



THE ADVISER



California Association of
Pest Control Advisers

August 2023
Volume XXVI, No. 4

Registration is open for the
2023 CAPCA Conference

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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: CAPCA Adviser is published bi-monthly by the California Association of Pest Control Advisers (CAPCA), 555 University Ave., Ste. 260, Sacramento, California 95825. Web: www.capca.com, (916) 928-1625. POSTMASTER: send address change to CAPCA. A portion of CAPCA membership dues is used to provide subscription privileges to the Adviser magazine. Non-member subscriptions are \$30/year. Third class bulk postage paid at Tucson, AZ and at additional mailing offices. CAPCA has endeavored to include appropriate and accurate statements, but disclaims any and all warranties and/or responsibility for the statements or articles submitted to CAPCA Adviser that may have additionally been edited for style, content and space prior to publication. Views expressed are those of the authors and do not necessarily represent CAPCA policies, or positions or endorsements. Editorial content of this publication is educational and informational in nature. No part of this publication, including images, may be reproduced without prior written permission from the publisher. Contact CAPCA at (916) 928-1625 for reprint authorization.

MANAGING ALMOND PESTS



WHAT'S WORKING FOR YOUR GROWERS?

An effective pest management program includes the ability for growers to accurately evaluate what's working – and what's not – in their orchards. Harvest sampling as part of a season-end evaluation can provide those answers.



Scan the QR code to read more about harvest sampling.



Scan the QR code to watch and learn more about a year-end assessment



Editor's Notes

Why CAPCA?

For the last 50 years, PCAs like yourself have considered each year, “Why CAPCA?” Maybe your first thought is, “I didn’t track my hours from last year,” and CAPCA provides hours tracking support. Or maybe you are searching for a job and want access to the current jobs listing to narrow your search. Possibly, you found value in your local Chapter along the way and see CAPCA as a vehicle to engage with that local network and provide discounts to CE meetings. However, I hope that CAPCA delivers so much more for you. CAPCA is the only association that focuses solely on the protection and longevity of the Pest Control Adviser License.

In the nearly 10 years I have been with CAPCA, I have never witnessed as many regulatory changes focused to roll out on one particular date – January 1, 2024. The laundry list starts with changes to Certification and Training (C&T) for Pesticide Handlers. This change is basically a gut and amend of the licensing and CE portions of the code that regulates all DPR licensees. In addition, new neonicotinoid regulations which seek to impose mitigations by product and crop along with maximum application and seasonal use caps. The list goes on. If you would like to dive deeper into each of the current regulation changes in process and the way that CAPCA is working on your behalf, please continue reading on page 6.

So why CAPCA? CAPCA currently sits alone in the meetings that impact your license. There is no other agricultural organization or association in the room fighting for your license. When we can’t stop what is coming down the pipeline any longer, we sit alone at the table pushing for transparent timelines and enforcement details to ensure you are educated and ready for compliance.

Your CAPCA staff is buried in emails, has scheduled phone calls, and is awaiting answers to questions around how each of these programs will roll out and impact you, your license, and your livelihood in 2024. While CAPCA fights for your license, our Sustaining Members and event sponsors continue to support your association through financial contributions to strengthen our programs and advocacy. When you see the Media Kit in this issue, please see the investment that these groups make in CAPCA to support and reach you as an audience.



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Ruthann Anderson

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Printing: Sundance Press, Tucson, AZ

Graphic Design: Rosemary Norris-Southward

Advocacy

Due to the timing of this publication, many of the final regulation packages will be published in July after we go to press. But we can do plenty of things now to start piecing together the “what, how, where, and why” before January 1, 2024. Please join us on Thursday, August 24, at 10:00 a.m. for a Membership Update on all these topics and more!

Certification and Training of Pesticide Handlers - Fumigants

When: Licensing categories for fumigants on QAL and QAC must be updated by January 1, 2024 to ensure continued compliance.

What: If you are a QAL or QAC and currently hold any of the fumigant categories, *your categories will sunset at the end of the year regardless of renewal requirements.* The new C&T requirements streamline all fumigant categories to a Soil Fumigant and Non-Soil Fumigant Category. Depending on your application work, each category requires retesting to comply and make applications after December 31, 2023. Be on the lookout for the study guide, application packet to take the new Fumigant Exams (Soil and Non-Soil Fumigation) – these should be released as CAPCA goes to press on the Adviser.

How: CAPCA has been hard at work and engaged on this issue as it impacts many PCAs who hold multiple DPR licenses. We have expressed concern over timelines and the ability to actively retest the up to 5,000 license and certificate holders who are impacted.

While there are still some political cards in play, which we hope may provide a little relief to this aggressive timeline to re-certify categories, if you need to retest, we encourage you to get signed up as soon as possible to select your ideal testing date and location.

Why: Please see DPR Regulations for more information on the C&T process. It references Federal changes to 40 CFR Part 171 to EPA Standards as the catalyst for changes. Each state was responsible to write a plan (new regulations) to adhere to updated standards. These were shaped by CDPR staff and approved by EPA. There is no hard deadline to implement at this time by EPA, however, California has led the way for other states by pushing for a January 1, 2024 implementation.

Certification and Training of Pesticide Handlers - Licensing

When: January 1, 2024

What: CE requirements for your renewal education are changing. There are a broad range of regulatory changes including but not limited to changes in submission forms, limitations on the types of approved CE (maximum 30 minutes per 8-hour day for exhibitor presentations, Q&A sessions and panel discussions) and new reporting requirements for CE sponsors that could impact our ability to track your hours.

How: CAPCA cares about the PCA license. Since C&T discussions started in 2019, we have been engaged offering ideas and actively commenting to ensure the best roll out we could from the draft to final regulations. We won in some areas, for instance, getting a small window of CE hours for exhibitor presentations and panel discussions when there was an outright exclusion. And we lost in others like direct reporting of CE hours to DPR that will require you as members to be even more diligent to look for the CE Hours Reported mark because those hours will be reported to both CAPCA and DPR. This will assist you to stay compliant with the new regulations while still supporting your desire to have hours tracked.

Why: If you are a CE sponsor, we are hosting a free workshop for you on Monday, October 16th in Reno at the CAPCA Annual Conference. We have invited CDPR Staff to outline the changes and enforcement with CAPCA to follow with what we hope will be some solutions and tools to make compliance as easy as possible. Please see page 8 to learn more about the event details, including CE Hours Reported.

Updated Neonicotinoid Regulations:

When: Currently expected to roll out January 1, 2024. In speaking with County Ag Commissioners about the date enforcement for seasonal crops, any crops that are considered in season at the stroke of midnight on December 31, 2023, will have a clean slate for applications starting January 1, 2024 regardless of prior use in the fall of 2023. Moving into the year, each “growing season” will reset the clock for neonic use.

What: DPR started a neonicotinoid mitigation back in 2020 based on the 2018 Neonicotinoid Risk Determination with a focus on pollinator protection. The initial draft was designed around mitigations to the use of product on a crop-by-crop basis. CAPCA was engaged in the comment period with member call to actions as well as staying informed with registrants – our overarching question in reviewing the complexity of the by product, by crop, by application with additional season limitations was *how will this be enforced?*

How: While the regulatory package has been submitted to OAL, there are a lot of questions around how these regulations will be implemented and enforced. You can see the current DPR update on Neonicotinoid regulation update on page 58. Some of the questions still lingering that we have asked DPR to answer are:

- How will implementation be applied on January 1, 2024, to crops already in progress?
- For permits with multi-season crops, how (if any) will the PCA need to distinguish and document the cross over in seasons?
- How will this be enforced? *For example: is there specific documentation that needs to be kept for the year/season?*

If you or your growers have more questions, please email ruthann@capca.com so we can add those to our talking points through our discussions with DPR Enforcement that need clarification for users in the field.

Why: Please see DPR regulations page to see more context for the development of this regulation package.

CAPCA is working on behalf of the membership to develop tools to support PCAs continuing to write recommendations for Neonics in 2024. We are currently drafting a plan with lead registrants and rec writing systems to put a plan in place for compliance and seasonal accounting of use.

Not to go without mention as we run out of page space: 1,3-D Regulations will be updated on January 1, 2024 as well. These new mitigations include a rollback of the township cap for 1,3-D and adjust setbacks in response to non-occupational (bystander) exposure mitigations. This change will be released under an active lawsuit that will temporarily restore elements including township caps until an occupational exposure mitigation with subsequent regulations are finalized and released. ■



CERTIFICATION
& TRAINING
FOR PESTICIDE
HANDLERS
UPDATE



NEONICOTINOID
REGULATIONS



1,3-D REGULATIONS

2024 is Bringing Changes to Sponsor Responsibilities for CE Hours & Reporting!

We have invited California Department of Pesticide Regulation (CDPR) to present on the impact of new regulation changes brought on by the update of Federal EPA Standards (40 CFR Part 171). Specifically, the impact this will have on hosting and reporting CDPR CE starting January 1, 2024. After DPR's presentation, stick around to hear from CAPCA staff on the tools and resources we want to make available to CE sponsors in 2024 to help with compliance!

Monday, October 16th at 2 pm at the Grand Sierra Resort in Reno

This workshop is offered free of charge to all CE sponsors, regardless of event registration. Please note there is no CE credit for attendance.

Can't make it? CAPCA is working to record the Sponsor Training Session to help sponsors in the future! Please email conference@capca.com to get on the CAPCA sponsor outreach list.



CAPCA also hosts the **CE Hours Reported** trademark. The mark was created to help CAPCA members register for education with confidence that their completed CE hours will be reported and will appear on their official certificate promptly. CAPCA is offering this trademark at no cost to CE sponsors dedicated to advancing the professionalism and educational training of all DPR license holders.

New CAPCA Website



In June we launched the new CAPCA.com website and member dashboard!

We want to thank all of you who created and verified your account in the past month. The new website and dashboard was created to increase user experience and our members ability to circumnavigate and request your verification of attendance.

All CAPCA members must create a new account for the improved member dashboard. If you are a member, you should have received an email to verify your

CAPCA member dashboard account.

CAPCA wants to ensure the new website and member dashboard is a smooth process for you. Therefore, we created a YouTube tutorial on our channel to help you understand the registration process better.

Support: If you have any questions or concerns about setting up your CAPCA account, please contact support@capca.com or (916) 928-1625.

SAVE THE DATES!

INNOVATIVE CONVERSATIONS: CHANGING THE WAY WE TALK ABOUT PESTICIDES

Saturday, October 14, 2023 |
12:00 p.m. - 4:00 p.m. in the Crystal
Ballroom

It can be difficult to talk with elected officials, family, friends, and others in your community about pesticides. Join CropLife America Vice President of Communications Genevieve O'Sullivan and Director, State Government Affairs, Western Region Scott Dahlman, for a four-hour interactive training based on consumer research and learn new tactics and messages to effectively communicate your story. We have developed this training to help you feel more confident when addressing questions and concerns about pesticides. **The cost to attend is free.**

Register at events.capca.com



2023 CAPCA GOLF TOURNAMENT

Saturday, October 14, 2023

Join CAPCA and PCAs from across the state for a Golf Tournament and networking.



The technology that's a wake-up call for dormant oil users.

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The Reality of “Litigate & Legislate to Regulate”

By Taylor Roschen

The battle between environmental conservation and pest management practices feels like standard practice. And while bills in the State legislature banning or restricting certain active ingredients, classes of pesticides and individual products is not a relatively new phenomenon, make no mistake—it is a strategy.

National news has been dominated by glyphosate, but California has its own host of bogeymen. In the last decade, California has seen legislation on neonicotinoids, anticoagulants, bromadiolone, diphacinone, treated seeds, glyphosate, fumigants, rodenticides, and chlorpyrifos to name a few. We’ve seen bills addressing cumulative impacts, worker safety, reevaluation procedures, licensing requirements, bystander exposures, drift, use near schools, use reporting, and public notification.

So, when we consider the increased number of bills introduced annually, at times the reintroduction of the same bill year-over-year (i.e., neonicotinoids), one might ask “what’s the plan?” What is the value of a whack-a-mole approach?

But the reality is advocates’ actions aren’t so disjointed. It’s part of a larger strategy of “litigate and legislate to regulate.”

These bills and their proponents usually start with litigation—suing the Department of Pesticide Regulation (DPR) for failure to pursue a regulation, further restrict a product use through mitigations, or challenge the scientific basis for DPR’s ruling.

When cases are unsuccessful or, as litigation goes, takes time and is expensive, advocates bring the issue to the State Legislature. It’s a hedge to some extent. And puts the Agency and Department in an uncomfortable position of fighting a battle on two fronts.

