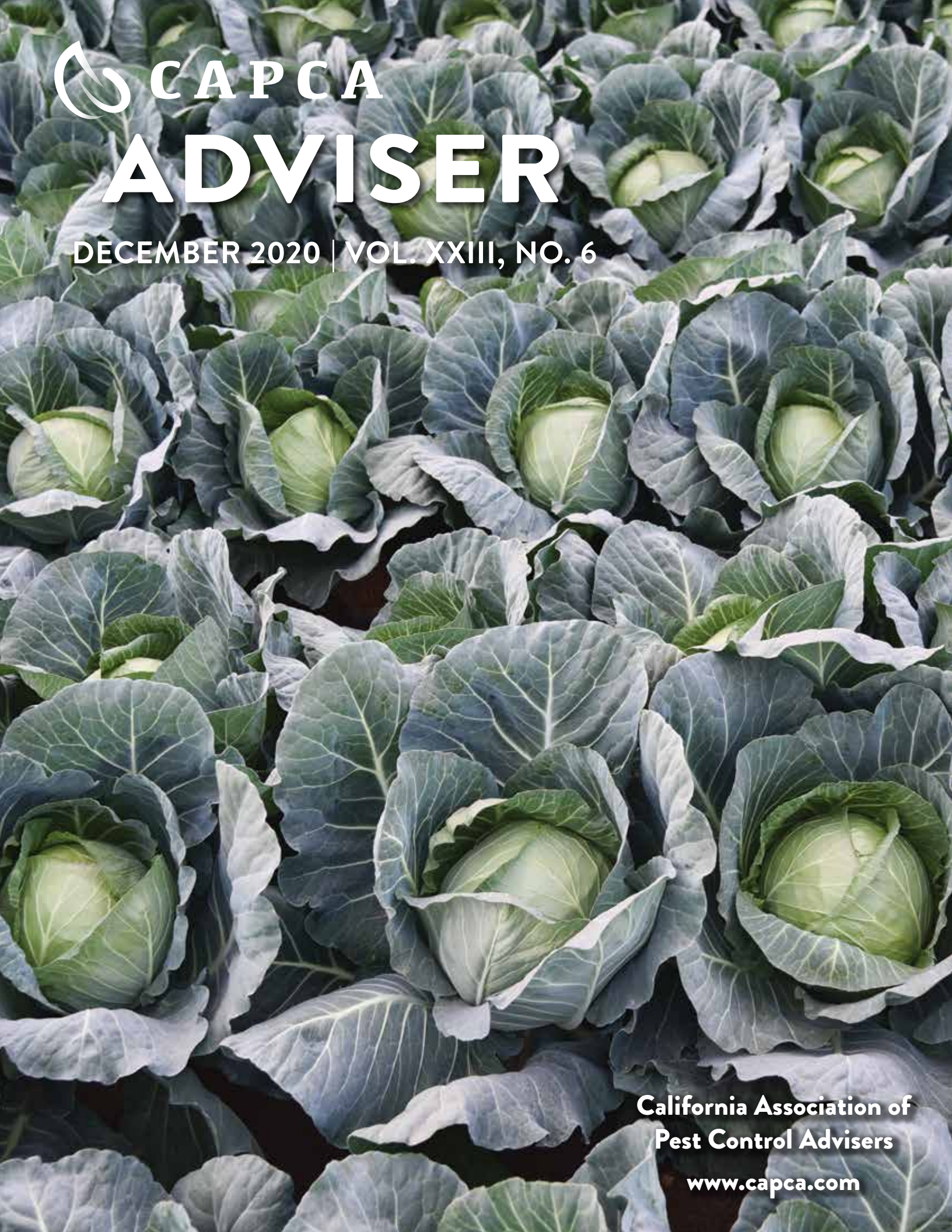


CAPCA ADVISER

DECEMBER 2020 | VOL. XXIII, NO. 6

California Association of Pest Control Advisers

www.capca.com

CAPCA

2600 River Plaza Drive, Suite 250 - Sacramento CA 95833
(916) 928-1625 - Fax (916) 928-0705
crystelle@capca.com - capca.com

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
Licensed PCAs must join as Active Members

- ☐ 2022 = $160.00
- ☐ *2021 = $160.00
- ☐ 2020 = $210.00

ASSOCIATE MEMBERSHIP
Non-PCAs - printout not provided

- ☐ 2022 = $45.00
- ☐ 2021= $45.00

STUDENT MEMBERSHIP
Must provide proof of full-time student status.
May not hold a DPR license.

- ☐ 2021 = (no fee)

* ***A late fee of $50.00 will be charged for any 2021 Active Membership paid after December 31, 2021.***

☐ 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):

- ☐ Aquatics
- ☐ Berries
- ☐ Citrus & Subtropicals
- ☐ Cotton
- ☐ Deciduous Fruits
- ☐ Forage/Silage
- ☐ Golf/Sports Turf
- ☐ Grains
- ☐ Grapes
- ☐ Rice
- ☐ T/O, Landscape
- ☐ Tree Nuts
- ☐ Vegetables
- ☐ Vegetation Mgmt
- ☐ Organics
- ☐ Hemp

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

Federal Tax ID #94-2277533

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_____

Photos, this page and cover: © Fred Rehrman, Elysian Fields

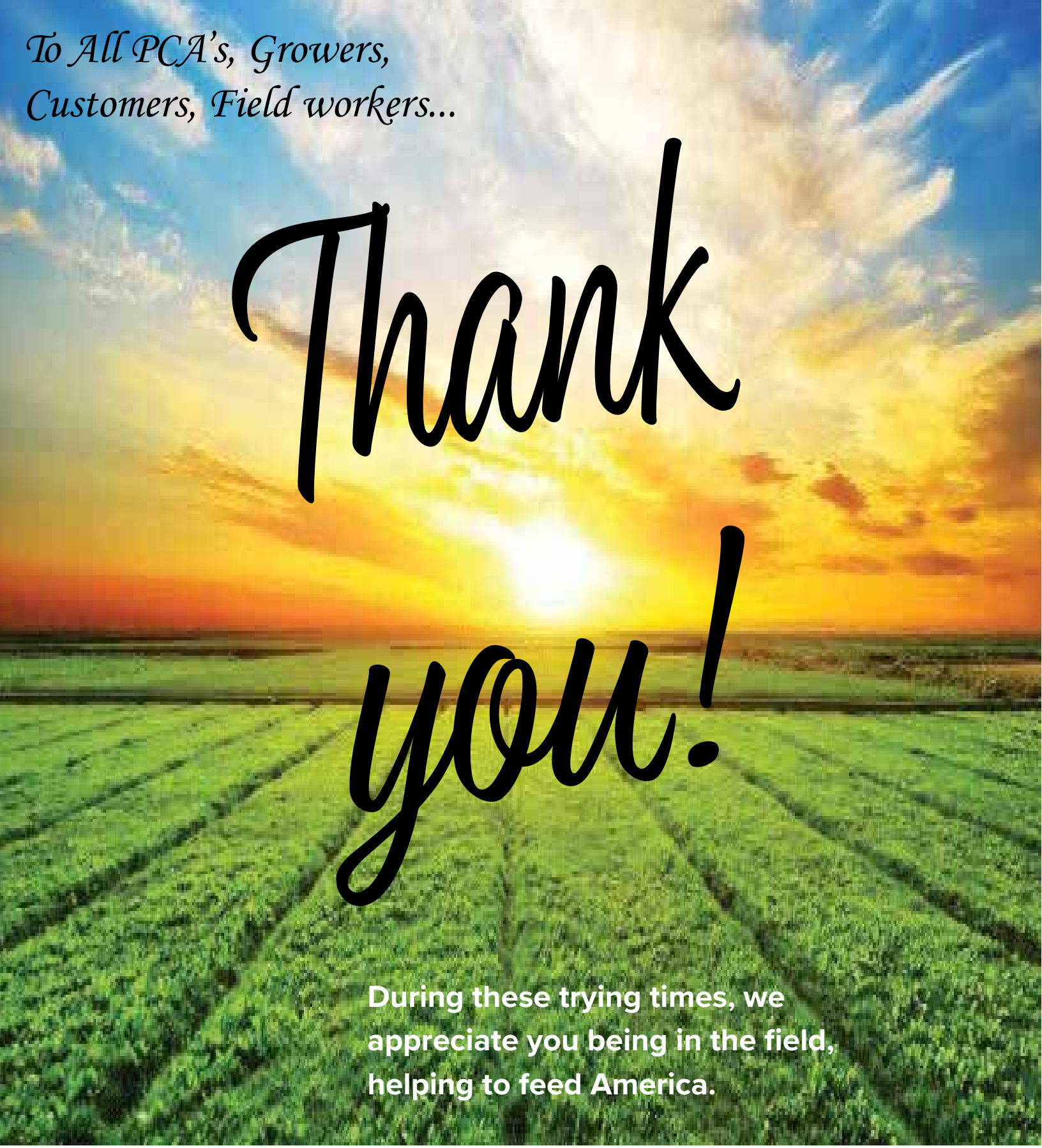
CAPCA
AT THE CENTER OF PLANT HEALTH

Table of Contents

CAPCA PHOTO CONTEST AWARDS

See page 16

Farm Advisors
see page 44



From the Editor

Our Resilient Membership

This year has been a rollercoaster for most, between the uncertainty of COVID, contentious politics and the new ways, like online CE, adopted to get the job done. But CAPCA Members, PCAs have continued to prove themselves essential: essential to keeping our communities safe, essential to growers and essential to moving food and fiber from soil to table. Now more than ever, your essential knowledge of IPM has and continues to deliver innovation to the field.

As we face a mountain of uncertainty and challenges to pesticide policy, public perception of agriculture and climate change, I am encouraged by the resiliency of this membership in continuing to show their professionalism. As this year closes, I keep reflecting back to why CAPCA started, what drove the founding members to bring not just local chapters together but organize an entire state association? I can't help but think that this same resiliency to serve, to innovate, to steward the land in the face of uncertainty foraged CAPCA 48 years ago. My hope is that CAPCA Members, Chapters and Leaders can once again find inspiration from the founding of CAPCA and the defense of the newly formed PCA license all those years ago to continue pushing forward into the opportunities that await us in 2021.

Ruthann Anderson, Editor
ruthann@capca.com

© Fred Rehrman, Elysian Fields

CAPCA EDITORIAL STAFF
Ruthann Anderson - Editor
Joyce Basan - Deputy Editor
Crystelle Turlo - Chief Operations Director
Sylvia Stark - Advertising Sales Manager
Rachel Taft - Executive Assistant
Kent Hinson - Director of Engineering & Technology

Graphic Design - Rosemary N. Southward
southwardr@comcast.net

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), 2600 River Plaza Dr., Suite 250, Sacramento, California 95833. 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.

PRINTING:
Sundance Press
Tucson, Arizona




The Benefits of Engagement

Rick Harrison, CAPCA Chair

This will be my last Adviser article as your CAPCA Chairman. To say it has been an honor to serve you these last two years is an understatement!

Few great things are possible without a team effort and that is why I would like to thank our CAPCA CEO/President and Adviser Editor Ruthann Anderson for her leadership in heading the best CAPCA staff ever. Thank you to our CAPCA State Board, our local chapters, and their presidents for their dedication in volunteering and serving CAPCA in many roles. I would like to thank my fellow PCAs for their expertise and dedication to each other, their growers, and our industry. A big thank you to Nutrien Ag Solutions for their continued support of PCAs and CAPCA in providing for our needs. And most importantly, thank you to my wife Karen, for her patience and understanding of the demands of our industry.

At the beginning of my term I expressed my desire to help CAPCA develop our voice and to support our local chapters. I believe we have accomplished these goals together by setting in motion programs that will benefit us in the long term.

One of my favorite developments was the establishment of the CAPCA State Board Finance Committee's re-investment policy to establish an Advocacy Fund. Through this fund we have increased our efforts in the legislative arena, stayed current on new regulations, become more involved in the process and exercised our voice proactively. We also re-invested in our local chapters by creating the Chapter Purpose which strengthens local chapters by establishing goals to support CAPCA members. Along with the Agricultural Commissioners (CACASA), we established the BeeWhere Program to enhance communication between applicators and Beekeepers. And most significantly, I am very proud of our staff for quickly stepping up to develop and implement our new Online CE. With Covid-19 and social distancing as key factors that prevented us from offering our Spring Summit and 2020 Annual Conference, we now offer on-demand Online CE as a supplemental resource.

I believe we have lived up to CAPCA's purpose of serving our PCAs as leaders in the evolution of the pest management industry through communication of reliable current information at our CE meetings and now online. We have a great 2021-2022 Executive Board lined up with Patrick Dosier leading the way as our new Chair. Patrick was our recipient of CAPCA's 2018 Member Of The Year Award and he has been at the forefront of developing our Government Relations Committee's activities. He has also dedicated a great deal to developing our Online CE resources. I am confident you are in good hands.

