adjusting sprinkler irrigation locations so that tree trunks are not wetted will help reduce the incidence of canker diseases.

Final tips

Combined results of pruning wound protection and susceptibility experiments provided strong evidence that successful protection of almond trees against fungal canker pathogens can be achieved. While pruning should always be avoided during and following rainfall, late-January pruning combined with a single application of a protective fungicide or biological control agent applied immediately after pruning is recommended to reduce the risk of infection caused by canker pathogens.

Our research indicates that both Thiophanate-methyl and the biological *Trichoderma atroviride* SC1 can provide great protection of almond pruning wounds against a broad spectrum of fungal canker pathogens including those responsible for band canker, *Ceratocystis* canker, *Cytospora* canker and *Eutypa* canker. Recently, Thiophanate-methyl has received a 2(ee) label recommendation for use in almonds as a pruning wound protectant against canker pathogens. Similarly, the biological control product *Trichoderma atroviride* SC1 is currently in the registration phase in California for use against canker diseases in almonds.

While air blast systems are well adapted for the application of conventional fungicides (i.e. Thiophanate-methyl: check label rates and recommendations for use), they appear less reliable for the application of *Trichoderma atroviride* SC1. One reason for this is that tanks used on farms for conventional fungicide applications often contain fungicide residues that may impact the viability of the biological control agent. Field trials are ongoing in our laboratory to optimize application methods and effective delivery of *Trichoderma atroviride* SC1 to pruning wounds. So far, our results suggest that clean, manual-pressure (hand pump) backpack sprayers are better adapted for the application of products containing biologicals like *Trichoderma atroviride* SC1 to fresh pruning wounds, as this topical application method mainly targets pruning wounds. Furthermore, our current data indicates that *Trichoderma atroviride* SC1 (1g/L) performs best when mixed with a sticker-spreader adjuvant, demonstrating an efficacy level comparable to that of Thiophanate-methyl. The availability of *Trichoderma atroviride* SC1 to protect almond trees against canker pathogens adds new biological control solutions to almond growers in California, thus enhancing the long-term sustainability of almond production.

Growers are also encouraged to check out the University of California IPM website for more information on various types of canker diseases. ■



CAPCA Online CE Opportunities

<https://capca.com/onlinece/>

Conference Update I - 2.0 DPR Hours (1.5 Other 0.5 Laws)

Presentations from the 2021 CAPCA Annual Conference: Paul Crout, CAPCA sharing Licensing Reminders; Ruben Arroyo, Riverside Agricultural Commissioner providing a CACASA Update; Paul Squires, Independent PCA presenting “Drift Issues with High Value Crops – Mitigation and Best Practices”; and Drew Wolter, Senior Specialist, Pest Management from The Almond Board of California discussing “Herbicide Resistance in California – Identification and Management.”

Conference Update II – 2.0 DPR Hours (2.0 Other)

Presentations from the 2021 CAPCA Annual Conference: Ian Lemay, CEO of California Fresh Fruit Association shares the State of Fresh Fruit; David Holden of Holden Research and Consulting presents “Current Integrated Pest Management Research in Avocados and Citrus”; Mohammad Yaghmour, UCC Area Orchard Systems Adviser discussing “IPM for Fruit and nut Tree Diseases.”

Pollinator Risks and Benefits – (CE Hours coming soon)

James A. Bethke, UCCE Emeritus presents “Pollinator Risks And Benefits From The Landscape And Nursery Industries” – recent research findings relevant to balancing the needs of pollinators with the need for pest management in the ornamental horticulture industry (green industry). From the speaker: “This presentation will present an update on information acquired from a nationwide research effort that tries to answer major gaps in our understanding of the level of bee exposure to pesticides in pollen and nectar and the relative attractiveness of ornamental plants as pollinator food sources.”

Purchase and Access available until 12/31/22 | Introductory SALE PRICE ends 3/31/22 Purchase today at the lowest rate for access all year!

Looking for additional hours? See in-person Chapter CE Meetings and the 2022 Spring Summit <https://capca.com/events/>



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The Carbon/Nitrogen Relationship

By Abe Isaak, AgroLiquid Agronomist

Organic matter (OM) is the carbon-based compounds found in the environment. Organic matter is important to the soil's structure and water-holding capacity, as well as nutrient availability. One nutrient OM – or more specifically, carbon, effects is nitrogen. Most soil tests analysis have a Carbon (C)/Nitrogen (N) ratio on them. This ratio indicates how fast nitrogen will be released to the plant, a lower ratio means that nitrogen will quickly become available and the unused nitrogen can be leached through the root zone. An ideal ratio is 10:1 of carbon to nitrogen in the soil.

Higher Ratio of C to N

The soil biology uses the nitrogen to help break down the carbon. A higher ratio means that the available nitrogen is tied up by the soil biology until it is done using it to break down the carbon in the soil. In other words, the nitrogen will become available much later and it may not be available when the plant needs it.