As an example, let’s discuss rodenticides. After years of challenges from environmental and wildlife special interests, in 2014, DPR designated second-generation anticoagulants (SGARs) as restricted use materials. While that was a win for the advocates, it was not enough. And so also in 2014, AB 2657 restricted the use of SGARs in wildlife areas. In 2019, DPR began a reevaluation of SGARs, but while the process was underway, in 2020, AB 1788 subsequently prohibited the use of SGARs until the re-evaluation is completed.

And this year, the cycle repeats. AB 1322 was introduced to make diphacinone, another rodenticide, a restricted material, prohibiting its use until a DPR reevaluation currently underway is completed.

And while the immediate intent of the strategy is to further restrict products or product categories with a legislative success rate of less than 50%, the larger ramification of year-over-year criticisms of DPR is to attack the system. These bills argue that the state and federal systems are flawed and therefore, scientific decisions can’t be trusted.

Agricultural advocates do their best to rebut these legislative challenges—and while we argue on the merit of the bills, we always use our time to re-educate Senators and Assembly members that California (and DPR for that matter) has the most conservative environmental review threshold and the strictest pesticide use standards.

Just as anti-pesticide advocates are working on all fronts, we need to as well. While I can argue that our system is durable and health protective, it all comes down to how the system is implemented. And PCAs use their education, knowledge, and expertise to be the backstop, ensuring that the system is used safely and appropriately.

Litigate, Legislate and Regulate will continue to be the strategy for special interest groups. But CAPCA’s Educate and Advocate can be just as powerful. ■

LEADING THE FIELD

GROWING SUSTAINABLY SHOULD BE PROFITABLE

Nutrien Ag Solutions® recognizes the enormity of challenges growers face. In California in particular, those challenges tend to be unique, and mounting. Whether it's the cycle of drought, finding enough labor to help with on-farm needs, or even reconciling your own operation's legacy and future and how to transition that from one generation to the next, the obstacles can seem daunting. While not in short supply, we at Nutrien Ag Solutions see these challenges as opportunities.

In 2020, Nutrien started investing heavily in sustainable ag, largely in response to the increasing challenges our grower customers are facing. Which brings us to the present.

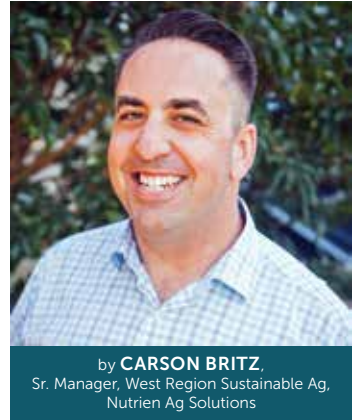
In the last few years, Nutrien Ag Solutions has developed several programs that help address supply chain concerns from downstream partners (CPG's, processors, marketers, retailers, merchants, etc.) to establish meaningful programs which reward growers for their sustainable ag practices. While sustainable ag at Nutrien Ag Solutions encompasses all aspects of the operations, one important program has been our Sustainable Nitrogen Outcomes (SNO) program.

As SNO has evolved, growers who are raising wheat, processing tomatoes, corn, cotton, or sorghum can participate in receiving a payment for a 5% - 30% reduction in their total applied nitrogen to the acre. Additionally, growers may earn an even larger payment if they apply a nitrification inhibitor or slow-release fertilizer. The payment can balloon even larger, if the nitrification inhibitor applied is listed as a qualifying product from Loveland Products, in our SNO program. There are several reasons that over-applying nitrogen is not in anyone's best interest. For one, it's a waste of a grower's budget and resources going into producing the crop (time, money material, fuel, etc.) Another reason is the implementation of the Sustainable Ground Water Management Act (SGMA) by the California Water Boards. The continued regulatory roll-out will increase pressure on growers to raise awareness and reduce their nitrogen. The ability to mitigate or eliminate nitrate leaching and runoff will be paramount in the compliance of SGMA.

SNO is a tool which helps to increase nitrogen use efficiency, while generating a payment for that practice. The net effect can be improved management practices, economic efficiency, environmental stewardship and the long-term viability of your operation.

Nutrien Ag Solutions is proud to be the trusted advisor to the grower, leading the field in profitable sustainable ag solutions.

VISIT NUTRIENAGSOLUTIONS.COM/SNO TO LEARN MORE.



by **CARSON BRITZ**,
Sr. Manager, West Region Sustainable Ag,
Nutrien Ag Solutions

Featured Article

AB 1042 to limit treated seeds as a tool for California farmers

By Scott Dahlman, Director of State Regulatory Affairs, CropLife America

Since the drafting of this article on June 20, 2023, amendments to AB 1042 have been updated. For the most current language of the bill and its progress through the State legislature, please visit <https://leginfo.legislature.ca.gov/>.

Increased crop yields, curbed environmental impact and decreased pesticide use are just a few of the benefits of using treated seeds. Despite these advances, California growers' access to treated seeds is being threatened by a recently introduced bill in the California State Assembly.

This spring, Assemblymember Rebecca Bauer-Kahan, who represents the 16th District covering much of Contra Costa and parts of Alameda counties, introduced

Assembly Bill No. 1042. The bill, which as of mid-June 2023 resides in the Senate Environmental Quality Committee waiting for discussion and vote, would establish new regulations for treated seeds in the state. AB1042 would require the California Department of Pesticide Regulation (DPR) to “adopt regulations to govern the use and disposal of seeds treated with a pesticide and prohibit the use of seeds treated with a pesticide that meets specified conditions.” Simply put, AB1042 would grant DPR authority to add additional regulations — beyond those already in place at the state and federal level — to pesticides used to treat seeds.

AB 1042 creates duplicative regulations and unnecessary hurdles for California's agriculture community, muddling an already robust and extensive regulatory process for treated seeds. Under current law, pesticide components of treated seeds undergo *two rounds* of extensive regulatory review — both at the federal and state level. The U.S. Environmental Protection Agency (EPA) assesses and reviews all pesticide products, including pesticides registered for treated seeds, before the pesticide is approved for sale. In addition to EPA oversight, every manufacturer, importer or dealer of any pesticide must obtain a certificate of registration from DPR to sell pesticide products within the state. Additionally, all pesticides are subject to periodic review to account for advancements in science and changes in pesticide policy or use. The collective work of the EPA and DPR guarantees that pesticide-treated seeds are highly regulated for sale and use in California.

AB 1042 also lacks specificity on how the law will be applied and DPR has yet to provide any guidance or a timeline for how it intends to implement the proposed requirements. This has led to great uncertainty for pesticide manufacturers and California growers. Without a clear regulatory framework in place, implementing the legislation will delay agency action, create further industry confusion and slow down environmental



progress of food production. There is also a question of whether treated seeds will be available to California farmers at all while DPR creates a brand-new regulatory framework. Proponents of the bill are asking DPR to rigorously regulate treated seeds and dictate many practices around how they can be used. Some have even suggested that details as minute as planting depth should be regulated by DPR. All this during a time when California is seeking to reduce the environmental impact of agriculture, while supporting a thriving food production system. Limiting the use of treated seeds is contrary to those important efforts.

Allowing room for the use of innovative technologies helps ensure that California farmers can continue to provide safe and nutritious food for a growing population, while using less fuel, water and energy. More specifically, treated seeds are an important tool for decreasing pesticide use and helping farmers reduce or limit crop damage from fungus and insects.

According to the California Department of Food and Agriculture (CDFA), California farmers lose \$3 billion annually due to crop pests and disease. Seed

treatments provide a targeted approach to pest control by decreasing the quantity of pesticides and the number of spray applications used. This reduces potential soil surface exposure by more than 90% compared to other application methods. By protecting farmers' investments in their most vulnerable stage, seed treatments increase crop yields, depending on the crop, anywhere from 3.6% (soybeans) to 71.3% (potatoes). This is a win-win for Californians and growers alike, as we can use less pesticides and produce more food when using treated seeds.

As a PCA, growers depend on your expertise and guidance to help solve their plant, pest and soil challenges. Treated seeds are just one of the many tools in the farmer's toolbox that allow for a variety of options for pest and fungus management. At CropLife America, we will continue to work to expand that toolbox by helping to ensure that innovation can be brought to market to support a strong agriculture industry in the future, but we can't do it alone. To learn how you can support our advocacy efforts, contact CropLife America at SDahlman@croplifeamerica.org. ■



View the evidence at your own discretion



Keep your eyes peeled. A herbicide of interest is on the loose in vineyards and was last seen headed towards California. They say it's already taken out economically important broadleaves and grasses. It's said to be cold, calculated and ruthless. The scariest part? It has yet to be identified.



Leadership

A PCA's Keys to Effective Communication & Grassroots Advocacy



Paul W. Crout, CAPCA Chairman

One of my goals as CAPCA Chairman this year was to attend a different local chapter meeting every month until I was able to visit every chapter in the state. To date,

I have had the opportunity to visit four local chapters, and I have many more on the calendar.

I was excited to see attendance by PCAs, students, Agricultural Commissioners, and others. The conversations were highly productive, and I greatly appreciated all the information I received on local issues. What struck me was the high level of expertise and passion for our industry within the chapter meetings. So, why do we (PCAs) have difficulty discussing and advocating for our industry? We sometimes think we need to shoot high and hit that home run: during public comment periods, in larger groups, non-ag groups, to elected officials, etc. If we take a smaller, more focused, grassroots approach, we can communicate and advocate to more people over time.

There are tons of books, TED talks, YouTube videos, classes, etc., on effective communication and grassroots advocacy (you need the first to do well in the second). I've had the privilege of being a Fellow in the California Ag Leadership Program, and one of the key pieces we learned and practiced was becoming more effective communicators. I want to share some of the keys that have helped me when I tell my story & advocate on behalf of the industry with small groups and individuals.

In my mind (and many experts), three pieces of interconnected skills work together to make us effective communicators. Those skills are clarity, active listening, and adaptability.

Clarity refers to the ability to convey your message clearly and understandably. It involves using simple and concise language, organizing your thoughts logically, and avoiding unnecessary complexity. This is one of the pitfalls in our industry; we deal in science, statistics, and numbers. We can lose our audience in the details! When you communicate with clarity, your message is easily comprehended, reducing the chances of misinterpretation or confusion. In other words, know your audience!

Effective communication is not just about expressing yourself; it also involves actively listening to others. Active listening means paying full attention to the speaker, understanding their perspective, and responding appropriately. It requires concentration, empathy, and nonverbal cues, such as maintaining eye contact and nodding. By actively listening, you demonstrate respect and create an environment for open dialogue. We often speak to people with preconceptions about pesticides, agriculture, and our industry. When we get adverse reactions or responses to what we're saying, we tend to ignore it and plow on. I often stop and turn the response around with a "help me understand" question. For example, when someone tells me that PCAs just push pesticides, rather than discounting or ignoring that statement, I'll ask them to help me understand why they believe that to be true, thus including them in the conversation and speaking *with* them rather than *at* them.

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Finally, communication is a dynamic process that requires adaptability to different situations and audiences. It's crucial to adjust your communication style, tone, and content based on the recipient's context and needs. Adapting your communication helps you connect better with others and ensure your message resonates effectively. Again, know your audience!

When sharing our story and trying to educate or bring awareness to an issue, for example, the role PCAs play in IPM & reducing pesticide use, we are utilizing several key principles of grassroots advocacy. Those include building relationships, education & awareness, and coalition building. Therefore, as we become better communicators, we improve our advocacy abilities and effectiveness as our industry representatives. This gives you some food for thought and a little more confidence as we discuss ourselves and our industry. ■



Membership

CAPCA Member Benefits Continue to Grow!



Crystelle Turlo, Chief Operations Director

As a professional trade association, we recognize the importance and value of member benefits. You hear us at the CAPCA state office talk quite often about benefits and how we can best support our members to assist in your professional development. In addition, we are listening to your opinions and striving to be the hub for relevant and timely PCA information.

Earlier in 2023, we introduced a new communication method; the eNewsletter. The state office began receiving rave reviews from readers as soon as it was sent. This monthly update answered many member requests for a concise and consistent way to get information from CAPCA. We are happy that the eNewsletter accomplished what people were asking for, and the feedback continues to be excellent.

Our commitment to you will grow even further in the second half of 2023 as we deliver quality online continuing education. For those who prefer to be in-person, chapters are hosting informative events being attended by a record number of industry members.

After six months of development and many staff hours, the state office unveiled a new CAPCA website in June. This new website evolved from our members' requests for an intuitive and easy-to-operate site. We listened and hope all members can easily navigate the new site.

As we progress, I invite you to look ahead to the 2023 CAPCA Conference in Reno, Nevada, in October. Expect to see new events and exhibitors while we focus on agriculture technology. I look forward to seeing everyone there! Have a great summer! ■

Join CAPCA

Membership with CAPCA is the best way to take your involvement, education, and skill set to the next level. There are 3 levels of membership available: Active, Associate, & Student.