I look forward to when we can meet again in person at all of our conferences.

Best Regards, Rick Harrison ■

Every aspect of this job is a challenge just waiting to be overcome. Crop protection included.

Working in farming means you're better than most at overcoming obstacles. You got that way through practice – lots of it. But every grower needs support. Atticus provides it with branded-generic herbicides, fungicides and insecticides you can count on, backing them up with the expertise you need for victory. Because success relies on every possible edge. Find yours at AtticusLLC.com.

ATTICUSLLC.COM

Atticus

2020 ONLINE CONFERENCE RECAP

46th Annual CAPCA Conference

Despite the shift this year from the in-person seminar event our members, sponsors and exhibitors would normally engage in, that transitioned the 46th Annual CAPCA Conference to an online/virtual event, CAPCA still managed to provide an educational and informational experience to nearly 1,000 attendees, and featured 60 exhibitors and 23 sponsors.

The virtual event included a Live presentation at the beginning of the conference on October 12th, attended by over 300. Our special thanks to keynote speaker, Anthony LaFauce of The Cycle group.

During the Live event, the annual award presentations for PCA of the Year and Outstanding Contribution to Agriculture were announced.

The PCA of the Year award went to Dan Wickham, and Cheryl Wilen received the Outstanding Contribution to Agriculture award. Read more about these very deserving award winners on pages 10 and 11.

CAPCA is proud to represent Pest Control Advisers and we extend our gratitude to all who participated in engaging and making our 46th conference a success via this alternate format, while maintaining a focus for continuing education, professionalism and our ongoing efforts to support our membership and the industry in providing crop protection and stewardship of the largest, most varied agricultural industry.

Save-the-Date!

47th Annual CAPCA Conference & Agri-Expo

October 17-19, 2021 – Grand Sierra Resort, Reno, NV

We are all hoping that 2021 will provide an opportunity to renew in-person events and trade shows. CAPCA's 2021 conference is currently contracted for October 17-19 in Reno, NV but the event will be held dependent on allowances for in-person events during the coming calendar year. Watch for updates on our website and in our CAPCA e-mail notifications.

CAPCA

ESSENTIAL

POTASSIUM & SULFUR

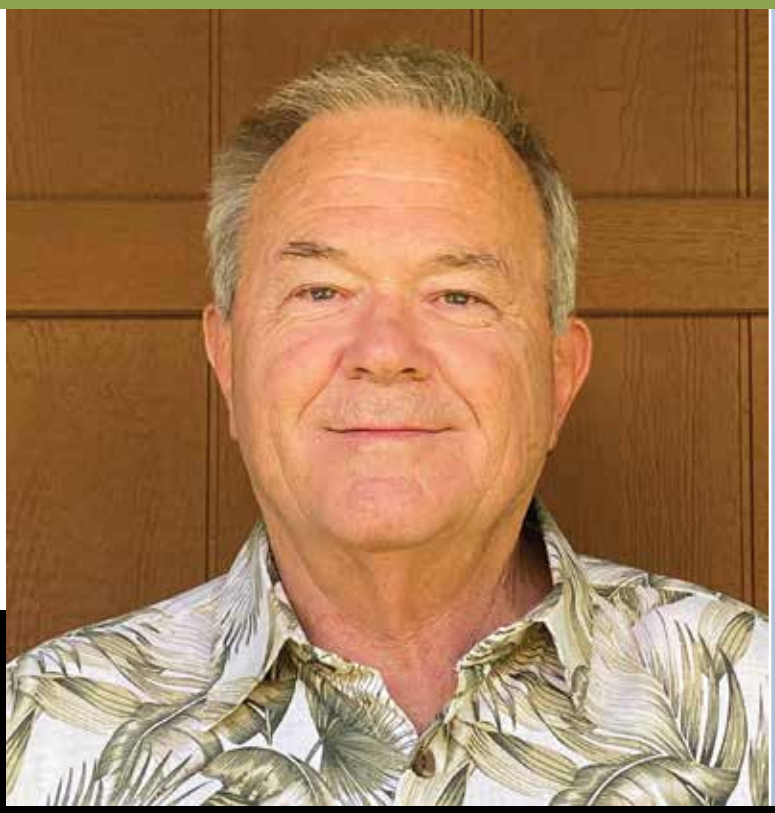
0-0-25-17S

FREE KTS® RESOURCES AT CROPVITALITY.COM

OR CALL (800) 525-2803 - EMAIL INFO@CROPVITALITY.COM

TESSENDERLO Kerley
CROP VITALITY
EST. 1919

CAPCA ANNUAL AWARDS



"As I look back on this award, it will stand as a reminder of the impact that CAPCA membership has had on me. I offer my heartfelt thanks and appreciation, and I urge each of you to remain engaged, defend your principles, and always be safe. Thank you."

-Dan Wickham

DAN WICKHAM

2020 MEMBER OF THE YEAR

2020 AWAR

CAPCA Member of the Year is an annual award bestowed upon a member and licensed PCA who excels in their contribution to the profession through CAPCA activities and leadership, above and beyond the norm. The 2020 recipient of the CAPCA Member of the Year Award is Dan Wickham.

Dan Wickham has been a licensed PCA since 1975. Employed with Wilbur-Ellis Company since 2006, Dan is lead support for the Vegetation Management business, as well as sales and technical support of various markets, including vegetables, strawberries and cane berries, citrus, avocados, landscape, and ornamentals throughout Southern California.

Dan has been a voice for the PCA since the 1990's and his volunteerism reaches far beyond CAPCA. He has represented PCAs on the SoCal CAPCA Board, State CAPCA Board, PAPA Board, California Association of Nurserymen, Aquatic Plant Management Society, Southwest Vegetation Management Association, The Nature Conservancy and California Weed Science Society.

Dan served as an expert witness representing the PCA in various cases regarding environmental fate of herbicides, standards of practice for a Pest Control Adviser and definition of a recommendation. In all cases, the defendant prevailed.

Dan's dedication to his career and to the CAPCA organization is worth celebrating. Nominating chapters SoCal and NorCal both acknowledged that this award is long overdue. Dan has been a joy to serve in CAPCA with. He is always eager to mentor and motivate new PCAs and has a way of getting everyone excited about our profession.

Dan is committed to raising the professionalism of the PCA and is most deserving of recognition through his volunteerism and leadership as the 2020 CAPCA Member of the Year.

"I appreciate the things I have learned from PCAs over the years and I am also glad that my work in pest management has contributed to agriculture and the science behind it. Thank you again for this very significant award."

-Cheryl Wilen

D WINNERS

CHERYL WILEN

OUTSTANDING CONTRIBUTION TO AGRICULTURE AWARD

CAPCA's Outstanding Contribution to Agriculture Award is given to those individuals, companies or organizations that have made a meaningful difference in support of California Agriculture. The 2020 recipient of the Outstanding Contribution to Agriculture Award is Cheryl Wilen.

The nominating Chapter, SoCal, wrote: *"Cheryl is the rare person who is current on the scientific literature, will address the politics of a pesticide issue, and still be polite to single-agenda groups."*

Dr. Cheryl Wilen has been the Area Integrated Pest Management Advisor for Orange, Los Angeles, and San Diego counties for 22 years, during which time she has proven to be invaluable to the floriculture, horticulture, and agriculture industries in Southern California. Always accessible, Cheryl has participated in CAPCA, PAPA, and University of California continuing education meetings, providing research and management strategies for current and emerging pest issues. Cheryl has been instrumental in providing guidance on various industry pests, including snails and slugs, Red Imported Fire Ant, Asian Citrus Psyllid, Polyphagous Shot Hole Borer, and numerous weeds affecting nurseries, landscape, homeowners, and public schools.

Cheryl has collaborated on numerous publications, predominantly supporting IPM and sustainable practices for container nurseries and urban agriculture. Cheryl has received awards from several industry associations, and has served for many years as an ad hoc board member of the SoCal Chapter, offering her expertise and assistance in our efforts to provide service to Pest Control Advisers in Southern California.

It is with much honor and respect that CAPCA recognizes Cheryl Wilen as our 2020 Outstanding Contribution to Agriculture Award recipient.

THANK YOU TO OUR 2020 CONFERENCE EXHIBITORS

Acadian Plant Health
ADAMA
Agrian Inc.
Agri-Pulse Communications, Inc.
AgroLiquid
Albaugh, LLC
Almond Board of California
Atticus LLC
Barkley/Valent
BASF
Bayer Crop Science
BioFlora (Global Organics)
Blue Mountain Minerals
Brandt
Central Life Sciences
Certis USA LLC
Corteva
Cultiva LLC
Diamond K Gypsum
DTN
Duarte Nursery Inc.
Farm Proud
Gowan USA, LLC
Grow West
Huma Gro
ICL Specialty Fertilizers
Integra Partners, Inc. (Ag1 Source)
IRROMETER Company Inc.
JH Biotech, Inc.
Kemin | Crop Technologies
Koppert Biological Systems
Mar Vista Resources
Miller Chemical & Fertilizer, LLC
Neudorff North America
Nichino America
NovaSource
Nufarm
Nutrien Ag Solutions
Nutrient Technologies
Ocean Organics Corp.
Patagonia Bio
Polymer Ag, LLC
Precision Laboratories
QualiTech, Inc.
Redox
Rotam
Semios
SQM North America
Summit-Agro USA
Superior Soil Supplements LLC
Syngenta
Terramera
Tiger-Sul Products, LLC
TKI - Crop Vitality
Trécé, Inc.
UPL NA INC.
Vestaron
Westbridge Agricultural Products
Western Region Certified Crop Advisers
Wilbur-Ellis

New Post-Emergence Herbicide Provides Thorough Kill of Weeds

Corteva Agriscience received California Department of Pesticide Regulation approval for Embed® Extra herbicide in June 2020. Embed Extra is a post-emergent herbicide, containing an innovative formulation of the active ingredient 2,4-D with near-zero volatility. In tree nuts, it will have an excellent fit in "post-harvest" clean-up sprays and in "residual" programs in late fall and early winter. Once residual herbicides reach their limit of effectiveness, Embed Extra can be used "in-season" prior to harvest. See label for PHIs.

Labeled Crops: almonds, pistachios, walnuts, pecans, stone fruit, apples, pears.

Labeled Weeds: 102 on the label, including marestail, lambsquarters, Shepherd's-purse, malva, filaree and field bindweed.

Thorough Kill of Weeds

Embed Extra is systemic, taken into plants through above-ground foliage, then traveling through phloem toward roots. The weed kill process is thorough, but not rapid, and foliage "burn" won't likely be visible within the first 24 hours. Burndown is not as rapid as glufosinate, paraquat or PPO herbicides, but weed control can be more thorough on several weed species. The slower movement of Embed Extra through the plant, by contrast, allows it to thoroughly kill weeds. That weed kill, down to the roots, can prevent regrowth.

Near-Zero Volatility and Low Drift Potential

Embed Extra contains 2,4-D *choline*, a completely new form of 2,4-D with near-zero volatility. All other 2,4-D herbicides used in California are an *amine* formulation. The use of choline salt to bind 2,4-D choline makes for a much more stable form of the herbicide. 2,4-D choline boasts an 87.5% reduction in volatility compared with 2,4-D amine and a 96% reduction over 2,4-D ester – resulting in near-zero volatility and minimal potential for physical drift.

▲ Above: Untreated at 36 days after treatments.

▼ Below: Embed Extra (3 pt/A) + glyphosate (3 pt/A) at 36 days after treatment.

Embed® Extra

HERBICIDE

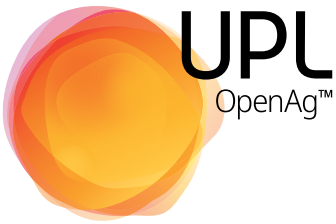
CORTEVA™ agriscience

Visit us at **corteva.us**

SPONSORS

Thank You Sponsors!

As a result of your support, the average attendee was able to access an additional 9.5 CE hours to renew their DPR license!



Velpar®
Agricultural Herbicide

ADVERTORIAL

A Proven Solution for Hairy Fleabane Control in California Alfalfa

By NovaSource

Mick Canevari is a University of California Cooperative Extension Advisor Emeritus who began his career in the mid-1970s, around the time when Velpar® was first registered as a herbicide for alfalfa. Over the years, he has conducted "countless amounts of research that includes Velpar in alfalfa," so we asked him about his thoughts for controlling hairy fleabane in alfalfa. Here's what he said:

"Hairy fleabane is not a new weed, but it's becoming more populated in our alfalfa system throughout the central valley of California. Every year, there's more and more fleabane popping up in alfalfa. It's one of the major weeds in California, and it's just a nightmare.