Lower Ratio of C to N

When you have a lower ratio of carbon to nitrogen, the soil biology does not use the nitrogen. The nitrogen changes to the nitrate form and if it is not used by the plant, it is leached out of the root zone and wasted. In many parts of California, such as the San Joaquin Valley, OM is very low in the soil. Soil test analysis with an OM of less than 1% is common in

these areas. Plus, these soils tend to be very sandy. In these sandy soils, carbon is often added in the form of Humic Acid with nitrogen applications. The carbon molecules are negatively charged and have the ability to hold positively charged cations, such as potassium, calcium, hydrogen, sodium and magnesium, as well as making the nitrogen more available.

Next Steps

It is common practice to split nitrogen applications to prevent leaching, which is critical. Consideration must also be given to the carbon/nitrogen ratio. Otherwise, we can easily waste a lot of money and wonder why the crop does not respond as anticipated.

This is only the first part of the equation that must be considered; the other is the soil health of the microbes in the soil. This can be measured using the respiration of CO₂ produced by soil microbes. Many labs in California are now offering this test and it should become a part of a comprehensive soil testing program. When the microbes are in good health and the carbon/nitrogen ratio is correct, soil works well and produces better. With the current cost of inputs, using these tools to get every ounce of use from every pound of crop nutrition applied is more critical than ever. As always, do not hesitate to reach out to your trusted crop nutrition specialist or agronomist to help utilize these tools. ■

Controlling All Slug and Snail Species Improves Crop Health, ROI

Supplementing ground and crop management practices with powerful baits approved for conventional and organic production is an efficient way to achieve as much control as possible.

Slugs and snails can rob performance from any crop. They're among the most destructive pests in agriculture. In fact, slugs alone can wipe out a slow-growing crop in just a few days, according to The Ohio State University. Both pests thrive in damp and wet conditions, common during spring. They're most active at night and on cloudy and foggy days. They hide when it's sunny and warm, so often the only evidence of their presence is missing or damaged plants and slimy, silver trails.

Successfully managing these pests takes a combination of practices. Where possible, the first step to remove as many places as possible where they can hide during the day. Debris, weedy areas around tree trunks and dense ground cover are ideal for them to avoid sun and heat.

Green cover crops can harbor these pests, so baiting to reduce populations before the cover crops are disked, mowed or dried down is sound management. Otherwise, slugs and snails can move out of disturbed cover crops and infest the crop.

Early warm spells, especially right after rainfall, make for prime baiting weather. These periods give the pests time to come out of hibernation, get active and start feeding on your crop and profits. Supplementing ground and crop management practices with powerful baits approved for conventional and organic production is an efficient way to achieve as much control as possible.



Keeping trunk areas as grass- and weed-free as possible and not letting limbs and leaves touch the ground help keep slugs and snails away from citrus trees as shown on this snail bait trial site. A sound baiting strategy will help manage infestations should they occur.

Two baits have shown to be especially effective at controlling all species of slugs and snails.

Ferroxx® AQ Slug and Snail Bait from Neudorff North America is an iron-based, *waterproof* bait, resistant enough that it is labeled for aquatic application. This characteristic also helps the bait last a long time on the ground. With iron phosphate as the active ingredient, Ferroxx AQ can be used around pets and wildlife. Because it is MRL-exempt, Ferroxx AQ may be applied to all food and feed crops,

unlike competing baits. Snails and slugs are lured to the bait. Once ingested, even small amounts will cause them to stop feeding and die. The product has one label for all use sites and its micro pellets allow for the maximum number of baiting points. Ferroxx AQ is labeled for broadcast, aerial, and direct aquatic application.

Sluggo Maxx® Slug and Snail Bait, also from Neudorff, is the most powerful slug and snail bait for organic agriculture. It is OMRI Listed®, MRL-exempt and offers fast-acting protection up to the day of harvest. It simplifies compliance because it can be applied to a wide variety of crops and has no annual maximum or re-application interval. Sluggo Maxx can be applied via broadcast, over-the-top, aerial and aquatic methods. It can be used around pets, wildlife and domestic animals.

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Be sure to monitor crops before and after baiting. More than one application of product may be needed, especially in heavily infested areas with slugs of varying ages. Rapid disappearance of bait indicates pest activity, population and bait acceptance. **As with any pest control product, always read follow label directions.** For more information, please visit www.neudorffpro.com.

NOTE: Some of the following job opportunities are abbreviated postings. To view the complete posting, please log into your membership access on our website at <https://capca.com/my-account/>