JOIN HERE:

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



ACTIVE MEMBER

Only California State licensed Pest Control Advisers are eligible for Active Membership in the Association.

ASSOCIATE MEMBER

An associate member is any person not licensed as an agricultural Pest Control Adviser, but may hold other licenses issued by the State of California, and wants to promote the purpose of the Association.

STUDENT MEMBER

A student member is a student regularly enrolled in a college or university, majoring in biological or agricultural sciences and preparing for a career in pest management. A student member may not hold a DPR license.



555 University Avenue, Suite 260 - Sacramento CA 95825
(916) 928-1625

Please enclose check payable to: CAPCA (A \$25 FEE WILL BE CHARGED FOR RETURNED CHECKS)

License Number: _____ Email: _____

Name: _____ Cell Phone: _____

Mailing Address: _____ Work Phone: _____

City, State, Zip: _____ Employer: _____

Additional Chapters you wish to join: _____ CCA #: _____

ACTIVE MEMBERSHIP	ASSOCIATE MEMBERSHIP	STUDENT MEMBERSHIP
Licensed PCAs must join as Active Members	Non-PCAs - printout not provided	Must provide proof of full-time student status. May not hold a DPR license.
<input type="checkbox"/> 2023 = \$160.00	<input type="checkbox"/> 2022 = \$45.00	<input type="checkbox"/> 2023 = (no fee)
<input type="checkbox"/> 2024 = \$160.00	<input type="checkbox"/> 2023 = \$45.00	
<input type="checkbox"/> 2022 = \$210.00		

- I WOULD LIKE TO OPT OUT OF ALL EMAIL COMMUNICATIONS. I understand that by opting out of email, I will NOT receive any information from CAPCA regarding CAPCA business or any information outside of CAPCA, such as emails from CAPCA Sustaining Members or industry stakeholders. This includes updates and notices about continuing education, programs and benefit opportunities. (Please be aware that CAPCA primarily utilizes email to communicate with members.)
- I DO NOT WANT MY MAILING ADDRESS UTILIZED OUTSIDE OF CAPCA PURPOSES.
- I DO NOT WANT \$7.00 OF MY DUES TO GO TO CAPCA PAC** (Political Action Committee).

Update your email communication preferences through the CAPCA website
<https://capca.com/manage-my-communications/>
You can now define which crop team, chapter and event notifications you want to receive.

Which of the following categories are important to your work as a PCA (check all that apply):

- | | | |
|--|---|--|
| <input type="checkbox"/> Aquatics | <input type="checkbox"/> Forage/Silage | <input type="checkbox"/> T/O, Landscape |
| <input type="checkbox"/> Berries | <input type="checkbox"/> Golf/Sports Turf | <input type="checkbox"/> Tree Nuts |
| <input type="checkbox"/> Citrus & Subtropicals | <input type="checkbox"/> Grains | <input type="checkbox"/> Vegetables |
| <input type="checkbox"/> Cotton | <input type="checkbox"/> Grapes | <input type="checkbox"/> Vegetation Mgmt |
| <input type="checkbox"/> Deciduous Fruits | <input type="checkbox"/> Rice | <input type="checkbox"/> Organics |
| | | <input type="checkbox"/> Hemp |

Want access to your membership benefits quicker? Pay your dues online at capca.com/membership.

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Your dues payment is not deductible as a charitable contribution for federal and state tax purposes. However, a portion of your payment may be deducted as an ordinary and necessary business expense. Please advise your tax consultant if you qualify for an ordinary and necessary business expense tax deduction. If you qualify for an ordinary and necessary business expense tax deduction, you may deduct up to \$143/\$35 for dues of \$160/\$45 respectively. If you chose not to earmark \$7.00 of your dues as a contribution to CAPCA PAC and you qualify for an ordinary and necessary business expense tax deduction, you may deduct up to \$150/\$42 for dues of \$160/\$45.

**The CAPCA PAC Contribution is a voluntary non-tax deductible contribution.

For CAPCA Use Only
Check# _____
Amount _____

Early Renewal 2023 REMINDER

The Department of Pesticide Regulation (DPR) will mail out renewal packets in August to license and certificate holders with surnames or business names starting with the letters **M-Z**.

Avoid Processing Delays

Submitting earlier allows DPR staff additional time to deal with issues that could delay processing your license or certificate.

Submit By October

Please mail your application before November so that your license or certificate can be issued before it expires. Submit before October, and be renewed by early December to register with the county before the New Year.

Have QP Renew Early

For pest control businesses, the qualified person (QP) must be renewed before the business license can be processed. Submit renewals at the same time **before** November.



If you do not receive your application in the mail, scan the QR to visit our website and download a copy. If you need to contact Licensing at licenseemail@cdpr.ca.gov, don't forget to include your full name (First, MI, Last) and license number(s) so staff can assist you faster.



2023 Renewal Information for DPR M-Z License and Certificate Holders

Dates for Renewal

October 1, 2023	DPR encourages submitting completed renewal applications to DPR by this date to best ensure you receive your new license/certificate before January 1, 2024.
November 1, 2023	Processing time is 60 days for applications with payments processed by this date. Applications received after November 1 may experience a longer processing time and you may not receive your license/certificate by January 1.
January 1, 2024	Your license/certificate must be renewed by this date to continue working legally and without interruption.

Address Changes

Always notify DPR in writing immediately of any address or name changes. When emailing DPR it is best to include your full name (First MI Last) or business name, as well as your DPR License or Certificate Number.

Mailing of Renewal Packets

DPR is mailing renewal packets in August to provide sufficient time for license and certificate holders to submit their applications by October 1. Renewal applications must be postmarked on or before December 31, or a late fee applies.

If you did not receive your renewal application or misplaced it, download a renewal packet from DPR's website.



Qualified Person for Business

Business applications are held until the Qualified Person's license or certificate has processed. It is best to submit the Business and Qualified Person's individual application by October to allow time to register with the County before the New Year.

Individual License and Certificate Renewal

The following forms will be included in the renewal packet:

- Renewal Application
- License/Certificate Renewal Information
- CE Records Renewal Summary
- Visa/MasterCard Transaction

Renewal applications need to be signed and must include the required CE records summary and correct fee.

Check Your Renewal Status on DPR's Valid License Web Page:



Continuing Education

You must retain copies of your CE records for three years. DPR may request copies of your CE records to audit at any time. DPR does not track CE hours for individuals.

Submit the CE Records Renewal Summary or a summary record of CE attendance from a third-party professional association.

Your CE records must include:

- License/Certificate Holder's Name
- License/Certificate Number and Type
- Course Location
- Course Title
- Course Date
- DPR Course I.D. Number
- Course hours attended for each CE category
- Name of instructor or sponsoring organization
- Your Signature

General Information about CE Courses

DPR-approved CE hours must be obtained during the valid period of the license or certificate. The valid period is listed on the license or certificate (from the 'date of issue' until the 'valid through' date). No grace period is given to obtain CE hours. No CE hours can be carried over to the next renewal period.

If renewing multiple licenses or certificates, you only need sufficient CE hours to meet the license/certificate with the most CE hours required.

Questions about your CE hours?

For questions about your CE hours, you must contact the course sponsor or your professional association. See DPR's website for current or previous years' courses and sponsors' contact info.



DPR Electronic Mailing List

Sign up for important information and updates from DPR about Licensing and CE.



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CAPCA has secured incredible room rates at the Grand Sierra Resort! Registration grants you access to the CAPCA Room Block. Upon registration confirmation, you will receive an email with the link to book your hotel room.

Register today at events.capca.com!

FULL ATTENDEE REGISTRATION | Member: \$475 / Non-Member: \$555

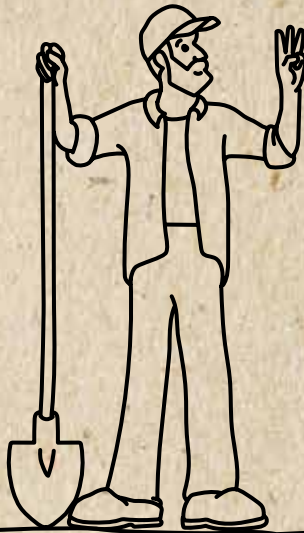
All Licensees (including exhibitors and industry professionals needing CE credit)

- CE Programming including pre-event Nitrogen Management Update on Sunday morning.
- Access to all Conference dining and reception events.
- Conference Swag Bag
- Discount for CAPCA Members
- Discount for Early Registration (before August 30, 2023)
- For Early Registration Full Attendees ONLY (before August 30, 2023) – Access to the Online Label Update CE Program (DPR Hours TBA, release date early September 2023).
- Onsite registration is \$555, and depending on capacity, may not be available.

PROFESSIONAL ATTENDEE REGISTRATION | \$495

Industry professionals including exhibitors without a License

- Access to all Conference dining and reception events.
- Registration is not eligible for Continuing Education credit.
- Registration does not include the online Label Update program.
- Early or CAPCA Member discounts do not apply.
- This is a pre-registration option only – must register before August 30, 2023.
- Onsite registration is \$555, and depending on capacity, may not be available.



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| A4 Promotions & Incentives | FMC | Premium Double Booth |
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| Ag Spray Equipment | Grower's Secret | Profarm |
| AgBiome | Helena Agri-Enterprises | Pumptech |
| AgNet Media/AgNet West Radio Network | Heliae Agriculture | Redox Bio-Nutrients |
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2023 Program

SUNDAY, OCTOBER 15

12:15 - 12:50 PM

In Person Label Updates & Exhibitor Presentations

12:00 - 6:00 PM

Exhibit Hall Open

1:00 - 3:30 PM

Technology Roundtable: Innovation in Recordkeeping, Food Safety and Pest & Disease Detection

3:30 - 4:00 PM

Development & Application of an In-Field Optical Biosensor for Early Detection of Plant Diseases

4:00 - 6:00 PM

Exhibitor Presentations

6:00 PM - 9:00 PM

Welcome Reception

MONDAY, OCTOBER 16

7:30 - 7:40 AM

Welcome & CAPCA Annual Business Meeting

7:40 - 8:00 AM

Licensing & Hours Housekeeping

8:00 - 8:45 AM

CACASA & BeeWhere Update

8:45 - 9:15 AM

Navigating California's Regulatory Landscape with Innovative Technology

9:15 - 9:45 AM

EPA's ESA Workplan

MONDAY, CONT.

9:45 - 10:00 AM

Break

10:00 - 10:30 AM

The Imperative Need for Bio-Solutions & Novel Technology in Conventional Systems

10:30 - 11:00 AM

Harnessing Aerodynamics through Technology in Aerial Application

11:00 - 11:45 AM

Neonic Regulation Update and CDPR Licensing Update

11:45 AM - 1:40 PM

Membership Luncheon

1:40 - 2:10 PM

Innovation & Technology in Almonds

2:10 - 2:40 PM

Pest Management, Water Quality, & the Future of Rice

2:40 - 3:10 PM

Managing Pests & Diseases in Pistachios: Current Technology & Works in Progress

3:10 - 3:35 PM

Managing Insecticide Resistance in Spotted Wing Drosophila Using Integrated Approach

3:35 - 4:00 PM

Spotted Lantern Fly

3:30 - 5:30 PM

Exhibitor Presentations

TUESDAY, OCTOBER 17

7:30 - 8:00 AM

In Person Label Updates

8:00 - 9:10 AM

Exhibitor Presentations

9:10 - 9:15 AM

Break/Room Transition

9:15 - 10:00 AM

Managing Ants Sustainably: On-farm Baiting Strategies for Protein & Sugar-feeding Ants

10:00 - 10:30 AM

Managing Herbicide Resistant Chickweed in Small Grains

10:30 - 11:00 AM

Beet Curly Top Virus Control Program

11:00 AM - 12:00 PM

Moderated Discussion – The SPM Roadmap: Leveraging the Expertise of the PCA

12:00 - 12:10 PM

Conference Summary & Closing Questions

**PLEASE VISIT
CAPCA.COM FOR
CONTINUING
EDUCATION HOURS
UPDATES.**

**SCHEDULE IS SUBJECT
TO CHANGE PRIOR TO
THE EVENT.**

Conference Speakers

ZACH WORDEN

Global Head of Agronomy and Compliance Sales
Agrian by TELUS

JUSTIN KERR

CEO and Founder
Factor IV Solutions

GREG GUYETTE

GM/Founder
Insero

PERRY EDWARDS, PH.D.