I first noticed it becoming a potential problem 10-15 years ago. At the time, I had some ongoing weed research in alfalfa that included Velpar — and Velpar was one of the herbicides doing a reasonably good job controlling fleabane. But back then, nobody thought too much about it.

Today, when it shows up in hay bales, fleabane has an odor, stems are woody and less palatable, and it lowers feed values which generally leads to discounted prices to the grower.

As a pre-emergent herbicide, Velpar provides good efficacy on fleabane for the window of germination during the alfalfa dormant period of November through February.

In fact, when a PCA or a grower asks for fleabane control recommendations, I routinely suggest Velpar as one of the few tools that are effective.

Velpar, in my estimation, has remained a foundation herbicide in alfalfa since its inception when used during the dormant period for controlling many of our broadleaf weed issues.

When you have a perennial crop like alfalfa that goes dormant, or growth is minimal in the winter, it leaves a wide-open canopy exposing much of the soil to sunlight. That allows fleabane and other weeds to germinate and establish without competition.

Velpar's mode of action is primarily root uptake with some foliar activity on small emerging dicot weeds. I have seen it control groundsel 2-to-3 inches tall. However, rather than relying on an aggressive rate of Velpar alone, I still recommend that it be tank mixed with many of the post-herbicides that are used during the dormant period. This approach can pick up the more difficult weeds such as fleabane, shepherd's purse and winter grasses.

An application of Velpar is typically made between December and February. Within that window, there is a high germination rate of fleabane occurring. So Velpar provides a pre-emergent barrier and prevents new germination. What I'm telling you is what I have observed from research trials leading to my recommendation."

"In fact, when a PCA or a grower asks for fleabane control recommendations, I routinely suggest Velpar as one of the few tools that are effective."

— Mick Canevari, University of California Cooperative Extension Advisor Emeritus

Read more about Velpar at **novasource.com** or **contact your regional NovaSource® representative:**

Northern California (Fresno & north) + Nevada
Jason Miller
Jason.Miller@tkinet.com
559-285-3475

Southern California (South of Fresno) + Arizona + New Mexico
Bernard Olsen
BOlsen@tkinet.com
760-419-5880

NovaSource® Tessenderlo Group

novasource.com

Always read and follow label instructions.

2020 CAPCA Photo Contest

Grand Prize, $1,000

Category: Crop Commodity Production
Photographer: James McNutt
Title: "View Along California Avenue Toward Downtown Fresno" (Fresno, CA)
Caption: Drone shot showing Ag west of Fresno, Fresno, Foothills & Sierra Nevada.
Photographer's note: *James McNutt wishes to acknowledge colleague Drew Palrang for his assistance in capturing this image.*

ADVERTORIAL

Extend Almond Bloom for Increased Nut Set

Each year between February and early March, California almond orchards burst with beautiful flowers as almond buds begin to bloom — and time is of the essence to set a good crop.

The longer the bloom, and if weather cooperates, the better your chances for each of those almond blooms to become pollinated, and the better your chances for a strong nut set and yield potential.

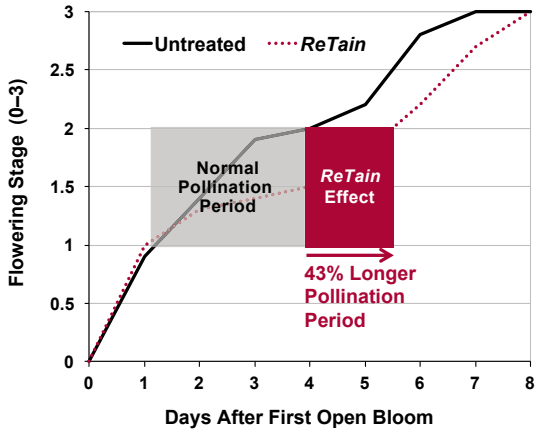
"Keeping the almond bloom viable longer is important for pollination — especially if wind, cloudy days or rain interfere with bees foraging," said Kevin Forney, Valent PGR product development manager. "By keeping the flower alive longer, growers can help ensure the success of their investment."

Keep Flowers Alive Longer

There's never been a way to keep almond flowers viable longer. Until now. ReTain® Plant Growth Regulator for California extends the viability of almond bloom, allowing more opportunity for nut set, thus ensuring optimum crop load potential.

ReTain works by reducing the blooms' production of ethylene, a naturally occurring plant hormone, thus delaying flower and stigmatic senescence. This results in flowers being viable longer, which allows more time for pollination to occur.

"*ReTain* is a proven technology with established use patterns for fruit and nut set in California cherries and walnuts," Forney said. "*ReTain* offers an innovative use for increasing nut set in almonds to ultimately provide growers with an enhanced crop load potential."

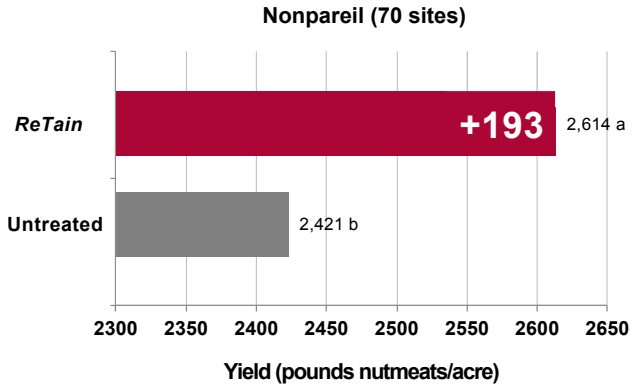


Extend the Pollination Period

Field studies have demonstrated that *ReTain* extends the life of an almond bloom for a 43% longer pollination period over the untreated check.

Boost Nut Set for Optimized Yield Potential

In 70 commercially applied research trials over five years, *ReTain* increased Nonpareil almond yields by an average of 193 pounds of nutmeats per acre over the untreated check.



Apply from 30 to 60% Bloom

ReTain can be applied from 10% bloom to petal fall, but best results have been demonstrated when applied from 30 to 60% bloom. *ReTain* is easy to use, with only one water-soluble pouch needed per acre.

"To capitalize on a longer almond bloom and, most importantly, increased nut set, growers can now rely on *ReTain*," Forney said.

To learn more, visit valent.com/ReTainCA or contact your PCA.

ReTain®
PLANT GROWTH REGULATOR FOR CALIFORNIA

VALENT®

Products That Work, From People Who Care® | **valent.com** | 800-6-VALENT (682-5368)

Always read and follow label instructions.

1st Prize, $500

Category: People, Faces in Agriculture
Photographer: Jennifer DeJong
Title: "PCA in Training" (Ripon, CA)
Caption: "Train up a child in the way he should grow; even when he is old he will not depart from it." (Proverbs 22:6)

THE FIGHT AGAINST MITES – STIFLE® WP ENABLES GROWERS TO PROTECT THEIR FIELDS

Mites can do some real crop damage if given a chance. Mite pressures can be unpredictable in the California landscape, but growers can handle whatever complications occur and protect their crops with a dependable pest management plan.

What makes a forceful pest management plan? Inputs that are both reliable and efficient. When controlling mites, growers need an input to target mites of all life stages. One product that excels at just that is Stifle® WP miticide by AMVAC®, an American Vanguard® company.

How Does It Work?

By implementing Stifle WP into a pest management plan, growers receive effective protection against most common mite species such as various spider mites, Banks grass mites and European Red mites. Stifle WP targets all mite life stages – from eggs to maturity. It sterilizes adult females and their eggs, kills eggs on foliage and controls nymphs by inhibiting molting. Etoxazole, the active ingredient in Stifle WP, is a mite growth regulator which works by inhibiting chitin synthesis. Stifle WP is the only miticide in the insecticide resistance classification subgroup.

Stifle WP can be used on the following crops and crop groups: avocados, corn (field, popcorn, and seed), cotton, cucurbits, grapes, mint, peppers and eggplants, pome fruits, strawberries, stone fruits, tree nuts and all other labeled crops.

How Should It Be Applied?

Growers can apply Stifle WP only once per season when mite populations are building up. However, two applications per season are allowed on corn. Horticultural oil or non-ionic adjuvant in the tank mix may increase efficacy due to better coverage and enhanced translaminar movement of active compound.

Don't let mites impact your crop and yield. Talk to your local AMVAC rep to implement Stifle WP into your pest management plan. Visit **www.AMVAC.com** for more information.

Stifle® WP
MITICIDE

About AMVAC®

AMVAC® is a subsidiary of American Vanguard® Corporation. American Vanguard Corporation is a diversified specialty and agricultural products company that develops and markets products for crop protection management, turf and ornamentals management, and public safety and animal health applications. American Vanguard is included on the Russell 2000® & Russell 3000® Indexes and the Standard & Poors® Small Cap 600 Index.

The Company, from time to time, may discuss forward-looking information. Except for the historical information contained in this release, all forward-looking statements are estimates by the Company's management and are subject to various risks and uncertainties that may cause results to differ from management's current expectations. Such factors include weather conditions, changes in regulatory policy and other risks as detailed from time to time in the Company's SEC reports and filings. All forward-looking statements, if any, in this release represent the Company's judgment as of the date of this release.

AMVAC®
An American Vanguard Company

Honorable Mention, $250

Category: COVID 19 – Quarantine Impacts
Photographer: Halley Lauchland
Title: "Essential Every Year" (Lodi, CA)
Caption: "Nothing new here. The harvest team is always protected, socially distanced, and essential to the operation."

Honorable Mention, $250

Category: Good Bugs, Bad Bugs
Photographer: Ashlee DeSilva
Title: "Honey Time" (Bakersfield, CA)
Caption: "Bees making delicious honey"

A Special Thank You to all who entered our 2020 CAPCA Photo Contest.

Honorable Mention, $250

Category: Integrated Pest Management (IPM)
Photographer: Anthony Barbeiro
Title: "May Spray on Almonds" (Armona, CA)

Suterra introduces the most reliable *Puffer®* ever

With increased regulatory pressure, evolving sustainability expectations, and efforts to reduce non-target and environmental impacts, mating disruption's unique mode of action has made it a fundamental pillar of many integrated pest management (IPM) programs.

In particular, aerosol-based Puffer® mating disruption systems are a proven IPM tactic, with scientific support from the University of California, USDA, and independent researchers dating back well over a decade. Each year hundreds of thousands of acres of specialty crops throughout California are treated with Puffer® mating disruption systems targeting serious pests such as Navel Orangeworm, Codling Moth, and Oriental Fruit Moth.

Suterra produced the industry's first aerosol mating disruption solution, the Puffer®, in 2009. Every year since its initial introduction, the company's chemists and engineers (with feedback from Suterra's California technical field team, growers, and PCAs throughout the state) have been continuously devoted to delivering the highest quality and most reliable aerosol pheromone release systems in the world.

The 2021 season ushers in the latest evolution in Puffer® development, available across the entire California product line, including: CheckMate® Puffer® NOW Ace™, CheckMate® Puffer® CM-O Pro, CheckMate® Puffer® OFM-O; CheckMate® Puffer® CM-OFM Pro.

The latest Puffer® boasts a number of features that ensure the durability, reliability, and ease-of-use that growers deserve to be confident in their mating disruption systems. The new design is based on a fully-sealed compartment coupled with an anti-corrosion coated steel can. A single button operation located on the external aspect of the device initiates the season-long pheromone release cycle, with no additional programming required. This means that it is no longer necessary to open cabinets during deployment, saving significant time and labor inputs.

"The latest Puffer® boasts a number of features that ensure the durability, reliability, and ease-of-use that growers deserve..."

Built with real-world crop conditions in mind, the rugged new design is simultaneously lighter and stronger than previous versions. This facilitates correct placement in the canopy, not only ensuring that the pheromone plume is being directed properly in the orchard environment, but also minimizing the potential for dropping during orchard operations. Its rounded edges maximize durability by significantly reducing potential breakage points.

The fully-sealed design eliminate dust, debris, and water, protecting all the functional components and the pheromone. The patent-pending design meets international standards for waterproof electronics like IP54 and NEMA 3S, and is so rugged, it even works underwater.

Because Suterra understands that a grower's crop is their livelihood, the new Puffer® is the only aerosol on the market that is rated to Life and Safety Standards for the electrical apparatus and enclosure.

Suterra remains committed to sustainability with the Clean Orchard Promise™ program. Growers will receive new Puffer® units each year. Suterra will handle the logistics and expense of responsibly recycling spent devices at the convenience of each grower, allowing increased flexibility for timing of removal at the end of the season when labor is available.

All of these features combine to make the new Puffer® easier and faster to deploy, with unrivaled durability and reliability to provide peace of mind to the grower that each and every treated acre is covered to the fullest extent.