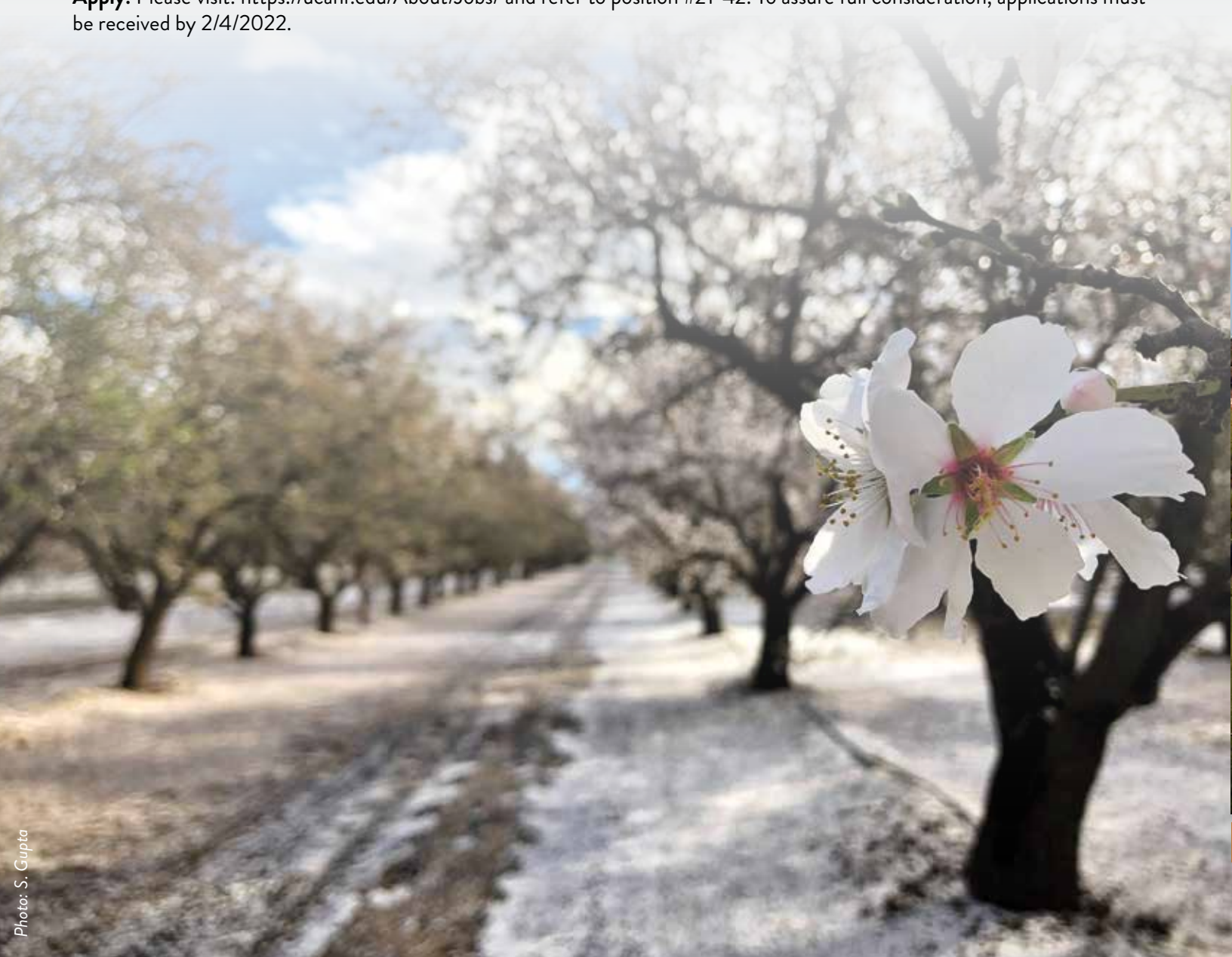
Area IPM Advisor Applied Research and Extension – San Diego, CA

UC, Agriculture & Natural Resources

Description: The IPM Advisor will implement an innovative applied research and extension education program to address high priority pest management needs and problems in the various crop production and landscape systems in Southern CA. The IPM Advisor will focus on long-term IPM systems, reducing economic, environmental, and human health impacts from pests and pest management practices.

Duties, Qualifications & Requirements: A minimum of a Master's degree in a pest management discipline (entomology, plant pathology, weed science) or a closely related field is required at the time of appointment. Knowledge of integrated pest management principles and practices, including tactics for prevention, avoidance, monitoring and suppression of pests is essential. Quantitative skills and knowledge of, and experience using, statistical analysis and experimental designs is required. Applicant should have a passion and desire to pursue a career in Cooperative Extension and community development.

Apply: Please visit: <https://ucanr.edu/About/Jobs/> and refer to position #21-42. To assure full consideration, applications must be received by 2/4/2022.



Wednesday, February 16, 2022

Santa Paula

Ventura CAPCA Chapter

Santa Paula Senior Center

530 W Main St. Santa Paula, CA 93060

Time TBD

For additional information:

<https://capca.com/events>



Tuesday, March 22, 2022

Atascadero

Central Coast CAPCA Chapter

Central Coast Label Update and Expo

Pavillion on the Lake

9315 Pismo Ave, Atascadero, CA 93422

Check-in: 7:15-7:45am

Meeting: 7:45am - 4:15pm

Early registration (Before 03/15): \$75

At-the-door: \$100 (based on space available)

Ventura CAPCA Chapter 38th Annual Golf Classic & BBQ

Sterling Hills Golf Course

901 Sterling Hills Dr., Camarillo, CA 93010

Wednesday, March 9, 2022

Texas Scramble Shotgun Start 11:30 a.m.

Contact: Blair Benchwick

(805) 443-1890 / bbenchwick@trical.com



For sponsorship and registration information visit <https://capca.com/chapters/ventura/>

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