Founder & CEO
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RUBEN ARROYO

Agricultural Commissioner & CACASA Liaison
Riverside County

RACHEL G. LATTIMORE

Executive Vice President of Legal Affairs,
General Counsel, Secretary
Crop Life America

DREW WOLTERS

Technical Development Manager-BSIN
UPL

DOUG THIEL

Founder and Aerial Applicator
Thiel Air

JOSH OGAWA

DPR Enforcement HQ Branch Chief
CA DPR

DR. LAUREN FANN

Senior Specialist, Pest Management
Almond Board of California

TIM JOHNSON

CEO
CA Rice Commission

BOB KLEIN, PH.D.

Manager
California Pistachio Research Board

DR. JHALENDRA RIJAL

Pest Mgmt Advisor & Assoc. Director for Ag IPM
UC ANR

MARK A. MCLOUGHLIN

Director, Plant Health &
Pest Prevention Services Division
California Department of Food & Agriculture

DAVID HAVILAND

Entomologist & Farm Advisor
UCCE Kern County

KENDRA TAPIA

Environmental Scientist for BCTV Control Program
California Department of Food & Agriculture

JULIE HENDERSON

Director
Department of Pesticide Regulation

TAYLOR ROSCHEN

Legislative & Regulatory Advocacy
Kahn, Soares & Conway LLP

CHRISTY BIRDSONG

Undersecretary
California Department of Food & Agriculture

JOSH MINOR

Cotton and High Value Crop Test Lead
John Deere

ERIK NIJSKENS

Project Manager
Agrian by TELUS

NICHOLAS CLARK

Agronomy Advisor
UCCE Kings, Tulare, & Fresno Counties

STEPHANIE REGAGNON,

Executive Director
Innovation Partnerships Danforth Plant Science Center

A Glance Toward the Future: Student Network Event Success Story

By CAPCA Staff



The California Association of Pest Control Advisers (CAPCA) recognizes the importance of mentoring and helping students achieve success in the Pest Control Adviser (PCA) career field. In 2016, CAPCA started the Student Network Event (SNE) at the Annual Conference & Agri-Expo. In its seven years, this event

has boasted great success for those students who take the time to participate while they are in school.

Fabiola Perez is one of those students. Perez grew up around the agricultural industry in Santa Maria, California. She pursued degrees in agribusiness and plant science from California Polytechnic State University, Pomona (Cal Poly Pomona). She was drawn to the university because of its location and the unique opportunity to study agriculture in an urban setting.

Perez began school solely focused on an agribusiness degree, but during the course of her studies, she became interested in the PCA career path. To her, the investigation into what is happening to a plant, identifying a problem and determining a source is exciting. She realized she needed to switch her major to plant science. Because she was already invested in her agribusiness major though, she decided to double major, giving her unique experience and perspective into the agriculture world.

As Perez began to dig deeper and became more involved in Cal Poly Pomona's Plant Science department, one of her professors introduced her to CAPCA. During her studies, there was an emphasis on students networking and getting involved in the industry, and alumni, many of whom were CAPCA members, came to speak about their paths to success. They often invited the students

to events and educational opportunities taking place in and around the university.

Perez attended her first SNE in 2016. She had the opportunity to attend the entire Conference. While there, she found the educational courses, tradeshow, and networking events a wealth of information for a soon-to-be PCA. The ability to walk into the tradeshow and connect with so many different companies provided her a wide range of contacts that she took with her as she started her career.

The partnership and support between the university and CAPCA prepared her and her colleagues to make the most out of the event. This included intercommunication skills to prepare students for the networking aspect of the Conference. Her professors wanted to make sure that when they put these students in the right room that they were also armed with the knowledge and basic business skills to leave a lasting impression.

Perez has utilized the network she gained through the SNE and CAPCA events, both state and local. She was able to walk into her career with contacts from all over California and even nationwide companies. This engagement fostered a deep curiosity through research, field trainings, and chapter events.

Flash forward seven years, Perez has had a successful six-year career with John Deere after earning her degree. She serves as the Global Product Planner for Planters; her main role is to ensure that they are investing in the development of the right portfolio for planters to serve global market needs. Perez truly embodies the success of the program and what it aims to achieve for students at all stages of their education. Today, Perez still attends the Annual Conference & Agri-Expo.



Perez discussed how the agricultural industry is small and very interconnected. She encourages all students who are interested in a PCA career path to attend the SNE event, either through their school or reaching out to CAPCA directly. The program is built to help students achieve success in this community. So much of it is the knowledge that you gain from education and continuing education, but there is an important piece that only networking with those who have walked this career path before you can help you achieve.

For those sponsors who are looking to support an event that focuses on the future of the agricultural industry and helping to build this experience, please reach out to conference@capca.com. ■



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Do you have a specific question?

FOR ASSISTANCE FROM ONE OF THESE
CAPCA STATE OFFICE DEPARTMENTS,
SEND EMAIL TO:

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- CAPCA State Events - conference@capca.com
- Chapter Questions - chapter@capca.com
- Latest Information - news@capca.com
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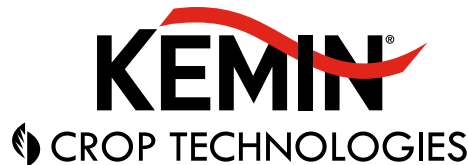
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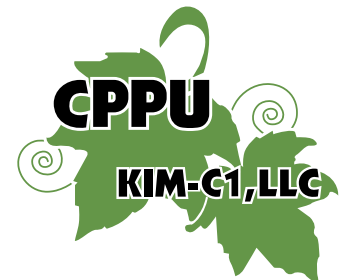


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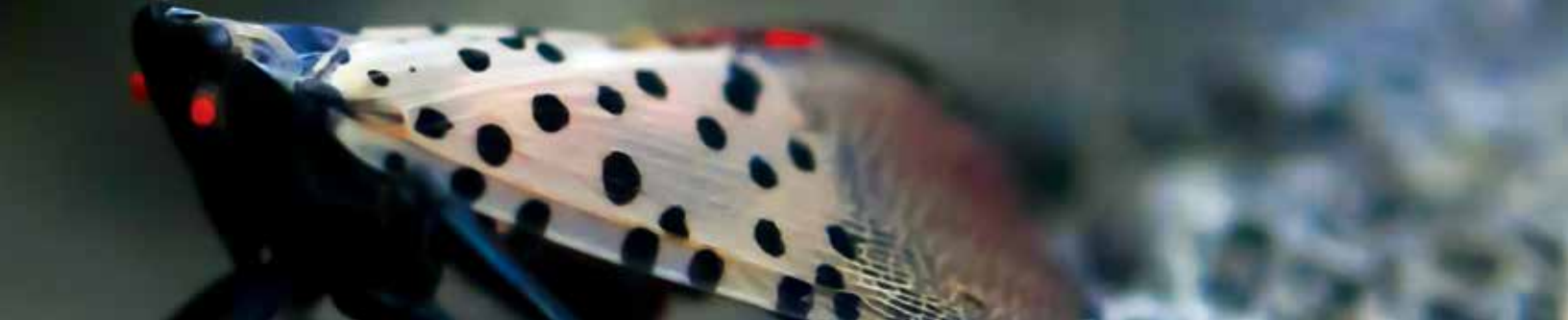
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2024 Sustaining Membership

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	\$10,000	\$6,500
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<p>Value: \$30,520</p> <p><i>The value listed here does not reflect your negotiated benefits.</i></p>	<p>Value: \$21,750</p>	<p>Value: \$11,530</p>



GOLD	SILVER	BRONZE
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PCA Profile

Meet David Drucker

By: CAPCA Staff

Pest Control Adviser (PCA) David Drucker graduated from California Polytechnical University, San Luis Obispo in 1982, with a degree in Ornamental Horticulture. Before becoming a PCA, his first job out of college was as an Ag Biologist with the Lake County Department of Agriculture. Drucker moved to the private sector in 1983, working for Purity Products in Sonoma County. He became a PCA in 1984 and got involved in the Plant Doctor program in its early days. He also holds a Certified Crop Adviser (CCA) License and a Qualified Applicator License (QAL).

In 1988, Drucker married his wife Nona at a winery in Sonoma County. They have two incredibly successful children: their daughter is a practicing attorney, and their son is a mechanical engineer. In his downtime, he enjoys outdoor activities such as hiking and fishing.

In junior high, Drucker found himself in his first ag sector job. He worked harvesting raisins in his family friend's vineyard in Biola, California. As he worked alongside the farmworker families that the industry relies on, he formed an immense amount of respect for those men and women. If you haven't had the pleasure of driving through California's Central Valley during harvest and witnessing the vast amount of time, labor, and care that goes into supplying the wide variety of food and fiber to the world, please know these men and women are vital to our food security.

Drucker is celebrating 34 years with Nutrien Ag Solutions as a Retail and Wholesale PCA. He started his career with the company in the Sonoma growing region before transferring to San Diego in 1999. While he services over six commodities, his specialty is wine grapes and avocados. His main joy throughout his career has been working with the growers and helping to provide



solutions for them. When asked what the most satisfying part of his job is, he replied, “Developing a plan and executing a successful outcome for the grower.”

If you have ever had the pleasure of speaking to or working with Drucker, you know that he is passionate and active in the industry. This passion and protectiveness of the industry started at a young age, but he truly started influencing change in the industry during his early years as a PCA in Sonoma. The area was starting to face environmental activism, calling attention to the need to communicate more effectively with the surrounding community. Drucker was part of a group of PCAs, growers, and the local Farm Bureau that helped tell the true story of agriculture. It was that experience that showed him the power of a collective voice and being involved. He has also been involved in San Diego's Ag in the Classroom since 2008.

Early in Drucker's career, he saw the strength and importance of an association like CAPCA. He began his membership with CAPCA while working on the North Coast and joining his local chapter. He went on to serve as a State Board member. After moving to the San Diego region in 1999, he started attending those local chapter meetings and became reinvolved at the local and state levels. Drucker currently serves as a CAPCA State Board Member representing the San Diego area.

The more involved Drucker has gotten, the more of the change he is able to see in the regulatory environment, the narrative, and the overall sentiment towards agriculture. When first joining CAPCA, he described Sacramento as an environment that genuinely heard the concerns of the agriculture community. As social media and other communication tools began to flood the market, he saw the storm of misinformation that became the narrative. To him, this is a large reason he became a member of CAPCA, to create a unified voice and message in

the industry that can be shared with lawmakers in Sacramento.

Drucker is a huge part of our advocacy mission at CAPCA. He is a main stakeholder in a pilot program called the Chapter Advocacy Leadership (CAL) Program. The program is working toward creating relationships at the local level with CAPCA members who live, work, and vote in districts that often are not friendly toward agriculture interests. Drucker believes we must be at the table to have a voice, and utilizing different access points to that table is a critical maneuver in the success of our industry.

"I encourage all young PCAs to be involved and engage consistently," said Drucker. He believes that someone else will do it for you if you are not telling your story. His last sentiment to leave with anyone reading this is: "Please get involved by at least going to your local board meetings. Next, if you are reading this, you are reading your Adviser magazine. There is a wealth of information in the magazine and on the website. We are a volunteer organization, so volunteer at any level. Your career will benefit from the tools and knowledge you receive." ■

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Managing agave mites: What we know so far

Eric Middleton PhD, IPM Advisor, University of California Statewide IPM Program and Cooperative Extension, San Diego, Orange, and Los Angeles Counties

Gerardo Spinelli, Production Horticulture Advisor, University of California Cooperative Extension, San Diego County

Agave mites are a pest of ornamental agave that are increasingly concerning commercial growers and homeowners alike. Colloquially known as “grease mites”, agave mites are a type of eriophyoid mite in the genus *Oziella*. Adults are around 1/3mm long and resemble translucent whitish worms (Fig. 1). Despite their small size, agave mite feeding can cause significant cosmetic damage to ornamental agave in both nurseries and landscapes.

Unfortunately, very little is known about these mites or how best to manage them. While studies have been conducted on miticides for use against the related aloe mite (see Villavicencio et al. in the references) this information does not currently exist for agave mite. To properly manage agave mites and come up with an effective IPM plan, we are currently studying various control methods for agave mite, as well as basic information about their biology and lifecycle.

Below are the preliminary results of our research combined with our current best management guidelines based on the limited published information that exists.

Hosts

The complete host range of agave mites is unknown, but they appear to be able to infest most agave species. In nurseries around San Diego, we have seen them primarily on Blue Glow agave (*Agave attenuata* x *Agave*



FIG. 1. Group of agave mites (*Oziella* sp.)

ocahui) and *Agave parryi* var. *truncata*. They have also been found on *Agave guadalajarana*, *A. isthmensis*, *A. macroacantha*, *A. murpheyi*, *A. palmeri*, *A. parrasana*, *A. potatorum*, *A. potrerana*, *A. shawii*, and *A. titanota*.