Suterra®




2020 Government Relations Recap

CAPCA Staff

Despite the pandemic, CAPCA has been busy this year engaging in ongoing discussions to protect the PCA license and the IPM toolbox. There continues to be several pathways for CAPCA to engage in the Advocacy arena. The Government Relations Committee has spent 2020 focusing on various goals and priorities that include Chapter support and outreach, AI defense, IPM components, coalition building, along with the Plant Doctor 2.0 relaunch.

Our efforts in 2020 to address the Neonic challenges included engaging our membership in submitting comments during the DPR comment period, plus evaluating, and analyzing concerns and effects that additional legislation will inevitably create. Our re-engagement with the Neonic working group facilitated working with registrants to discuss strategies and share communications tools and resources with other associations developing Neonic comments.

CAPCA ultimately focused Neonic comments on the necessity of diversity as part of a robust IPM toolbox. In the wake of the cancelation of chlorpyrifos, neonics are often cited as the most effective alternative crop protection tool. The extreme limitations on the use of neonics in the proposed regulations is a defacto cancelation of neonics for specific commodities without confirmed alternatives. Besides being unsupported by science, such action would greatly weaken the holistic IPM approach that PCAs and CDPR are striving to achieve.

CAPCA encouraged members to share field experiences with neonics as well as experience as a PCA practicing IPM. The PCA license is built around practicing IPM, following the label, pollinator stewardship and environmental safety regardless of the product ultimately being recommended. Thank you to the nearly 100 CAPCA members who took a few minutes to lend their voice and experience to the campaign.

Additionally, in 2020 CAPCA has been working diligently with a handful of industry stakeholders on a Pesticide Policy project. The ultimate goal of the project is to influence the development of pesticide policies in California through a commitment to transparency, use of best available science, consideration for impacts to agriculture and adherence to state regulations and statutes. While we often hear complaints about the erosion of pesticide policy in California, we hope this group can come together and focus through the lens of science and the law. Coming off this election cycle, we recognize more than ever that there is a process for developing and implementing laws in California. Whether it is through striking down a ballot measure or winning a lawsuit in court to overturn executive orders, there is still room for Californians to hold their elected officials in check.

With the approval of the CAPCA Board, and recommendation of the Government Relations Committee, CAPCA joined the Alliance of California Farmers and Ranchers (ACFR) in 2020 to lend our support to work with ACFR and others to have a stronger voice with legislators/policymakers to educate them on the importance the agriculture industry in the State, and how the dynamics of the political landscape inevitable effects all of us and our ability to continue to provide the safe, healthy food and fiber supply. These efforts for this election cycle were very focused on the NO on Prop 15 campaign. For more information on ACFR efforts see page 32. ■

BATTLING SUCKERS AGAINST TIME AND BUDGET

By Pedro Hernandez, Product Development Project Manager

Sucker control is an expensive and time-consuming task that many growers must perform on a yearly basis. Suckers are nonproductive and undesirable plant material that protrude from the trunk, base of the rootstalk, or roots. The main reason suckers are removed is to maintain the shape of the tree or vine; however, suckers can interfere with farming practices such as: irrigation, weed control, and harvest. Suckers can also harbor insects and diseases that can move over to the crop. Grape, pistachio, cherry, plum, pomegranate, and olive are among the crops that often require suckering.

Typically, suckers are removed manually which puts stress on budgets and an already short supply of available labor. Growers have been known to spend up to $200/acre per pass on manual labor to remove suckers, and two passes are often needed to effectively remove the suckers during the season. A more economical and efficient alternative to manual removal of suckers is chemical burndown with non-systemic contact herbicides. For this strategy to be effective, suckers must be sprayed while they are young and tender (8 to 12 inches of growth), and complete spray coverage is imperative. Often, two applications spaced at 3 to 4 weeks are necessary for control. Chemical sucker control can be accomplished in two ways: (1) by using a standard herbicide sprayer and adjusting the direction and height of the nozzles to spray the suckers or (2) by spot spraying with a hand wand. Whichever method is chosen, make sure it fits the needs of the orchard or vineyard.

Untreated Grape Suckers

Venue 4 fl oz

Spraying suckers by adjusting height and direction of the sprayer's nozzles will be fast and easy and can help control weeds between tree or vine trunks. However, using this strategy may prevent thorough spray coverage and can cause bare ground to be sprayed in between trees or plants if no weeds are present. It is likely that multiple applications will be needed to provide complete sucker control.

Spot spraying is the most effective way to control suckers since only the suckers are being targeted for treatment, good spray coverage can be accomplished, and waste of spray product will be reduced. However, this strategy is a bit more labor intensive and time-consuming.

Proper selection of herbicides for sucker control is key to avoid damaging the trees or vines. Venue® herbicide from Nichino America is registered for sucker control in a number of crops including grape, pistachio, walnut, pomegranate, cherry, prune, and olive. Venue is a Group 14 PPO contact herbicide/desiccant which rapidly burns down suckers and tender shoots without translocation into the tree or vine. In recent sucker control studies in the Central Valley and Central Coast, Venue proved very effective at providing control of suckers in grape, pistachio, cherry, pomegranate, and plum. When comparing spot treatment versus spray rig application, Venue showed superior control via spot treatment. Venue at 4 fl oz/acre should be used alone or in combination with paraquat, glufosinate, or carfentrazone at label use rates. Use of COC or MSO is recommended. Because spray coverage is critical, use 30 to 40 gallons of water per acre or spray suckers by hand till wet. Venue will also provide burndown of broadleaf weeds. The label allows a total of 12 fl oz per acre per year for weed and sucker control. Always read and follow all labels for use directions.

Untreated Pistachio Suckers

Venue 4 fl oz

VENUE®
HERBICIDE

NICHINO AMERICA

Follow us on Twitter
@NichinoAmerica




Kern County Agricultural Commissioner, Glenn Fankhauser

By CAPCA Staff

Kern County's Agricultural Commissioner, Glenn Fankhauser, has served in his current role for three and half years, and 21 years total with the county. He graduated from CSUB in 1991 with a B.S. in Biology, and in 1999 obtained his M.S. in Biology from SDSU. Prior to his work for the county, his interest was more in ecology and zoology. He taught high school science before coming to work for the county and transitioning to agriculture.

As the county is home to a number of large, international farming operations, the role of Kern County's Agricultural Commissioner entails many activities to support this industry: "Quite a bit of our day-to-day responsibilities involve phytosanitary inspections for export. We try to do everything we can to facilitate this type of commerce. As such, we have several ancillary programs that act to support these exports, from our pest detection program to growing season inspections. I've always been very interested in the work plans for a variety of crops and working closely with officials from other countries performing inspections, etc.," Fankhauser says.

Some of the major crops in the county include almonds, grapes, citrus and pistachios. With those predominate commodities, when asked about the disease and pest challenges the county faces, Fankhauser indicated Asian Citrus Psyllid and Greening Disease were of significant concern. "So far we have been very successful in being able to keep the ACP population under control whenever we have a find. However, in the past few weeks we have seen a marked increase in detections both in the metropolitan as well as commercial areas. Thanks to the great work by our State partners as well as our Grower Liaison in the Citrus Pest & Disease Prevention Program, Judy Zaninovich, we remain on top of this threat and poised to strike out when needed. Hopefully we can remain Citrus Greening free until a solution/cure is developed."

When asked about a common question he gets from PCAs and growers, Fankhauser says the one that comes up most often is, 'Why can't people be more careful?' "This comes from many diligent growers and PCAs who frequently experience 'near misses'

acadian®

FUNDAMENTALLY BETTER

ACADIAN® DELIVERS FUNDAMENTAL VALUE TO YOUR PROGRAM WITH:

- Increased nutrient efficiency
- Improved plant vigor
- Enhanced abiotic stress tolerance
- Higher yields

When you're looking to build your nutritional program – **ask for Acadian®.**

Derived exclusively from the marine plant *Ascophyllum nodosum*, Acadian® brings you the best in crop nutritional products. Produced using proprietary technologies that liberate the valuable, organic compounds and carefully formulated to provide a consistent product for your nutritional program with every drop. Acadian® offers tremendous ROI benefits to any commercially grown horticultural products, especially to wine and table grapes, tree nuts, stone fruit, leafy greens, and strawberries.

HOW DO YOU USE ACADIAN®?

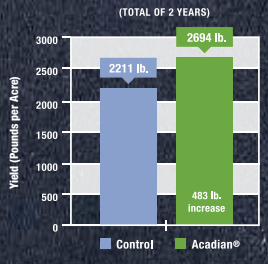
Acadian® is a water-soluble liquid that is suitable for use in foliar, soil-applied, irrigation, side-dressed, ground rig or aerial applications. Working synergistically with your existing nutritional program, Acadian® can be tank-mixed with most commonly used insecticides, fungicides, herbicides, and other agricultural inputs. Applications will depend on the crop, soil, timing and the additional materials in the tank mix.

WHY IS ACADIAN® FUNDAMENTALLY BETTER FOR ALMONDS, PISTACHIOS AND GRAPES?

Acadian® improves the bioavailability and transport of nutrients within the plant. Trees and vines are more vigorous, standing up to the toughest seasonal conditions. Acadian® delivers yields that improve year after year.

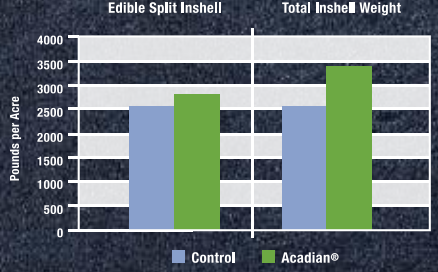
The complex mix of compounds present in Acadian® produces a wide variety of beneficial plant responses.

BETTER YIELDS FOR ALMONDS



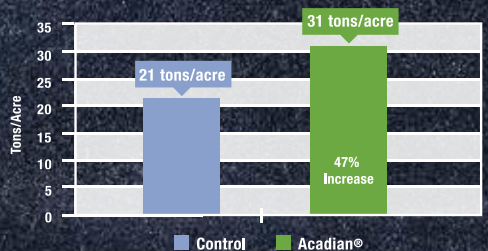
Trials on the same trees over two consecutive years demonstrate that Acadian® significantly improves yield of almonds.

BETTER YIELDS FOR PISTACHIOS



Acadian®-treated pistachios consistently yield higher and produced more pounds of marketable nuts.

BETTER YIELDS FOR TABLE GRAPES



Acadian® increased yield of table grapes by an average of 47% over Control.

Acadian Plant Health
Sustainably Empowering Plants.

Visit us at acadian-usa.com

of pesticide incidents. A lot of times they will find neighbors who are not being careful in their applications and have to bring it to their attention before they will do something about it. Increasingly, people seem to forget that if there is an incident it shines the spotlight negatively on the industry as a whole in addition to the individuals involved in the incident. Everyone needs to work together to apply materials in the safest manner possible. Ultimately everyone can suffer in the form of increased regulations if they aren't careful."

Like many other counties in the state, another significant concern for agriculture and the Commissioner's office is the increasing problem of the urban/ag interface. Fankhauser says, "Kern continues to be one of the most historically ag friendly and politically conservative counties. Because of rising property values, we continue to be one of the least expensive places to live in the State. Naturally, this results in quite an influx of new residents from other areas who are both unfamiliar with the agricultural industry as well as hypersensitive to environmental concerns. So, one of our greatest priorities is to help to mitigate their concerns while at the same time educating them as to exactly what the role of the Agricultural Commissioner is and how well we are working with DPR to ensure that the food supply is safe and that pesticide applications are performed in a careful manner."

To address these and other challenges, Fankhauser is committed to collaboration across the industry. "In a county as large as ours where there are quite a number of different agricultural entities, it is very difficult to keep in touch and develop close personal relationships with each of them. Therefore, I rely heavily on industry groups such as CAPCA and the Farm Bureau to help disperse as well as receive information that is pertinent to both me and the people I serve. Whenever possible, I attend meetings to hear from the representatives and to provide any updates on important happenings that could have an effect on their industries." He is appreciative of the efforts CAPCA members have made to work with their local ag commissioners. "... I know of many commissioners who regularly attend the monthly meetings of their local [CAPCA] chapters to bring them up to speed on any new issues that the members might deem of interest to them. I think that this fosters a sense of openness and accessibility. All of my local members know that they can pick up the phone at any time and talk to me about whatever they wish."

One of the very challenging local issues Fankhauser has faced recently has been increased demands from Environmental Justice (EJ) groups. He explains, "For many years Kern has run an innovative program to provide restricted material application notification to adjacent growers. The purpose of this program is to give additional protection to farmworkers near these applications by having the growers work together to reschedule activities, if necessary, to avoid possible drift incidents. Because of this, Environmental Justice groups have been asking for a long time for me to expand this notification to the general public. For various reasons I believe that doing so would be not only unnecessary and of no real value to the public, but would also be catastrophic to the current system that we have in place. The large statewide EJ groups, I believe, have ulterior motives in asking for this public notification and they have been promised things by several State agencies that cannot be delivered."