Scouting, Symptoms, and Spread

You won't see agave mites in the field. In addition to their small size, agave mites are hidden out of sight at the base of leaves and within the core of their host plants. The only way to see agave mites is to pull the agave apart and examine the leaves under high magnification, preferably using a microscope as opposed to a hand lens. Agave mites are very difficult to see even under a scope as they blend in with the whitish base of the leaf that they feed on, so exercise caution if you are trying to determine if mites are present or not. When we dissected symptomatic agave plants in the lab, the majority of mites were found on the concave side of leaves (facing the core), and the deeper in the core we got, the more mites we found per leaf.

Photos: Eric Middleton, UC IPM.

Scouting for agave mite involves looking for plants that are displaying symptoms instead of finding the mites themselves. The classic symptom of an agave mite infestation is greasy streaks. Often, it looks like someone dipped their thumb in grease and pushed it onto the inside surface of the leaf (Fig. 2). Leaves can also turn yellowish and develop lesions if the feeding damage is more severe. Once symptoms develop, commercially grown agave often become unsalable due to their appearance. In bad infestations, the core of the agave becomes distorted and begins to collapse (Fig. 3). While the damage these mites cause is mostly cosmetic, heavy infestations will stunt growth and can even kill agave in some instances.

But how long does it take after mites infest a plant for symptoms to appear? Considering agave are slow growing plants, agave mites are probably present for a long time before the plant grows out and symptoms first become visible. To more directly test this, we



FIG. 2. Characteristic “greasy” streak on a Blue Glow agave leaf, caused by agave mite feeding.

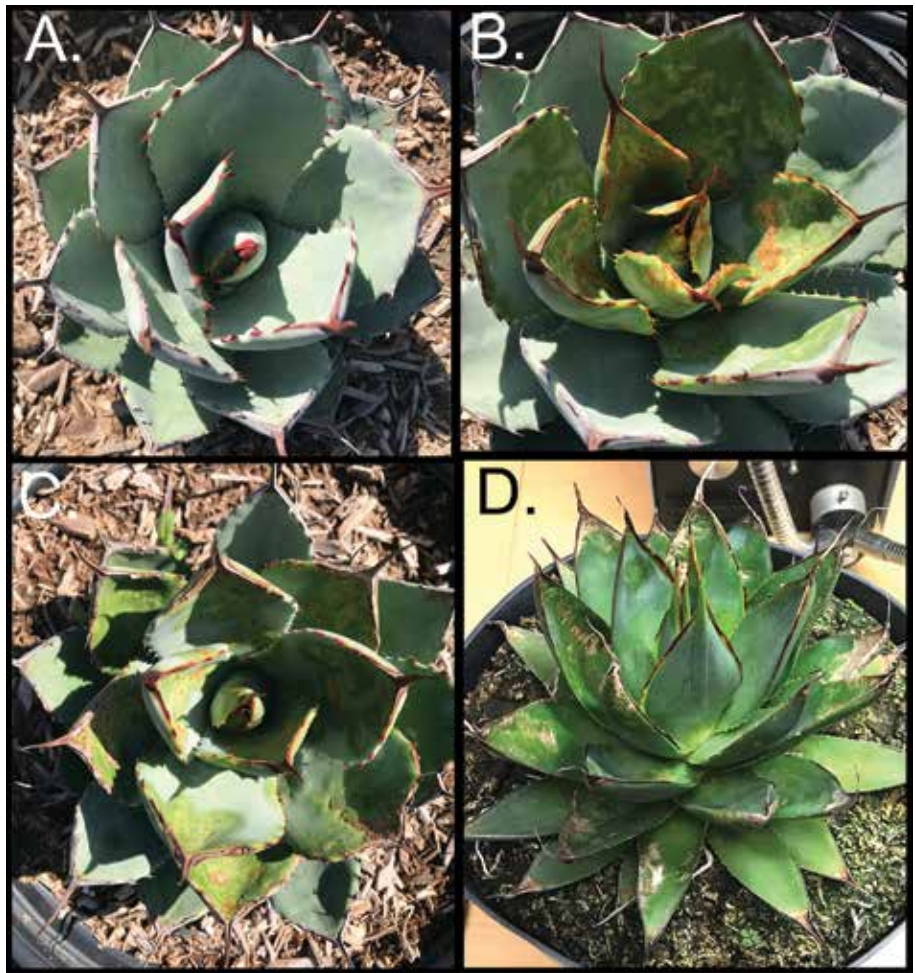


FIG. 3. A. Healthy Parry's agave; B. Parry's agave with symptoms on core and inner leaves; C. Parry's agave with symptoms on most leaves; D. Blue Glow agave with symptoms on most leaves.

deliberately infested clean plants with agave mites and monitored them over the course of several months. We found symptoms appeared in young Blue Glow agave approximately 3 months after infestation, and in Parry's agave around 5 months after infestation.

Like other eriophyoid mites, agave mites are thought to spread by being carried on the wind, making infestations patchy and hard to predict ahead of time. As an example, we put 125 clean agave in the center of a hoophouse where symptomatic agave were frequently present, and monitored them for symptoms for 7 months. None of the clean plants developed symptoms and no mites were found on any of them, despite new symptomatic agave appearing frequently elsewhere throughout the hoophouse for the duration of the experiment. Even in cases where there is high pest pressure, agave mite infestations are unpredictable.

Biological Control

Predatory *Amblyseius* mites could be useful tools to prevent agave mite infestations. We tested three different commercially available predator

mites (*Amblyseius andersoni*, *A. californicus*, and *A. swirskii*) and found that all of them consumed agave mites in the lab. Additionally, when predator mites were placed on agave that were then infested with agave mites to simulate a new infestation, *A. californicus* significantly reduced agave mite numbers and almost prevented infestations from establishing entirely (Fig. 4). This suggests that *A. californicus* mites could be used preventatively to stop agave mite infestations from starting on clean plants. However, in a separate experiment, none of the predator mites were able to significantly reduce agave mite numbers on symptomatic plants that had large existing agave mite populations.

agave mite infestations, but symptoms still appear later from damage that occurred months earlier. This can falsely make effective miticides appear ineffective.

Another problem could be where the mites are located. If contact insecticides are being used without proper adjuvants and thorough coverage, they may never reach the mites deep in the agave core.

Finally, many of the miticides growers and PCAs use could simply be ineffective. In our experience, several growers we worked with were using products labeled for use against spider mites or tarsonemid mites instead of products labeled for use against eriophyoid mites. Some of the difficulty in managing agave mite may simply come down to correctly identifying it and using the appropriate miticides for eriophyoids.

Currently we do not know which miticides are effective and which aren't against agave mite. We will be testing multiple miticides later this summer to determine their efficacy. For now, select miticides that are labeled for use against eriophyoid or eriophyid mites, make sure you achieve thorough coverage on your agave when applying, and strongly consider using an adjuvant that will help the miticide spread into all the crevices of the plant to reach the agave mites. Based on previous research on aloe mites and what we know about agave mite biology, we suspect miticides containing fenpyroximate, spirotetramat, or spiromesifen may be effective, and are labeled for use against eriophyoids.

An IPM Plan

Below is a sample IPM plan for managing agave mite.

Monitoring

Check if any of your agave have symptoms and strongly consider roguing agave with advanced symptoms. Cover and dispose of these plants downwind of the rest of your agave. Continue to monitor your plants for symptoms, especially plants close to previously infested agave.

Prevention

After removing already infested agave, you can deploy predatory *Amblyseius californicus* mites or use miticides prophylactically to help prevent infestations. Sachets of *A. californicus* are available to purchase and may provide preventative control for several weeks. If using miticides, products containing fenpyroximate, spiromesifen, or spirotetramat are likely good choices.

Agave Mite Abundance (Preventative)

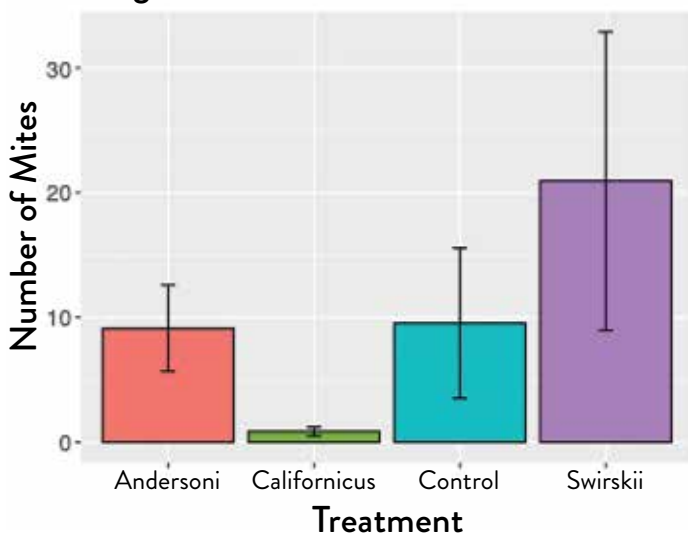


FIG. 4. Results from our preventative predator mite experiment. Bars represent the average number of agave mites on plants 3 weeks after predator mites were added, ± 1 standard error. “Andersoni” = *Amblyseius andersoni*, “Californicus” = *Amblyseius californicus*, “Swirskii” = *Amblyseius swirskii*, “Control” = untreated control.

Chemical Control

Agave mites are difficult to manage with miticides. Numerous growers and PCAs we worked with have used a variety of miticides without finding something that prevents symptoms. Unfortunately, this could be for a couple of reasons. As we found earlier, symptoms take months to appear after a plant has been infested, so it is possible that some miticides are effective and eliminate

Curing Infestations

If agave mites are established in your plants, applications of miticides labeled for use against eriophyids and combined with adjuvants to increase their coverage are the most likely to be effective. However, the damage the mites caused will persist and may take months to grow out. Unfortunately, predatory mites will not be able to clean up existing agave mite infestations.

Monitor Again

Check your plants multiple times after treatment to evaluate what has worked and what hasn't. Remember that just because symptoms appear later does not necessarily mean plants are still infested with agave mite. If possible, cut up a plant or two and check for mites under high magnification (30x or greater at minimum) to see if agave mites are still present.

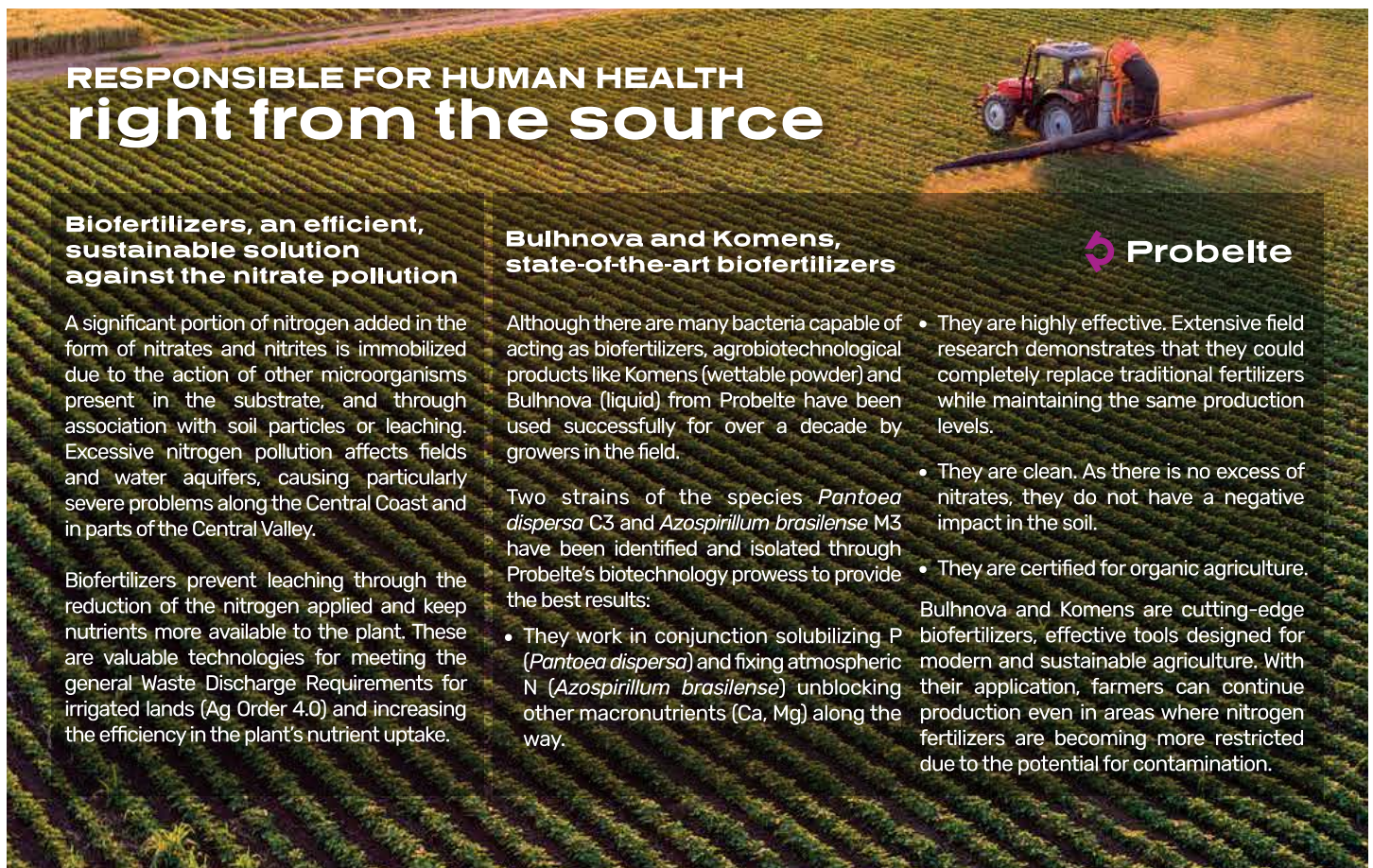
Agave mites are difficult to manage, but hopefully this gives you a decent starting point for controlling this damaging pest. Remember, our research is still ongoing, so stay tuned for future updates from UC Cooperative Extension! ■

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Biofertilizers, an efficient, sustainable solution against the nitrate pollution

A significant portion of nitrogen added in the form of nitrates and nitrites is immobilized due to the action of other microorganisms present in the substrate, and through association with soil particles or leaching. Excessive nitrogen pollution affects fields and water aquifers, causing particularly severe problems along the Central Coast and in parts of the Central Valley.