Fankhauser continues, "As a result, I have been unfairly made a target by these agencies who are trying to force me to implement an unworkable program, something which they don't have the legal authority to do. I think that this erodes the relationship that commissioners have spent many years forging with DPR. Increasingly it is looking like DPR is no longer an independent regulatory agency, but rather a partisan group that doesn't treat both sides of an issue equally. While I have been willing to provide a scaled down notification program to residents near certain applications which I believe addressed the needs that were conveyed to me by the EJ groups, unfortunately they have taken more of an all or nothing position on what they want. This has resulted in what I believe to be a conflict of interest. The statewide EJ groups are directing local groups in an overarching agenda that is not in the best interest, nor to the direct benefit of, local citizens that they purport to represent. Nevertheless, notification will soon become an issue for ag commissioners in the entire State because it is clearly an issue that can only be solved with new legislation, rather than by state agencies trying to put pressure on one county at a time. I urge your membership to keep an eye out for this rapidly emerging issue."

In spite of the significant challenges the role brings, Fankhauser is deeply committed to serving the department, the industry and his county well. "I really have a love for this department, particularly because it is in my hometown. I get a great sense of pride in knowing that I can have a hand in keeping the department the great place to work that I have always experienced," he says. As a true introvert, the amount of time spent in meetings, giving presentations and in industry interactions can take a lot energy, but is a personal challenge Fankhauser acknowledges. "... Hopefully people realize that I'm willing to be the representative for them that they need me to be." He recalls being appointed commissioner as a real personal highlight. "It was never really one of my career goals, but I felt honored that my board was confident in my leadership ability." ■

EcoSwing®

BOTANICAL FUNGICIDE

OMRI LISTED

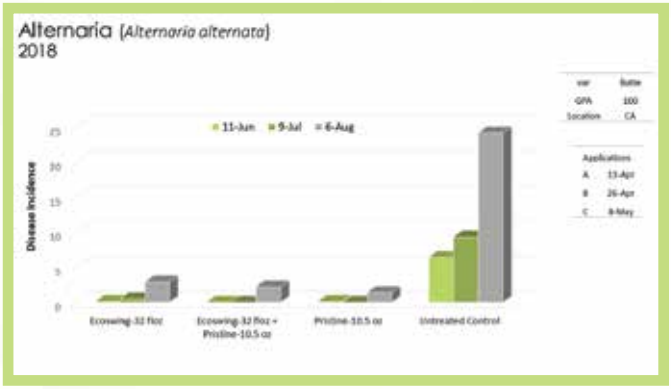
Gowan USA is excited to announce the registration of EcoSwing botanical fungicide in the state of California!

EcoSwing is created using proprietary plant extracts from the Swinglea glutinosa tree. It is formulated as an easy-to-use soluble liquid, and has proven to be compatible with a wide variety of tank-mix partners. Incorporating EcoSwing as a preventative application allows for the addition of an alternative mode of action for improved disease control and resistance management. EcoSwing is NOP-compliant, OMRI-approved and tolerance exempt.

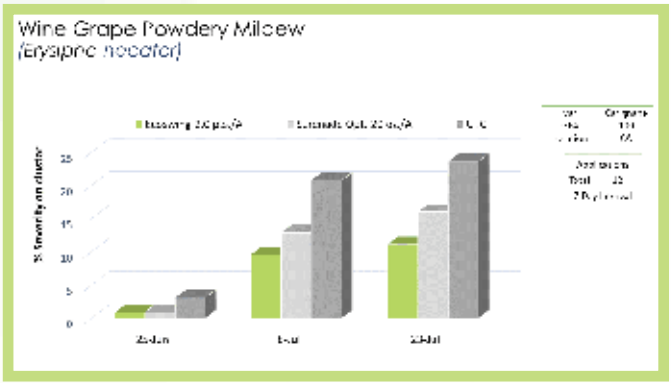
EcoSwing's active ingredient, the extract of Swinglea glutinosa, includes a unique combination of bioactive compounds including phenols, sesquiterpenes, triterpenoids, and coumarins. EcoSwing is currently classified as FRAC group BM 01, which encompasses biologicals with multiple modes of action derived from plant extracts. These products are considered to have a low risk of resistance due to their multiple modes of actions against pathogens.

EcoSwing's primary mode of action is desiccation of fungal spores and mycelium. In addition, EcoSwing decreases the growth rate of the germ tubes of fungal pathogens. More research is needed to verify, but it is also believed that applications of EcoSwing activate plant defense mechanisms.

In field trials conducted in California over the last several years, we have found EcoSwing to have good activity against several key pathogens of almonds including shot hole, alternaria, and monilinia.



EcoSwing has also shown solid activity on important diseases on grapes including powdery mildew and botrytis.



For Additional Product Information
800.883.1844
GOWANCO.COM

Gowan USA




Report: Environmental justice advocacy plays a leading role at CalEPA

Brad Hooker, Agri-Pulse

A new CalEPA report details how the agency has hired environmental justice (EJ) liaisons to elevate the representation of community advocacy groups in the decision-making process for regulations. The agency's argument is that pollution in air, water, soil and pesticides disproportionately burdens communities of color and low-income populations.

"California has developed some of the most advanced and ambitious environmental regulations in the country, including regulatory requirements to address environmental injustice," writes CalEPA Secretary Jared Blumenfeld (above) in the report.

In listing accomplishments, Blumenfeld added that the Newsom administration has begun "to transition away from some of the state's more harmful pesticide products, and toward less harmful alternatives."

The Department of Pesticide Regulation (DPR) has been working with county agricultural commissioners to address EJ issues as well. "Children's bodies are more susceptible and sensitive to the impacts of pesticide exposure," the report notes. It explains how DPR has added new restrictions around schools and is planning to add regulations regarding notifications when applying pesticides.

The department nominated one of its environmental scientists to be its EJ liaison, Martha Sanchez, in 2017. Sanchez has worked alongside "numerous advocacy groups and community leaders" on workshops and trainings and reports directly to the DPR executive team. In 2019, CalEPA appointed Val Dolcini as agricultural liaison. Within a few months, Dolcini transitioned to head DPR and the position has remained vacant for more than a year. Gov. Gavin Newsom also hired an agricultural liaison within his cabinet, Bill Lyons, who stepped down ahead of a lawsuit the governor filed against the Trump administration in March over water for the Central Valley.

According to the report, CalEPA received funding in 2016 from the state's taxpayer fund to hire six full-time EJ positions to establish an enforcement task force, which became permanent the following year. Some of those EJ liaisons have led efforts to work with local advocacy groups on safe drinking water initiatives.

While the report does not detail the funding for EJ programs, the bulk of DPR's budget comes directly from the agriculture industry, through a mill tax on registered pesticide products to cover regulatory costs and educational outreach to the ag community for complying with pesticide regulations.

The report details how CalEPA is pursuing "community-driven science" in programs like AB 617. The Shafter contingent of that program developed an $50-million incentives grant program through a local steering committee comprised of five EJ advocates and 19 residents and no agricultural representatives. A similar approach was applied to work group and public workshops on finding alternatives to chlorpyrifos following the administration's decision to ban the insecticide. Providing an elevated platform for environmental and social justice advocates frustrated many of the industry representatives, with some calling it a "farce" and an opportunity for activists to "lambast farmers."

The report also claims pesticide use in California "is one of the highest in the country" due to the "vast amount of agricultural crops," making the risk of exposure to workers "a top priority at CalEPA."

While the report mentions few DPR efforts to work with industry on outreach, such as Spray Safe events, it does describe how DPR staff have participated in more than 150 events focused on farmworkers. DPR did work with the Central California Environmental Justice Network, Fresno County ag commissioner and EPA to host the first Environmental Justice Pesticide Enforcement Workshop in 2016.

While the report covers 2016-2018, it highlights EJ efforts in the Newsom administration and promises to further elevate the EJ voice in the future.

"CalEPA looks forward to supporting even more high-level representation of EJ interests in the years to come," the report reads.

To view the full CalEPA report visit https://calepa.ca.gov/wp-content/uploads/sites/6/2020/10/ej_report_2016-2018_a.pdf ■

We all know by now that, as the world is growing, so is our need for more food. By 2050 there will be 10 billion people on this planet, which means a 60% increase in more food needed. How do we make this happen when our resources are limited? Many efforts and investments are done year after year in order to mitigate this issue. Great examples of this are indoor vertical farms and an increase of greenhouse production, both intended to extend, and maybe in the future completely eliminate the seasonality of food production. But, is this scalable enough?

Currently 69% of the world's water use goes to agriculture, this water is used to irrigate only 20% of the arable land, and still an overwhelming number of 77% of the irrigated land is inefficiently irrigated by flood. Utilizing precision irrigation, we can grow more food and reduce our water use on the land we already have. As land prices are increasing exponentially, so are the demands for additional housing and for different environmental conservation efforts, which will increase the limitation of additional acreage for food production.

Farming is more complicated than this. In addition to water, and fertilizer use, crop protection is a critical component of yields with significant impact to the environment if not applied in a smart manner. One example of this is approximately half of California's perennial crop acreage is impacted by elevated plant parasitic nematode populations. The importance of innovations to enable the precise application of crop protection is what can make the difference for your crop's health and yields.

Building a More Sustainable Future:

- Drip Irrigation provides uniform crop growth, higher yields & better quality.
- With Netafim Precision Irrigation, nutrients and crop protection are delivered directly to the root zone - significantly reducing waste.
- 50% of California's perennial crop acreage is impacted by nematode populations.
- Netafim and Bayer CropScience team up to deliver the ultimate solution for almonds – Precise Defense.

So, how does a farmer integrate different solutions for water management, nutrient management, and crop protection, all while nurturing the environment? Farming is tough, but farmers are tougher!

As the industry continually moves to improve their sustainability practices, so does the technology and partnerships that work to combat this challenge. Netafim in partnership with Bayer CropScience LP are working together to create an innovative, sustainable and easy-to-use solution with the Precise Defense program.

The program brings together the dynamic combination of Bayer CropScience Velum® One, a proven crop protection product that suppresses nematodes, increases canopy area and trunk growth in new almond plantings, and Netafim's Precision Drip Technology that delivers the Velum® One straight to the root zone to maximize the residual efficacy. Simply put, it's a powerful solution that works together to build a more sustainable future.

For more information about the Precise Defense program, visit www.precisedefense.com

NETAFIM USA CUSTOMER SERVICE
5 am - 5 pm PST 888-638-2346
netafim.usa@netafim.com
www.netafimusa.com

NETAFIM™
GROW MORE WITH LESS

SPRAY SAFE

A FARMER TO FARMER COMMITMENT TO YOU

SPRAY SAFE 2021

Always essential, the agricultural community is finding ways to bring the message of spray safe and safe application of pesticides to farmers, applicators and PCAs at the start of the season, despite COVID.

Spray Safe Education, Updates from County Ag Commissioners, and more coming to https://spraysafeca.com

Check the website for updates on statewide and local outreach opportunities to participate in starting January 2021.

If you are interested in sponsoring, hosting or contributing technical expertise to this year's statewide and local outreach, please email info@spraysafeca.com

YOUR MEMBERSHIP BENEFIT JUST GOT BETTER!

Active Members can now access and print their Official CE Certificate!

Simply log into your CAPCA.com account and go to your Hours report.
Click the button on top: "View Your Official CE Certificate."
Your Official CE cert will then be available to view and print!
It's that easy!

We are excited to provide this great new benefit and continue to find ways to add value to your membership.

We thank you for being a CAPCA Member!




ALLIANCE OF
California's Farmers & Ranchers

https://www.alliance.ag/

And the survey says...

Joshua C. Walters, Esq., Walters Strategies & Media, Inc.

When I woke up the day after the election, I have to admit that I longed for the simplicity of the gameshow Family Feud where you immediately knew the winner!

With more than 22 million registered voters statewide and participation levels typically exceeding 75% in a presidential election, the scope of our elections in California is enormous and officials have to count around 16.5 million votes. Given this reality, and given the fact that our local elections officials are hard at work through long hours and sleepless nights ensuring every vote is counted, our patience is certainly well earned.

Alliance of California's Farmers & Ranchers' Efforts to Defeat Proposition 15 – the $12 Billion "Split-Roll" Property Tax Increase Will Impact California's Agriculture Industry.

In my last article I detailed the significant negative impacts that Proposition 15 would have on business in California, including our agriculture industry. To meet this challenge, the Alliance of California's Farmers & Ranchers (Alliance) raised more than $1.3 million which was deployed in a radio and digital campaign educating voters on the cost of living pressures created by additional property tax increases. This effort was conducted as part of a fully coordinated effort with other organizations, including the Business Roundtable and the California Farm Bureau.

As of this writing, voters are rejecting Proposition 15 with the No vote at 51.9%. As discussed above, the ballot counting process will take several more weeks in California and the final numbers will likely be a little different. However, given our current margin and the number of outstanding ballots, the media has called the race for the No side. This is a huge win for California's agriculture industry and all Californians as Proposition 13's (1978) property tax protections will continue to shield both residential and commercial property moving forward.

Key 2020 Election Takeaway – California's Voters Can Be an Effective Check and Balance on California's Progressive Legislature.

Since 2012, Democrats have consistently expanded their majorities in the California legislature. At present, Democrats hold supermajorities in both the Senate and the Assembly, meaning their numbers exceed the two-thirds threshold necessary to raise taxes.

It is not surprising that over the same time period, the laws passed by the legislature have become more progressive as well. These laws tend to be sponsored by and promoted by California's organized labor organizations which are very politically sophisticated and effective in their advocacy at the State Capitol.

Through the initiative/referendum process, the 2020 election cycle saw the reversal of three policies passed by the California legislature: (1) classification of Uber/Lyft drivers as employees (AB 5); (2) elimination of cash bail; and (3) reinstatement of affirmative action for higher education and workplace. The voters' response to these three measures was so strong that the results were clear on election night.

Taking a glass-half-full perspective, there is hope that these strong repudiations by the voters of the underlying policy demonstrate the need for legislators to meet with advocates on the other side in order to negotiate around critical issues and find solutions acceptable to the broader population of California.

The glass-half-empty perspective is that there are tools available to use direct democracy to appeal to the voters where the legislature and Governor have overreached. That said, this strategy requires a significant financial investment.

Looking Towards 2021 – The CAPCA & Alliance Partnership

Looking ahead, to what we all hope will be a much better year, the Alliance is excited about the support we continue to receive from CAPCA.

Through CAPCA's participation in the Alliance, California's producers understand that our pest control advisors are our partners, stand by our side on the issues that are important to us, and care about preserving our way of life for the years to come.

Through the Alliance, CAPCA is supporting the common goal of working to moderate California's legislature in the coming election cycles. The last decade has made it clear that electing policymakers that understand our issues is fundamental to success in governmental affairs in California.

One of the key initiatives that the Alliance is pursuing for 2021 is participation in California's non-partisan redistricting process which will determine how the legislative districts are drawn from elections spanning from 2022-2032. This is a key investment to help shape the field from which the voters will choose our representatives for the next decade and cannot be ignored. ■

County Ag Commissioners ask for feasible alternatives

Joshua Huntsinger, Placer County Ag Commissioners and CACASA President

As we enter into the 2021 pesticide permit season, California's County Agricultural Commissioners want to make you aware of some new information that will be required prior to issuing you a restricted materials permit. Title 3 of the California Code of Regulations (CCR), section 6426 requires a permit applicant (grower) and pest control advisers to consider feasible alternatives to the use of restricted materials before applying for a restricted material permit with the county agricultural commissioner (CAC). What that means is that starting in 2021, you will need to provide your CAC with documentation that you have considered non-restricted alternatives to each restricted material that you place on your permit. Specifically, you should consider the following:

- Effectiveness (consider: broad control vs. selectivity, allowable applications per season, delivery mechanism, etc.)
- Reliability (consider: weather effects, resistance development, effects of other species such as argentine ants when attempting to control mealybugs, etc.)
- Economic Factors (consider: cost-benefit of application, quality metrics, harvest timing, trade restrictions, etc.)
- Environmental Factors (consider: how alternative could avoid or substantially lessen any significant environmental effect)
- Social Factors (consider: nearby buildings or institutions, availability of labor and PPE, likeliness of drift, etc.)
- Technological Factors (consider: delivery mechanism, type of sprayer available, acreage and topography, automation, etc.)

The CAC will consider the information you provided above in its independent review of your permit application and in the CAC's consideration of feasible alternatives and mitigation measures, per Title 3, CCR section 6432. We know that this new requirement will create an added workload, but pledge to do our best to work with you to ensure that you can continue to protect your crops while maintaining full compliance with California's pesticide laws and regulations. Please contact your local CAC for more information. ■

The Natural Chemistry Lab

By Galynn Beer, National Sales Manager, AgroLiquid

The expectation of a fertile soil is that it will share those nutrients with the crop. The production of a crop is what provides a return and that's why we want nutrition to be associated with crop production. Fertile soils are generally productive, so there is a correlation - but not always. Excesses of some nutrients can interfere with the utilization of good levels of other nutrients. Higher rainfall or irrigation amounts will cause some nutrients, such as potassium, to move down in the soil. With dry climates, high evaporation rates will keep cations at the surface. In addition, arid areas are often receiving irrigation water. Since the irrigation water generally carries other nutrients, the top of the soil starts acting like a coffee filter and the soil can take on the properties of the water. The result can be a potassium level that may have you gloating over how fertile you soil is, but could actually limit production. These factors matter as we manage crop nutrition. We can manipulate levels some, but then we're back to economics to see if productivity will justify the expense.

Let's get started. I'll go in the order that I look at a soil test analysis.

1. Cation exchange capacity (or CEC, and pronounced like a short phrase: cat-I-on)
The CEC shows us the nutrient and water holding capacity of the soil. This is the first indicator of the productive capability of a soil. The higher the number, the more water and nutrients it can store. I have seen all types of CEC soils be productive. Low numbers can be challenging because they need rain or irrigation more often since these sandy soils don't store much water. But crops root down well in a sandy soil and with sufficient water, they will reward you with outstanding yields. Higher CEC soils hold more nutrients and water, providing a buffer between rain events. A low CEC number would be 1, requiring superb management, and a high number might go as high as 50 if a lot of organic matter exists. Typical soils range between 10 and 30.

2. Calcium (Ca)
Calcium levels heavily influence soil productivity. I like a Ca base saturation range of 60-75%. Higher numbers will tie up, or crowd out, other nutrients. With a number higher than 75, I immediately look to see if it is tying up phosphorus and crowding out the micronutrient cations like zinc, iron and manganese. If it is, I need to make sure to allocate budget for these. This is a case of a low nutrient base saturation, such as phosphorus or one of the micros, and those low levels being related to an excess of something. In this example, it would be because of calcium. Phosphorus is very reactive with calcium and since zinc, iron, manganese and copper are cations, they can be displaced by high levels of calcium. Most commonly, you'd see associated low levels of zinc, iron and manganese. The importance of sulfur is elevated in this situation to counter high calcium levels. You aren't only considering crop needs for sulfur, but also the 'antidote' effect it has on the elevated cation level of calcium.

3. Magnesium (Mg)
I like Mg between 10 and 20%. Over 20, and compaction is more of an issue. An anaerobic condition can develop under heavy rain or even with severe drought. Under 10% and deficiencies begin to occur and applications should be made. Magnesium is central to chlorophyll development, so it is important to have enough of this nutrient available to your crop.

4. Potassium (K)
It should be between 3 and 8%. A low CEC soil should be in the high side of this range to supply ample amounts. If not, then it needs addressed. Rare instances of levels over 8% can exist and can restrict water infiltration. These high levels would most likely be found in low rainfall areas with potassium being brought to the soil through irrigation.

5. Hydrogen (H)
Any amount of hydrogen present means we are on the acidic side of the pH scale, meaning under 7. The higher the hydrogen number, the more acidic the soil. You'd like to keep your soil near the neutral level of 7. As soils become acidic, some nutrients are more readily released, such as iron and manganese. Often, you see crops that like high levels of iron and manganese grown in acidic soils, such as blueberries. But many beneficial microbes can't survive in an acidic environment, so generally lime is needed to raise the pH. This is done by adding lime with calcium and/or magnesium, which displaces the hydrogen and brings the pH up. Rain and irrigation (H2O) bring H to the environment, so acidity slowly creeps back in. Also, various forms of nitrogen can contribute more than others. NH3 and the conversion of urea to NH4, then to NO3 through the nitrogen cycle, contribute to acidity. Don't panic; these forms of nitrogen don't cause a radical shift in pH, but over-applications do contribute additional hydrogen and creates some acidity.

6. Sodium (Na)
Sodium mostly comes into play in arid areas where irrigation water is being applied, but can be a factor in low areas of fields where water stands and in areas with a shallow water table. Sodium base saturation over 2% can limit production when temperatures rise and water is demanded by the plant to cool itself. Sodium holds on to water and can limit its movement into a plant.

The management of cations greatly influences the productive capacity of your soil. Proper balance is important for other nutrient inputs to provide maximum return. Calcium in a range of 60-75%, magnesium between 10-20%, potassium between 3 and 8%, hydrogen less than 10% and sodium less than 2% will provide the most consistent yields through a variety of environmental conditions.

In the upcoming February issue of the CAPCA Adviser, we'll tackle the other nutrients and then look at how all cations and nutrients work together and interact with each other. ■

Exploring navel orangeworm monitoring tools for almond orchards under mating disruption

Jhalendra Rijal, Area IPM Advisor, University of California Statewide IPM Program and Cooperative Extension
Charles Burks, Research Entomologist, U.S. Department of Agriculture–Agricultural Research Service
Sudan Gyawaly, Associate Specialist, University of California Agriculture and Natural Resources

Background

Navel orangeworm (NOW), *Amyelois transitella*, is the primary pest of almonds and pistachios, and a significant pest of walnuts in California. NOW females lay eggs on hull-split nuts in which young larvae bore into and cause direct damage to the nutmeat. Damaged nuts are highly susceptible to mold fungus, *Aspergillus* spp., that can produce carcinogenic aflatoxin.

A comprehensive integrated pest management (IPM) approach that combines various monitoring and control measures is essential for effective navel orangeworm management. Recent studies have demonstrated that synthetic pheromone-based mating disruption could effectively be integrated into navel orangeworm management programs to reduce damage by this pest in nut crops. For monitoring purposes, the oviposition bait-based egg trap has been used to monitor egg-laying activity in nut orchards since the 1980s. After the discovery of the NOW pheromone and its commercial production, use of a pheromone lure has become a regular practice in nut orchards across the Central Valley in the last decade or so. However, with the rapid increase in adoption of NOW mating disruption in these orchards, the pheromone trap is not effective in tracking NOW adult activities. Synthetic pheromones from the mating disruption products impair the male moth's ability to track pheromone plumes originating from the female or pheromone lure.

In the last couple of years, additional types and formulations of attractants such as oviposition baits (e.g., a naturally occurring phenolic compound phenyl propionate (PPO)) and host-derived ovipositional attractants are being used to monitor NOW adults in nut orchards, including almonds. In this article, we present the results of multiple studies conducted to examine the efficacy of the commercially available attractants in capturing NOW adults in almond orchards with or without a mating disruption program. We discuss the potential implications of these newer attractants in monitoring navel orangeworm as a part of a NOW IPM program.

Methods

We conducted trapping studies in seven almond orchard sites in the Modesto (n = 3) and Fresno (n = 4) areas representing the upper and lower San Joaquin Valley (SJV) in the 2020 field season. In each site, the same commercial planting (60–160 acres) consisted of one experimental unit (i.e., plot) with commercial mating disruption and one without mating disruption—the grower standard. These plots were separated by a distance of 200 to 400 ft. In the mating disruption plot, navel orangeworm mating disruption dispensers were used at the rate of 20 dispensers/acre (upper SJV) or the high rate of 28 dispensers/acre (lower SJV).

Commercially available attractants used were a pheromone lure (Pheromone); two sources of phenyl propionate lure (PPO1, PPO2); the combination of PPO lures with pheromone lures (PPO1+pheromone, PPO2+pheromone); and a ground pistachio-based oviposition bait (Ovibait) in the upper SJV sites. Pheromone, PPO1, and Ovibait were used in the lower SJV sites. White wing traps with sticky liners were used for all attractant types except for the pheromone lure in the upper SJV sites. The wing traps were prepared by bending the wire to clip on and off the bottom half containing the trap liner. In lower SJV sites, the ovibait traps were prepared with the top and bottom about 2.5 inches apart compared to the 1-inch separation for other trap types. The attractants were deployed inside the traps following the manufacturer's directions. Four traps of each attractant were installed in two tree rows separated by five rows (approximately 100 ft.) around the center 5 to 10 acres of the individual plots. Traps were checked and serviced weekly for 20 weeks (May to mid-September) in upper SJV, and 24 weeks in the lower SJV sites (April to September).

Results and Discussion

Cumulative trap counts from mating disruption or grower standard plots of all three sites in upper SJV or four sites in lower SJV were combined for statistical analyses. In upper SJV, traps that consisted of pheromone alone or the combination of pheromone and PPO1 or PPO2 caught significantly higher numbers of moths than Ovibait, PPO1, or PPO2 in grower standard plots (Table 1). In mating disruption, the highest moth catch was recorded in PPO1+pheromone traps. PPO2+pheromone or Ovibait caught fewer moths than PPO1+pheromone traps but higher than the rest of the treatments (Table 1). Pheromone alone traps resulted in significantly lower catches than the traps mentioned earlier under mating disruption (Table 1).