Biofertilizers prevent leaching through the reduction of the nitrogen applied and keep nutrients more available to the plant. These are valuable technologies for meeting the general Waste Discharge Requirements for irrigated lands (Ag Order 4.0) and increasing the efficiency in the plant's nutrient uptake.

Bulhnova and Komens, state-of-the-art biofertilizers

Although there are many bacteria capable of acting as biofertilizers, agrobiotechnological products like Komens (wetable powder) and Bulhnova (liquid) from Probelte have been used successfully for over a decade by growers in the field.

Two strains of the species *Pantoea dispersa* C3 and *Azospirillum brasilense* M3 have been identified and isolated through Probelte's biotechnology prowess to provide the best results:

- They work in conjunction solubilizing P (*Pantoea dispersa*) and fixing atmospheric N (*Azospirillum brasilense*) unblocking other macronutrients (Ca, Mg) along the way.
- They are highly effective. Extensive field research demonstrates that they could completely replace traditional fertilizers while maintaining the same production levels.
- They are clean. As there is no excess of nitrates, they do not have a negative impact in the soil.
- They are certified for organic agriculture.

Bulhnova and Komens are cutting-edge biofertilizers, effective tools designed for modern and sustainable agriculture. With their application, farmers can continue production even in areas where nitrogen fertilizers are becoming more restricted due to the potential for contamination.

Probelte

With biologicals, experts call for a focus on the science

By: Brad Hooker, Agri-Pulse

Pest Control Advisers and dealers are encouraging farmers to focus on the science when deciding on biological options, rather than labels like Organic.

Issues with getting cultural buy-in from the industry arose throughout the 2023 Salinas Biological Summit in June. The Western Growers Association had partnered with a New Zealand-based agrifood tech firm to host the two-day conference. It connected startups with investors while spreading awareness among farmers of emerging alternatives to conventional pesticides, fertilizers and stimulants.

Paul Crout, who has more than 20 years of experience as a Pest Control Adviser, stressed that PCAs are both the gatekeeper and the consultants for many of the products that end up in grower hands.

“We want to make sure that the products we’re using or recommending are safe, effective and they do what they need to do at the end of the day,” he said, during a panel discussion at the summit.

Crout is a senior product manager and agronomist at Helena Agri-Enterprises. The company has been looking at more than 300 new products and new active ingredients on the market, before putting them through another three years of further internal research and development, he explained.

“Part of the challenge—nationally and in agriculture in general—with (biological) products is that we’re operating under a conventional chemistry paradigm,” he said, adding that biologicals require additional consideration for plant nutrition, soil health and other factors.

Grower perception is another challenge. Many farmers tried the first generation of biologicals—what are often dismissed today as “bugs in a jug” or “bathtub brews”—and were disappointed.

“They used a product once and it didn’t work,” said Crout. “They’re throwing the baby out the bathwater.”

Francisco Manzano, who is the director of business development at Nutrien Ag Solutions and has been selling biologicals for the last decade, noted the biggest challenge in his experience has been the assumption that biologicals do not work. He understands that sentiment, since the products were initially sold as one-size-fits-all solutions. But he emphasized that the approach has evolved since then.

“Companies are investing a ton of resources to understand when the product works, how it works and when it does not work, which is even more important—so that PCAs and retailers can make the right combination,” said Manzano.

The key is not to replace one conventional with one biological product but to understand how the two tools can play together to offer the farmer the best solution, he explained.

Mike Wilbur, who serves as the president and CEO of Cavallo Ventures, Inc., the venture capital arm of Wilbur-Ellis, added that credibility and confidence in the products are critical components for success.

Crout said the industry needs to make a conscientious shift in how the products are differentiated and called for less of a focus on labels like regenerative, organic or biodynamic.

“It’s science at the end of the day,” he said. “Honestly, they can all work together.”

He argued the direction should be toward sustainable farming practices that use the proper inputs and all the tools available. To do that, he added, state and federal agencies should redefine sustainability in the regulatory context. ■

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Featured Article

The rice seed midge as a pest of rice in California

Luis Espino, Rice Farming Systems Advisor,
UC Cooperative Extension

Ian Grettenberger, Cooperative Extension Specialist,
UC Davis

In the past three years, there has been an increase in the number of reports of damage to rice by rice seed midge in the Sacramento Valley. During 2021 and 2022, the issue was not widespread, but there were some instances where the damage was severe. For example, in 2022, one of the UC Cooperative Extension statewide variety trials in Yolo County was completely wiped out by the midge. In 2023, several reports of damaged fields were received. We visited several of these fields with varying levels of injury in Colusa and Glenn Counties. One of these fields lost almost 20 acres to midge. Some of the damaged fields had received a pyrethroid treatment soon after seeding. While these insecticide applications may have provided some control in the past, it appears that may no longer be the case, and we are puzzled by the apparent inefficacy of the insecticide.

Rice seed midge has been recognized as a problem in the California water seeded system since the 1950s, albeit often a more minor issue compared to the other key arthropod pests. Reports to the California Rice Research Board indicate that midges were a concern during the 1970s and early 1980s, although infestations were sporadic and varied from year to year. During the 1990s and early 2000s, rice seed midge problems seemed to have taken a backseat to rice water weevil and armyworms. It is not until 2007 that midges are mentioned again. In this article, we will review some basic information about this pest and provide some recent observations.

Rice seed midge biology

Midges are abundant in aquatic ecosystems with species found in bodies of water that are natural or man-made and flowing or still. They are flies that are members of the insect family Chironomidae. The immature stage is a small, often aquatic larvae (Figure 1). Rice fields are food-rich environments that are exploited by midges. Up to 30 species of midges have been identified in rice fields, but three species are the ones typically associated with injury to



FIG. 1. Rice seed midge larvae on a hollowed seed.



FIG. 2. Rice seed midge silken tubes surrounding injured seeds.



In My Opinion ...



Mark Brady, Western Marketing Manager, Plant Food Systems, Inc.
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“ Differentiation is a big deal in almonds ”. Of all the tree crops we grow in California, there is only one that I can think of that goes from a deciduous dormancy to bloom prior to any significant leafing out. We’re talking about California’s favorite and perhaps most challenging tree, almonds. Common sense and logic tells me that we really can’t get much uptake nutritionally during a bloom spray, in fact I wonder if we do more harm than good. A key time for P and K is at bud differentiation.

PRECURSOR XL At Hull Split

The hull split period can give a grower two opportunities to effect his crop. The first being reduction of hull rot through an application of *PRECURSOR XL* to mitigate the fumaric and oxalic acids produced by the pathogens *Rhizopus stolonifera* and *Aspergillus niger*. also phosphite can show activity toward *Monilinia spp.* and *Aspergillus niger*. Furthermore, nutritional potassium helps to strengthen the cell wall and guard against pathogen infection. The combined ingredients found in *PRECURSOR XL* are quite effective through eliciting a broad range of responses.

Many orchards properly managed with regards to both nitrogen and water may not exhibit a high incidence of hull rot. The second opportunity to affect the crop is the ability of P and K to trigger bud differentiation and generate a higher percentage of fruiting buds versus vegetative. Through years of research, ingredients available within *PRECURSOR XL* have repeatedly produced greater numbers of blossoms, along with stronger blossoms, exhibiting improved fertilization rates and early fruit set. Therefore the grower receives the benefits of hull rot reduction as well as increased fruiting buds from one product.

Applications of 1 gallon per acre repeated ten days to two weeks apart beginning at stage B of hull split can result in a very efficient economic return to next years crop. In addition to hull split applications, post harvest applications of *PRECURSOR XL* can definitely result in greater budwood maturation, again producing a stronger more easily fertilized flower. Investing in next year’s crop now is definitely the common sense thing to do.



PRECURSOR XL at Hull Split, “EXACTLY LIKE NOTHING ELSE”



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rice seedlings. When we talk about rice seed midge, we are really talking about multiple species at once, although many aspects of their biology are similar.

Rice seed midge survive in canals and ditches year-round. During spring, adults swarm, mate, and lay eggs on the surface of the water as fields are flooded. Larvae from other fields or canals can also be moved into fields with the floodwater. Adults do not feed on rice; it is not known if they feed at all. Eggs hatch after two days, and very small larvae swim to the bottom where they feed and build silken tubes (Figure 2) that they use for protection. The tubes get covered with mud and algae and are easy to spot when the water is clear. The larvae initially feed on diatoms and algae and can start feeding on rice seeds and seedlings after around 5 days. After a few more days, larvae pupate, turn into adults, and repeat the cycle again.

Injury to rice

Rice seed midge larvae damage rice fields by feeding on germinating rice seeds and seedlings. When feeding on the germinating seed, larvae consume the embryo and endosperm, hollowing them out. Damaged seeds show an entrance hole in the hull near the embryo. Algae tend to colonize the interior when seeds are hollowed, giving the seed a green tinge (Figure 3). A silken tube can sometimes be seen attached to the seed where the midge larvae rests while it is not feeding. Midge larvae can also clip the developing coleoptile or radicle, causing injury similar to tadpole shrimp. Hollowing of the seed and clipping the germinating structures will kill the seed. Once the coleoptile and radicle are well developed, midge injury is less likely to kill the seedling. Midge larvae also feed on larger seedlings. It is not uncommon for midges to perforate leaves; they may even attach their silken tubes to the seedling. However, this type of injury does not kill the seedling.

The most severe injury by midge occurs soon after seeding, so it can be easy to miss. When observing seed through the water, they seem to be healthy and waiting to sprout; the dead seeds and green coloration on the seeds develop much later. Most growers and PCAs notice that something is wrong because the seed seems to be just “sitting there,” and no germination is observed (Figure 4). Typically, midge injury tends to be concentrated near a field edge, leaving a large area with no stand (Figure 5).



FIG. 3. Rice seed injured by rice seed midge. Notice the area where the embryo should be is hollowed and has a green coloration from the development of algae.



FIG. 4. Seed injured by rice seed can be observed on the surface of the soil when the water is clear.



FIG. 5. Low stand caused by rice seed midge damage.