In the lower SJV, means were compared between mating disruption and grower standard plots for the three attractant types. There were, of course, significantly fewer males captured in pheromone traps in mating disruption plots compared to non-mating disruption plots (Table 2). The number of NOW captured was not significantly different between mating disruption and non-mating disruption sites in Ovibait and PPO1 traps, although the numbers were more similar for Ovibait than the PPO1 traps (Table 2).

Although we present combined numbers in tables and used cumulative counts for statistical analysis, NOW adult activities across attractant types in all 14 plots across seven sites were highly variable (Fig. 1 & 2). It is important to understand the orchard and population factors that can play an essential role in trap efficiency.

Table 1. Cumulative numbers of navel orangeworm per trap for various attractants in almond orchards in the upper San Joaquin Valley. Pheromone = a pheromone lure; PPO1 and PPO2 = two sources of phenyl propionate lure; PPO1+pheromone and PPO2+pheromone = the combination of PPO lures with a pheromone lure; Ovibait = ground pistachio-based oviposition bait.

Attractant type	Grower Standard	Mating Disruption
	Mean ± SE	Mean ± SE
Ovibait	12 ± 2.2 bc	12 ± 1.5 ab
Pheromone	83 ± 17 a	3.4 ± 1.6 d
PPO1+pheromone	64 ± 14 a	28 ± 7.6 a
PPO2+pheromone	79 ± 12 a	12 ± 3.7 bc
PPO1	9 ± 2.6 bc	7.9 ± 3.0 cd
PPO2	5.3 ± 1.7 c	4.8 ± 1.6 d

Means in the same column followed by different letters are significantly different.

Table 2. Cumulative numbers of navel orangeworm per trap for various attractants in almond orchards in the lower San Joaquin Valley. Pheromone = a pheromone lure; PPO1 = one source of phenyl propionate lure; Ovibait = ground pistachio-based oviposition bait.

Attractant type	Grower Standard	Mating Disruption
	Mean ± SE	Mean ± SE
Ovibait	23 ± 2.5 a	24 ± 4.0 a
Pheromone	43 ± 6.0 a	5 ± 1.6 b
PPO1	84 ± 16.7 a	59 ± 8.4 a

Means in the same row followed be different letters are significantly different.

Figure 1.

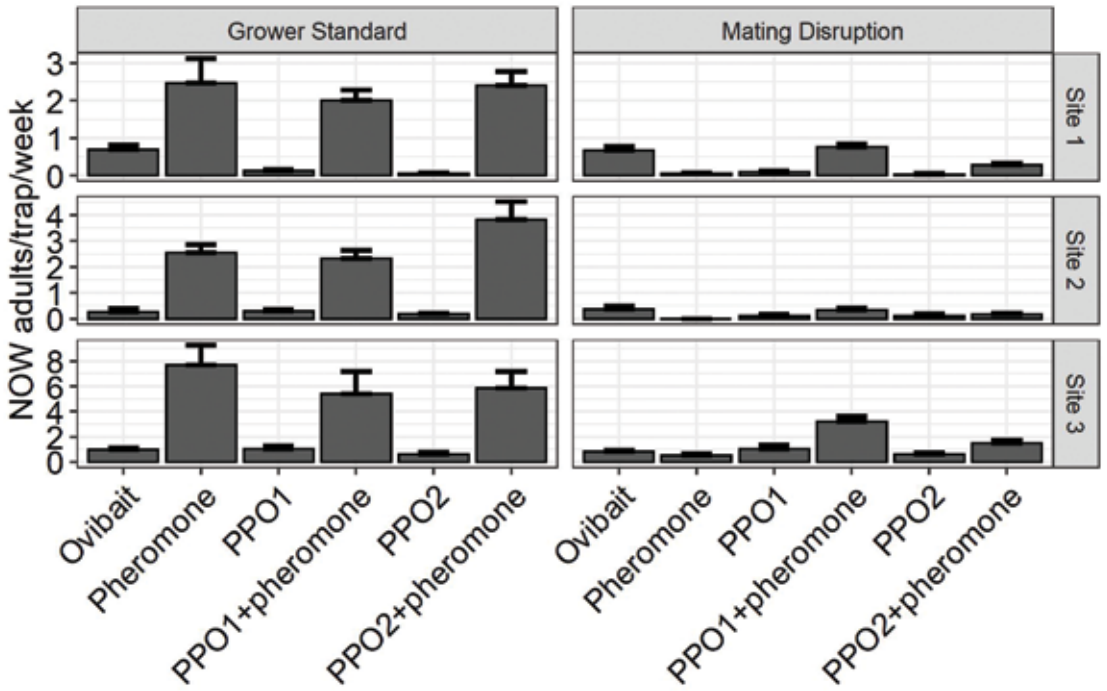


Figure 1. Average weekly number of navel orangeworm (NOW) adults captured per trap using various attractants in almond orchards in the upper San Joaquin Valley. Pheromone = a pheromone lure; PPO1 and PPO2 = two sources of phenyl propionate lure; PPO1+pheromone and PPO2+pheromone = the combination of PPO lures with a pheromone lure; Ovibait = ground pistachio-based oviposition bait.

Figure 2.

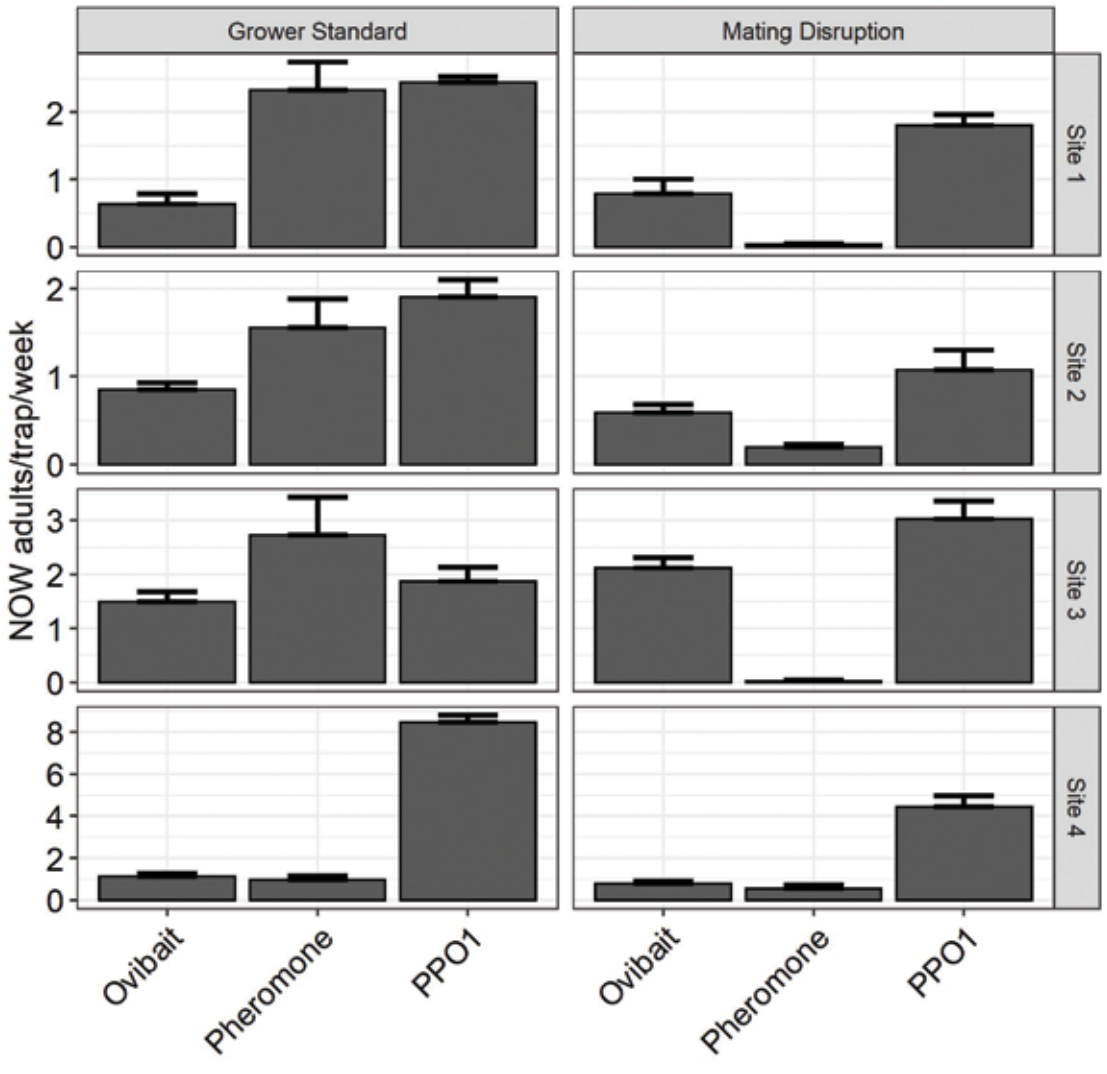


Figure 2. Average weekly number of navel orangeworm (NOW) adults captured per trap with various attractants in almond orchards in the lower San Joaquin Valley. Pheromone = a pheromone lure; PPO1 = one source of phenyl propionate lure; Ovibait = ground pistachio-based oviposition bait.

Koverall® mixed with Nu-Cop® 30 HB or Nu-Cop® HB provides excellent multi-site disease control

For decades, walnut growers have used mancozeb to help prevent fungal pathogens. These pathogens, when not treated, interfere with a tree's ability to produce market-quality nuts, which is why Koverall, produced by Albaugh, is so important to growers around the world.

Koverall® is a high-quality formulation that is an excellent mixing partner with other fungicides such as Nu-Cop 30 HB or Nu-Cop HB. Koverall® is an excellent resistance management tool against walnut blight and other key diseases, including fungal pathogens:

Anthracnose;
Alternaria;
Downy mildew;
Early and late blight;
Rusts;
and Scabs.

Koverall®, a multi-site contact protectant fungicide, has been used by growers for more than 60 years with little fungal resistance. It also contains specific micronutrients as well to help restore soil health and is suitable for Integrated Pest Management Programs (IPM).

Koverall®, is a "proven performer," and should be part of a regularly scheduled preventative fungicide spray program.

TECHNICAL DETAILS:

- **Active Ingredient:** Mancozeb
- **FRAC Code & Group:** FRAC Group M3 Multi-site protectant
- **Formulation:** 75 WDG
- **Signal Word:** Caution
- **PPE:** Applicators and other handlers: long-sleeved shirt and long pants, shoes plus socks, chemical resistant respirator and chemical resistant gloves.
- **REI:** 24 Hours
- **Resistance Management:** Do not exceed the total number of applications per crop on the label. Excellent tank mix partner.
- **Packaging:** 30 lb. bags

PRODUCT FEATURES:

- Koverall® has a unique mode of action making it an excellent disease resistance management tool.
- Koverall® can be applied in a foliar, seed or chemigation application in a variety of crops.
- Koverall® is effective in protecting against a wide range of fungal pathogens.

Nu-Cop brands have been a proven solution for growers for more than 16 years.

Contact your Albaugh representative to learn more!

Albaugh®
Your Alternative®

1525 NE 36th St., Ankeny, IA | **albaughllc.com**

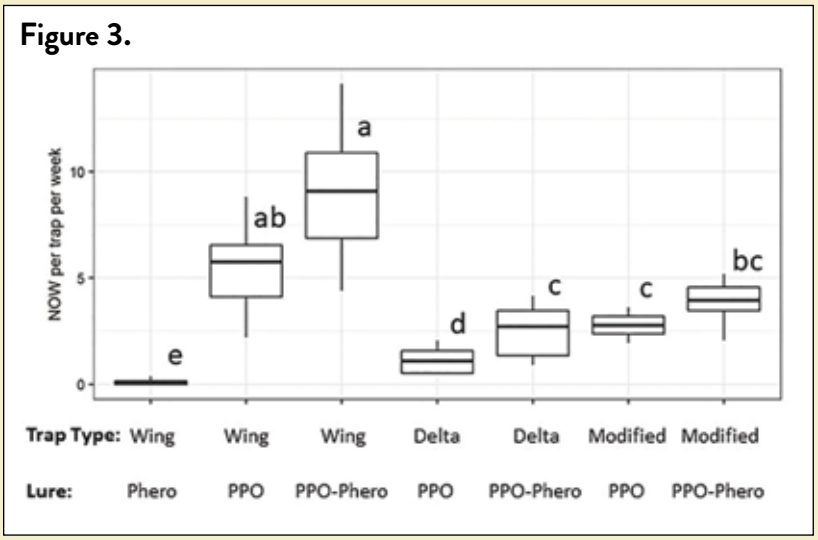


Figure 3. Performance of different types of traps and lure combinations tested for capturing navel orangeworm (NOW) adults in the lower San Joaquin Valley (Source: Burks et. al 2020). Phero = pheromone lure; PPO = phenyl propionate lure; PPO-Phero = phenyl propionate plus pheromone lure.