Three factors increase the risk of midge injury. One factor is cool temperatures that slow down the germination of seed. This exposes the seed to midge damage for longer periods of time and allows midge larvae to reach a size that can injure rice before the rice outgrows the window for risk. This year, we have experienced some cool weeks during planting time, and that might explain why we have seen more damage. A second factor is seeding time after flood. Given that midge larvae reaches a size that can injure rice in about seven days, a field that takes more than five days to flood and seed will be at much higher risk of injury than a field that can be flooded and seeded in less than five days (consider that the seed will be susceptible for three to four days after seeding). A third factor is planting time. Planting late, be it late date-wise (late May) or late with respect to nearby fields, increases the risk of midge injury. Adult midge populations can build up in an area and then infest these newly planted fields. Figure 6 shows results from a 1975 study that illustrates

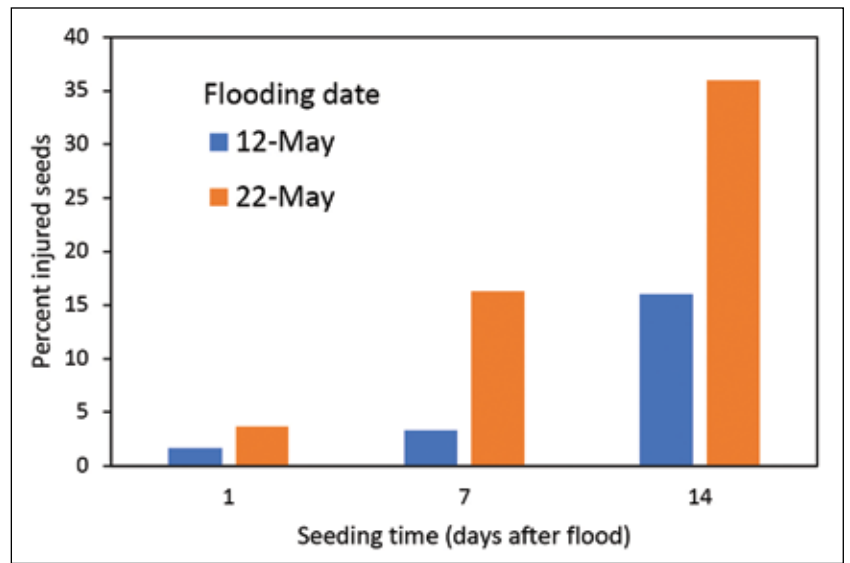


FIG. 6. Rice seed midge injury on plots flooded 10 days apart (12 May and 22 May) and seeded 1, 7, or 14 days after flood, Davis, 1975. Data taken from the paper “Conditions associated with rice plant injury by Chironomid midges in California” by Clement et al, Environmental Entomology 6: 91-96, 1977.

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the two last points. As the seeding time after flood was delayed by a week, injury more than doubled on average. As flooding date was delayed 10 days, injury by rice seed midge increased significantly.

Management

The best strategy to reduce the risk of injury by rice seed midge is to avoid planting too early or too late, avoid low or high temperatures during seeding, and seed soon after flooding. If injury is detected early enough and the field can be drained quickly, draining the field can reduce damage; however, injury can still occur in low areas of the field that do not drain completely. Planting high quality seed and maintaining an adequate flood can help seedlings establish quickly and avoid midge injury.

Lambda cyhalothrin, a common pyrethroid insecticide used for seedling pests in rice, has been used to manage rice seed midge. However, in recent years, we have noticed that some treated fields are still damaged by the midge. There is some evidence that indicates that midge larvae may not be as susceptible to this insecticide as we

thought, possibly due to repeated applications of these insecticides through time.

We began to try and understand more about management of seed midge with insecticides using field trials in 2022. We used 10.7 ft² aluminum ring plots for this study. To promote rice seed midge damage, we planted one section of the area we use for research at the Rice Experiment Station in Biggs very late on June 8th, roughly two weeks after nearby fields were planted. We tested a number of insecticides used in rice along with some unregistered materials. Two different types of untreated treatments were used. Benthic samples were taken 7 days after planting and midges were counted and identified.

Notably, there was a significant effect of treatment on rice seed midge abundance (Figure 7). The significant overall treatment effect was driven by high midge abundance in the lambda cyhalothrin at 0.04 lbs ai/a and pyrethrin treatments contrasting with lower abundances in the chlorantraniliprole, diflubenzuron at 0.125 lbs ai/a, clothianidin at 0.03 lbs ai/a, and diflubenzuron at 0.06 lbs ai/a treatments. Notably, the lambda cyhalothrin at 0.04 lbs ai/a treatment (highest treatment) had 7.5 times the midges that the lowest treatment (chlorantraniliprole) did, with the untreated treatments firmly in the middle of the various treatments. Future work aims to clarify which insecticides could be used to help manage midge. Importantly, we would like to learn more about how pyrethroids affect midge larvae; thus far, based on these data and observations, they may not provide control. We will continue to monitor the status of rice seed midge as a pest of rice and look for management alternatives. ■

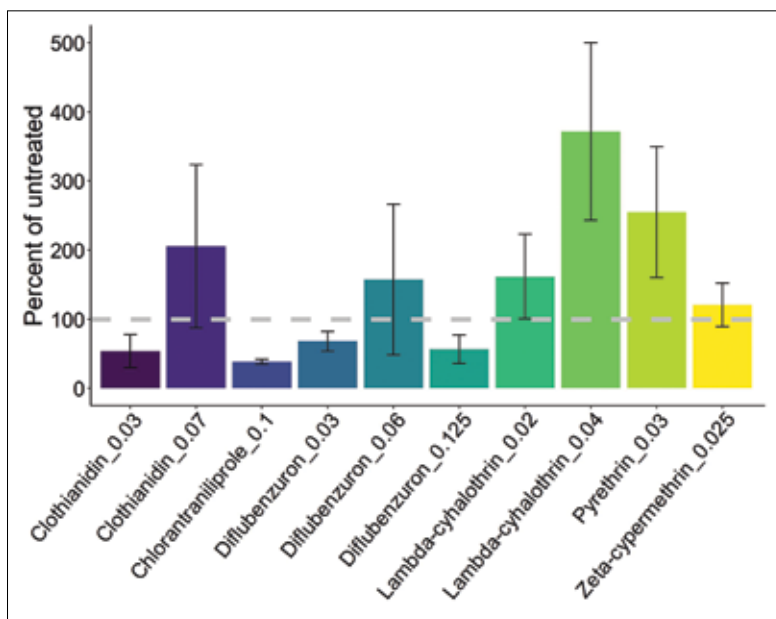


FIG. 7. Rice seed midge percent control relative to the two untreated treatment plots for different treatments. There was a significant effect of treatment, but no significant differences based on mean comparisons. The dashed line is at 100% of the untreated, i.e., the same mean as the untreated. Values represent means across replicates. Error bars are ± 1 SE.

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The Critical Role of Potassium



From stress tolerance to fruit quality, bud development to time-to-maturity, K serves pivotal roles in the plant.

By Abe Isaak, AgroLiquid Agronomist

Potassium (K) does many things for plants and the soil. This time of the year, one of the most important things we rely on potassium for is to help regulate heat stress. Heat stress can begin in plants starting at 85°. Potassium helps the stomata to stay open on the bottom side of the leaf. The stomata are tiny openings present on the epidermis of leaves. The stomata remaining open

helps the plant release oxygen and water vapor to cool the plant. Potassium is like Gatorade® for the plant. In addition to cooling the plant at high temperatures, it moves many other nutrients up and down the tree and into the roots. It is vital for cell development, cell division and sugar production in plants.

In addition, potassium helps with the quality of our crops. In stone fruit and grapes, for instance, it helps increase brix levels. This helps with storability of the fruit and makes them taste better. Nitrogen (N) will make fruit large and look nice, but K makes them beautiful and better tasting. Adequate potassium levels in grapes can translate into an increase of one brix point per week as harvest closes in. This is because the K helps in two ways: 1) with heat stress and 2) allowing the vine to photosynthesize longer into the heat of the day and begin again earlier in the late afternoon when temperatures drop lower. A deficient vine will shut down sooner in the heat and take longer to start up again at the end of the day.

To illustrate this fact, a few years ago I worked with a grower who used experimentation to make improvements in his vineyard. We applied extra K on half of his 40-acre raisin grapes and left the other side with his standard rates. This season, the grower had an exceptionally large crop. As it came close to time to pick, the grapes on the side with extra K were ready to harvest. He waited over a week for the side with standard application rates to catch up. He was fortunate that no rain came early that fall, but a week earlier would have gotten his grapes out of the field before the dangers of mold and other late-season issues.

Another critically important aspect of adequate potassium levels is saving money on pest and disease control. Plants that are vigorously growing because of high N levels are more susceptible to pests and disease





due to the imbalance of nutrients. You can have high levels of N, but make sure the K levels are kept up to help ensure the overall health of the plant.

Deficiencies in potassium can lead to bud failure, or as buds develop, they may stay vegetative instead of turning reproductive. Other factors influence this as well such as zinc and manganese, but potassium is a critical nutrient in bud development.

It is important to be proactive with K. Apply potassium early and take tissue samples to ensure there are ample levels in the leaf. A good rule of thumb is K should be 80% of the N value on a tissue test. High levels of sodium (Na) in the soil will tie up potassium.

Keep an eye on your K and Na levels in your base saturation. When combined, if potassium and sodium add up to more than 10% of the base saturation on your soil test analysis, you will have some serious problems. You will notice that tissue samples show low K, even if the soil tests show adequate to high levels of K. In fact, a soil test may say potassium is 5% of the base saturation, but that is measuring the total K level of the soil. This reflects both available K and what is trapped in between clay layers.

A word of caution: plants will take up potassium to what is called “luxury levels.” This means if K is available, a plant will pull it up to the detriment of other vital nutrients. Sometimes we think that if one pound of a nutrient is good, two must be better; this is true if you have a large deficiency, but a balance of nutrients in the plant is our goal.

There is much more that can be said about this critical nutrient. From stress tolerance to fruit quality, bud development to time-to-maturity, potassium serves so many pivotal roles in the plant. If you have questions about potassium, or any other crop nutrients, contact your trusted agronomist or crop nutrition expert. ■



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Featured Article

An Ecosystem Boost

By: Patrick Simmsgeiger, DWI - President

Freshwater ecosystems are incredibly complex habitats that rely on delicate balances shifting from season to season. The organisms that make-up these environments range in size from microscopic bacteria to massive fish. While every organism plays a role in nature, arguably none are more important than the microorganisms. In freshwater, these microorganisms are mostly things like phytoplankton, zooplankton, and bacteria. While all of these exist in numbers that are difficult to visualize, none are more numerous than bacteria. Bacteria inhabit all parts of water, but they are most concentrated in what is known as benthic sediment, or the bottom of the body of water.

These benthic bacteria are responsible for decomposing organic matter as it sinks to the bottom, and also performing vital chemical reactions such as nitrogen fixation and nutrient consumption. Their presence cuts down on excessive sediment accumulation, and also helps prevent unhealthy nutrient buildup that leads to rapid algae and plant growth. Because they perform so many vital roles, if bacterial populations suffer, the entire ecosystem suffers.

So, what can be done to help out water if bacterial populations are overworked or failing?

Many professionals who manage freshwater systems would recommend adding bacteria, as well as enzymes, to make digesting matter easier. However, others would say they are a waste of time, and that they do not assist the native bacteria population. This is an ongoing debate in the aquatic management industry, and one that does not really have a definitive right or wrong answer at this time.

Like many things involving freshwater, the best approach depends entirely on the specific body of water in question. However, in this article a general argument will be made in support of implementing bacteria and

enzymes to support the natural ecology of freshwater systems.

As mentioned previously, bacteria reside in benthic sediment in the billions and billions. They are relatively resilient, but certain things can hurt their populations. Threats such as dangerously low dissolved oxygen or hazardous chemicals can affect systems to the point that bacteria cannot digest organic matter or handle nutrient loads. When this happens, freshwater systems face a serious threat, and introducing new biological components such as bacteria and enzymes can help.

Bacteria

The bacteria that are normally added by lake managers are called aerobic bacteria, meaning they need oxygen to survive. These are relatively fast-acting decomposers that break down organic matter and supplement the existing population. By adding them, sediment accumulation can be slowed down, and potentially harmful buildups of matter can be prevented. Excessive sediment can be the cause of horrible odors, loss of depth, and even the incubation of diseases like E. coli. A healthy bacterial population plays a big part in stopping all of these circumstances from happening, but sometimes they need some outside help.



The Role of Precision Irrigation in an Integrated Pest Management System and How You Can Benefit



It's been more than 60 years since Netafim invented drip irrigation and changed the face of agriculture. Since then, the company has continued to innovate and adapt its core products to meet the needs of today's grower.

Now, they can take advantage of all the benefits of a precision irrigation system and combat threats to their crops – without installing a single piece of new equipment or requiring more labor.

By adding Netafim's precision irrigation solutions to your Integrated Pest Management system, not only are you managing pesky or even dangerous pest issues, you're also supplying critical nutrients directly to the plant. You're also wisely minimizing the risks to people and the environment.

Cost savings

Hiring an outside company to spray your crops comes with a significant cost. It's expensive and it takes time.

If you're already using a drip irrigation system, there's no need to pay for additional labor or purchase

yet another piece of equipment. Netafim drip solutions allows you to maximize efficiencies and deliver chemical additives, and nutrients through the drip line.

Precision irrigation pulls double duty.

There's no need for multiple loading zones.

Efficient and uniform

Spraying chemicals may be standard operating procedure for many growers, but it's highly inefficient, especially when the wind picks up. Fertigation is an exact science, which is why distribution uniformity matters. By using Netafim precision driplines, you're able to apply chemicals directly to the root zone, which are then taken up by the plant. Distribution uniformity is in the 90th percentile.

Guess what? Bugs don't like it.

Environmental savings

Drought and external climate conditions will continue to challenge our industry. The reality is that growers will have to pivot and adapt, and adopting precision irrigation solutions is a critical tool to mitigate water scarcity.

Drip irrigation systems allow you to apply the precise amount of water and nutrients needed directly to a plant's root zone, so it maximizes water efficiency.

Because crops are not sprayed or flooded, there is no need to worry about run-off or chemical leaching polluting waterways.

Safety

By using precision irrigation to apply chemicals, it eliminates the possibility of humans or animals touching or ingesting them. Safety always comes first!

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When a pesticide applicator is using chemical products, such as herbicides or algaecides, they have to think about what dosage is going to work in a system without hurting it. While these products are not inherently dangerous, careless use can pose real threats to ecosystems. On the flip side, Bacteria are difficult to over-apply. Bacterial populations are constantly in tight competition for resources, and are in a continuous battle with each other. Over time, different species will rise and fall due to a myriad of environmental factors that will benefit or hurt them, and no species can dominate all the others. This allows applicators to add bacteria in large amounts since they will not hurt the greater ecosystem with their presence, just join the other bacteria in the fight to break down organic matter and chemicals for sustenance.



Enzymes

Another way to help out the microorganisms is by adding enzymes. The function of an enzyme in nature is that of a catalyst. They speed up and increase the efficiency of chemical reactions. In the case of bacteria, enzymes help by drastically speeding up the decomposition process of organic matter. Enzymes can even be added by themselves to help out bacteria that already live in the water, making their task easier, and slowing down the rate of sediment accumulation in the water. Similar to bacterial applications, enzymes are also very hard to over-apply, and can be added in large quantities to achieve greater effect. This is because enzymes are just proteins. As a result, they do not have a negative impact on the environment, which is always a bonus for any product being applied to water.

Are Biological Products worth it?

Like so many things, cost tends to be the ultimate decider. Even the best plans and products have to be turned down if they are too expensive. One of the major things many people forget however, is that while some things may be more expensive up-front, the initial investment can lead to savings in the future.

Imagine being a first-time pond owner who has built their pond. You have already put lots of time and money into all the work and equipment, and set aside even more for placing plants and fish. However, when it is time to buy the pump for your filtration system, you decide you have already spent enough on the project and opt for a cheap pump, saving some money. Over the next few months as the pump starts to struggle, more and more labor is put into troubleshooting and buying new parts, and eventually, you are forced to just buy a better pump. While there were initial cost-savings buying the cheaper pump, it ends up not being the cost-effective choice in the long run. This is, in essence, the general argument in favor of biologicals.

Biological products will not fix all aquatic issues, but they will facilitate a healthier ecosystem - one better equipped to handle a wider range of environmental pressures. Being proactive with your water can be more expensive at first, but with time you will notice that the work done in the past can help change your lake from a headache into a source of pride. ■

Average Cost for Common Lake Treatment Products	
Product Type	Cost per Gallon/Pound
Algaecide	\$45/Gallon
Dye	\$100/Gallon
Surfactant	\$50/Gallon
Enzyme	\$100/Gallon
Bacteria	\$50/Pound

Ideas to Grow With

By **Darren Jones**, Northern California Sales, Ferticell
and **Alex Trudel**, PNW Sales, Ferticell

We all recognize that soil is the basis of everything we do in production agriculture. Healthy plants start with healthy soil. Environmental factors that we generally have no control over, such as drought, flooding, temperature, insects, and disease pressure make it difficult to keep crops healthy under the best conditions. When other factors such as soil salts and water quality contribute to diminished soil health, we as Crop Advisors must evaluate our choices in input materials more stringently.

Fertilizer input material has long been a tool used by Crop Advisors to overcome many crop deficiencies. We at Ferticell believe that encouraging the natural biological systems in soils makes plants more resilient to plant stressors. Ferticell's unique amino-acid, plant protein, and freshwater algae materials, coupled with natural low salt index properties and plant derived available carbon, are key to feeding the microorganisms in soil. These products have also been proven to increase nutrient use efficiency, do not require mineralization in the soil, and require little ATP energy to be utilized by plants in the fight against plant stress.

Two of our flagship products, **Universal 0-0-1** and **Nutri-Plus 2.5-0-0**, are examples of the latest fertilizer technology that cutting-edge Crop Advisors use to make much needed changes in their growers' fields. Universal 0-0-1 freshwater algae solution and Nutri-Plus 2.5-0-0 amino acids package not only provide exceptional plant responsiveness, they also aid in feeding the microbiology of the soil. This helps remediate many environmental stress factors that farmers and Crop Advisors face. Both products are liquid, compatible with most crop protection materials, and offer a wide range of application methods, including foliar and soil.

Agriculture has essentially used the same fertilizer technology since the 1950's. Ferticell's advanced technology has brought improvements to soil health, crop yield, and crop quality. Ferticell has been a pioneer in sustainability and low salt index plant nutritional products in the United States for the last 20 years. Our product line is compatible with both organic and conventional agriculture practices. All our fertility products are plant and mineral derived, making Ferticell a safe and effective tool for advancing your fertility program.



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New pollinator-protecting neonicotinoid regulations start in 2024

From the Department of Pesticide Regulation

California is making progress towards the state and national goal of protecting pollinators and bee health! New regulations by the Department of Pesticide Regulation (DPR) limiting agricultural uses of neonicotinoid pesticides will begin January 1, 2024. DPR determined that these mitigation measures are needed to protect pollinators from exposure to neonicotinoids in agricultural crops after an adverse effect report on imidacloprid and a formal reevaluation process.

The new regulations will affect food and feed use production agricultural applications of pesticide products containing the nitroguanidine-substituted neonicotinoid active ingredients: clothianidin, dinotefuran, imidacloprid, and thiamethoxam. The control measures consist of application method and rate restrictions, application timing restrictions, and seasonal application rate caps for the four neonicotinoid active ingredients and are specific to each crop group. It will be important for Pest Control Advisers to be aware of these new regulations and review the specific requirements for each crop before writing recommendations to best ensure compliance.

The regulations are a multi-level mitigation approach based on the relative bee attractiveness of each crop group. Typically, pollinators are most attracted to crops when they are in “bloom.” For most crops, “bloom” is defined in the regulations as the period from the onset of flowering until petal fall is complete. For citrus in the Citrus/Bee Protection Area (Fresno, Kern, and Tulare counties) the bloom period is defined in Title 3 of the California Code of Regulations (3CCR) Section 6984(b). The crop groups in the new regulations were divided into three categories based on their attractiveness to bees, and there are one to three types of restrictions (e.g. prohibition of application, seasonal application cap, and application rate and timing specifications) for each crop group:

- 1) Crops that are typically not attractive to bees (including crops normally harvested before bloom)
 - a. When the crop is harvested before bloom, the crop is not subject to the new regulations. Follow the neonicotinoid product label instructions.
 - b. However, if the crop is harvested after bloom (e.g., for seed production), neonicotinoid use is prohibited on the crop.
- 2) Crops that are highly or moderately attractive to bees (crops normally harvested after bloom):
 - c. Use is prohibited during bloom.
 - d. Additional use restrictions if multiple active ingredients (AIs) or both soil and foliar application methods are used on the crop during the growing season.
 - e. Additional use restrictions if managed pollinators will be used with the crop during the growing season.
 - f. Additional restrictions for certain crops.
- 3) Certain other crops where DPR was not able to determine the combinations of application rates and timings that are safe or low risk to pollinators:
 - g. Use is prohibited during bloom.
 - h. Only one neonicotinoid AI is permitted per growing season.
 - i. Only one application method (soil or foliar) is permitted per growing season.
 - j. If managed pollinators will be used with the crop, neonicotinoid use is prohibited.

The regulations include an exemption for quarantine pests, to provide the option, if necessary, to treat pests that can severely damage crops and food supply chains. The regulations also include exemptions for applications made to plants indoors or under insect-exclusionary netting and structures. The regulations do not apply to neonicotinoid use in non-agricultural settings (e.g. structural or home use) or non-crop settings (e.g. parks, cemeteries). In addition, individuals must always review and follow the pesticide label when making recommendations and applying these pesticides. These regulations do not permit a use, rate, or method not allowed by the pesticide product labeling.

DPR acknowledges that neonicotinoid products have been used as pest management tools for many years and they have also been widely used as alternatives to chlorpyrifos (whose availability and use mostly ended in 2020), however these neonicotinoid products were determined to present hazards to honey bees and other pollinators. DPR is mitigating these identified risks to bee health through crop-specific rate and timing application restrictions. DPR estimates that these new regulations will impact about 57 products currently registered in California and will reduce the number of

pounds of neonicotinoids applied and acres treated by an average of 43% and 45%, respectively, from existing use. These measures ensure the protection of pollinators, which are critical to growers and the entire agricultural industry as well as the consumers of the commodities they produce.

The new regulations are complex and specific to each crop group, therefore it will be very important for licensees to review the actual regulation text prior to making a use recommendation for, or planning an application of, clothianidin, dinotefuran, imidacloprid, or thiamethoxam on food or feed-use production agricultural crops. To view the neonicotinoid regulations and the specific restrictions for each category of crops, go to https://www.cdpr.ca.gov/docs/legbills/rulepkgs/22-001/22-001_final_text.pdf for the final regulations text, or scan the QR code with your mobile phone. ■



Final Regulations

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Katelyn Greening, Events & Partnership Director

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opportunities to help you achieve these goals, including Adviser magazine ads and articles, e-newsletters, digital marketing, commercials, networking events, conferences, and continuing education events. This article explains why we have added the Media Kit to this issue of the Adviser and explores the benefits of advertising with CAPCA to reach PCAs in the agricultural sector. By utilizing these diverse advertising channels, you can expand your reach, establish industry presence, and unlock new opportunities.

CAPCA is a recognized authority in the field of plant health, pest control, and agriculture, with a membership base consisting of licensed PCAs. Advertising through Adviser magazine ads, e-newsletters, and digital marketing allows you to directly target this audience of professionals who play a vital role in pest management and agricultural practices. By featuring your brand in Adviser magazine ads, you can capture the attention of PCAs who rely on this publication for industry updates and insights. Additionally, e-newsletters provide a direct and personalized communication channel to deliver your brand's message to the inboxes of PCAs, ensuring high visibility and engagement. Digital marketing techniques, such as website advertising, and commercials within our CE content, can further enhance your brand's visibility among PCAs in the digital landscape.

Partnering with CAPCA goes beyond print and digital advertising. CAPCA hosts networking events, conferences, and continuing education events where PCAs actively participate. By incorporating commercials during these events, you can showcase your products or services to a captive audience of PCAs, maximizing your brand's visibility, and engagement potential.

These events also provide valuable face-to-face networking opportunities, allowing you to connect, build relationships, and collaborate with PCAs. By participating in CAPCA's networking events, you can gain insights, exchange knowledge, and explore collaborative projects that enhance your offerings and open doors to new markets.

Furthermore, CAPCA stays actively informed about industry trends, regulatory changes, and emerging practices. Utilizing our advertising channels allows you to gain access to a wealth of industry knowledge and updates. This information can help you align your advertising strategies and product offerings with the latest trends, ensuring that you stay competitive and relevant in the evolving agricultural landscape.

Advertising with CAPCA allows you to position your brand as a thought leader and industry expert. You can contribute content, articles, or presentations that showcase your knowledge and expertise to PCAs. By demonstrating your understanding of the challenges and opportunities in the industry, you can establish yourself as a trusted resource and go-to solution provider. This thought leadership positioning not only enhances your brand's reputation, but also enables you to connect with PCAs on a deeper level, leading to valuable collaborations and new business opportunities.

To propel your business and brand forward in the agricultural sector, reach out to Katelyn Greening, Events and Partnership Director at CAPCA. Contact Katelyn at katelyn@capca.com to secure your partnership spot with CAPCA and discuss how Adviser magazine ads, e-Newsletters, digital marketing, commercials, networking events, conferences, and education events can be integrated into your advertising strategy. By leveraging CAPCA's diverse advertising opportunities, you can establish a strong presence, gain new clients, and foster valuable collaborations in the agricultural industry. ■

Central Valley Chapter



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Central Coast Chapter



The CAPCA Central Coast Chapter hosted their annual “Evening with PCAs” with Cal Poly’s Crop Club. This club consists of students from sustainability, business, ag education, plant science, engineering, and more. The students spent fifteen minutes speaking with three different PCAs from the CAPCA Chapter

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