Conclusion and Potential Implications

Our study indicated that the trap with PPO combined with pheromone lures shows excellent promise to be used in orchards with or without mating disruption to monitor the navel orangeworm population. Also, the efficacy of PPO seems to be different among orchards under varying levels of infestation. For example, PPO alone may provide a reasonable estimation of adult activity if the navel orangeworm population in the area is consistently moderate or high (e.g., lower SJV sites; Fig. 2). Under relatively low NOW pressure (e.g., sites 2 & 3 of upper SJV; Fig. 1), the combined use of PPO with pheromone seems to be critical.

The selection of attractant type can depend on the purpose of the monitoring. If monitoring is aimed at tracking the flights, PPO combined with pheromone lures seems to be the best choice. In contrast, if the focus is on monitoring female activity, the use of the ovibait attractant in wing traps can provide reliable information. All moths captured in the ovibait traps are mated females, which is a better predictor of the crop damage by navel orangeworm compared to the male-based pheromone trap captures (Rosenheim et al. 2017. J. Econ. Entomol. 110: 2692–2698; doi: 10.1093/jee/tox226).

Additionally, although delta traps are easier to use and the preferred traps among pest control professionals, the rate of capture in delta traps and even the modified delta traps (where a rectangular cut covering approximately half of the surface area of the delta trap 'roof' was made for better air flow) was poor compared to the wing traps for both PPO (with and without pheromone) and ovibait attractants (Burks et al. 2020. J. Econ. Entomol. 113: 1270–1278; doi: 10.1093/jee/toz363; Fig. 3). When PPO is used in the orchard, it is important to separate the PPO-based trap at least by 100 ft. from the pheromone-based trap to minimize interference.

In conclusion, the type of attractants that can effectively be used to track navel oranageworm flights in various field conditions and population levels is still a moving target. We will continue to explore and refine various monitoring tools that can help growers and pest control advisers implement IPM practices in nut crops.

Acknowledgments

The Almond Board of California partially funded these studies. We thank field technicians D. Rivers, F. Hengst, L. Salinas, J. Salinas, and S. Stephens for their help in conducting trapping studies. ■

ADVERTORIAL

NUTRIENT UPTAKE AND UNLOCKING NITROGEN SPURS ALMOND PRODUCTION

Compass Minerals
Plant Nutrition

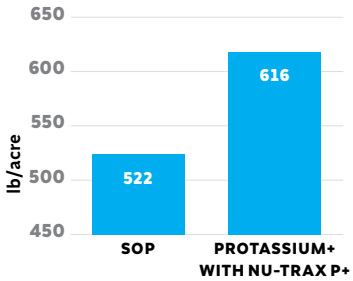
Potassium and Phosphorus Improve Nutrient Uptake

Sulfate of Potash (SOP) is considered a critical potassium (K) source to support almond fertility. A complete and balanced nutrient management program is necessary to maximize yield potential.

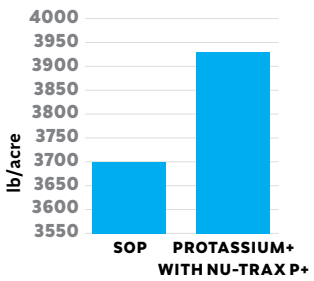
In 2017, Doug Picanso, Lead Agronomist in the Western U.S. for Compass Minerals, explored how coating Protassium+® (Compass Minerals' branded SOP) with the right combination of nitrogen (N), phosphorous (P), zinc (Zn) and manganese (Mn) could improve SOP performance and maximize return on investment (ROI). That specific combination is found in Nu-Trax P+® and field trials proved Picanso's theory.

Nu-Trax P+ is a dry dispersible powder that provides a combination of macronutrients and micronutrients. The product is a coating for dry fertilizer creating a consistent blend – piggybacking N, P, Zn, and Mn. Since the nutrient coating of Nu-Trax P+ is applied to every fertilizer prill, the nutrient combination offers blanket-like distribution in the field. Picanso demonstrated that the added benefit of phosphorous that came with coating SOP with Nu-Trax P+, provided a solution for addressing almond root growth, stress tolerance, water and nutrient efficiency, yield and overall nut quality.

"We knew we could grow a stronger root system and those extra roots help us get more of everything," said Picanso. "We found this translates to an uptake of approximately 17% more K in almond trees when we coat SOP with Nu-Trax P+ – and this increase occurred consistently across split fields and about 20,000 acres of demo trials."



Total Nut Weight – May Maturity (includes husk, shell and nut)



Final Yield

Similar performance recurred in 2019 trials:

- **Mid-season indicators improved,** with an increase in the number of nuts per tree, nut weight, and nut size.

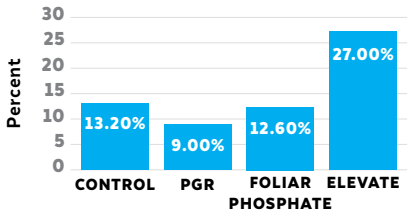
Unlocking Nitrogen with Micronutrient "Tools"

During the growing season, maintaining adequate levels of N in the soil is consistently at the top of grower's lists. Some of the N added is not used by the crops and is subject to loss into the environment, resulting in decreased ROI.

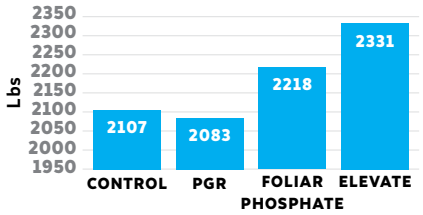
One option showing great promise in improving N use efficiency is the use of micronutrients as physiological tools. Like a baker using yeast to make bread rise, growers are using micronutrients, like Nickel (Ni), Cobalt (Co) and Molybdenum (Mo), to improve N use in the plant. ProAcqua® Elevate has rich sources of Ni, Co, and Mo. This nutrient combination, especially Co and Ni, work together to unlock nitrogen, build proteins and inhibit the production of ethylene.

In third-party trials, ProAcqua Elevate has shown to inhibit ethylene, increasing flower set by 27% while a popular and more costly plant growth regulator (PGR) only increased initiated flower set by 9%.

More importantly, ProAcqua Elevate also increased nut weight and size – which was not observed using a PGR. Increasing flower set is driven by timing and the stage of flower bloom, but if that timing is missed, it's important to be able to impact nut weight and size – a big advantage as growers are sometimes unable to get to the field to spray at the recommended time.



Flower Set



Net Yield Per Acre

Improved nutrient uptake and nitrogen efficiency is best achieved by maintaining key nutrients at optimal levels in the crop throughout the season. Maximizing nutrient use not only supports tree health and optimal flowering, but also contributes to a consistently high-performing orchard you can count on for years to come.

*Many factors contribute to increased yield and resulting financial gains. Results not guaranteed.

For more information visit CompassCrops.com.

Nu-Trax P+® ProAcqua® Protassium+®

Copper and Mancozeb: Reliable Tools in Agricultural Production

Jeremy Adamson, Product Manager, Certis USA

Copper and Mancozeb are among the most widely used bactericides and fungicides in agricultural production, providing growers with reliable control of a broad range of bacterial and fungal diseases across a wide array of crops. Both have long been a staple in Integrated Pest Management (IPM) to control bacterial and fungal diseases including powdery and downy mildew, bacteria blast, walnut blight, bacterial spot and speck to name a few. While these products are used standalone, they are also prominent tank mix partners that when combined, offers growers a broader spectrum of disease control and a resistance management tool whose effects provide enhanced performance and synergistic benefits.

Copper Use in Agriculture

The history of copper being used in agriculture dates back to the 1880's, when a French scientist, Pierre-Marie Alexis Millardet, noticed that vines that came in contact with a copper sulfate pentahydrate and lime mixture were free of Downy mildew. While this first mixture known as the "Bordeaux mix" was the first widely used fungicide containing copper, more advanced copper products have since been a foundational tool in controlling a broad range of fungal and bacterial diseases across number of crops.

On the surface, all copper fungicides/bactericides work as protectants to plants. The crystalline copper particles adhere to the surface of the plant to provide a protective barrier. As the copper comes in contact with water, bioavailable Cu++ ions are released to protect against fungal and bacterial infections. Where commercially available coppers vary are the efficiency in which Cu++ ions are released, particle size, water solubility, formulation, and rainfastness to name a few key differences. Metallic Copper Equivalent (MCE) also varies across copper products; however, it should be noted that several technological advancements allow for the aforementioned variances to be more of an indicator to performance, as opposed to simply viewing products containing a higher MCE as better performing.

Fixed Coppers are the most widely used form of copper in crop protection, mainly because they are less phytotoxic to the plant. Examples of fixed coppers are: Copper hydroxide, Copper oxide, Copper sulfate basic, Copper oxychloride sulfate, Copper oxychloride and Copper octanoate. The most commonly used copper products are Copper hydroxides due to their high level of disease control and plant safety. Several technological advancements have occurred over the years within copper hydroxide products. These advancements allow for increased levels of bioavailable copper on a per pound basis and lower use rates per acre. These products have helped to maximize copper efficiency on the foliage of the plant, while lowering the environmental impact of copper yet providing outstanding disease control.

Mancozeb Use in Agriculture

The early days of ethlene bidithoiocarbamate (EBDC) products can be traced back to Nabam, which was introduced in the 1940's. After several EBDCs were introduced over the next 25 years, a zinc ion (zineb) and manganese ethylene bisdithiocarbamate (maneb) were combined to form Mancozeb, which was introduced into agricultural production as a standalone product in 1962 and has since been the most prominent EBDC used.

Mancozeb is FRAC M:03 fungicide, which represents fungicides that have multi-site activity. It works as a protectant by disrupting core enzymatic processes within fungal cells, resulting in inhibiting spore germination within fungal pathogens on the plant surface. As a multi-site fungicide, Mancozeb has proven effective against a wide array of fungi, including ascomycetes, oomycetes, basidiomycetes, and deuteromycetes. Mancozeb is commonly used to control walnut blight, down mildew, and bacterial spot/speck, amongst a number of other diseases.

The Benefits of Using Copper and Mancozeb

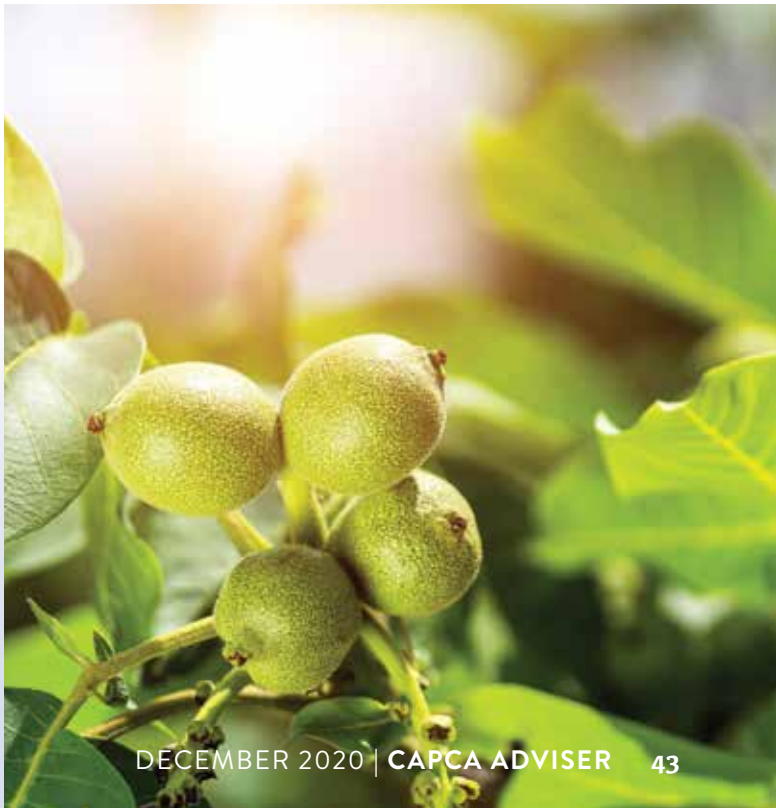
Copper and Mancozeb have been mainstays in grower IPM programs and for good reason. For years they have provided reliable control of bacterial and fungal diseases; however, this extended use has resulted in growers seeing a reduction in control when used alone in some key diseases, such as Walnut blight. Combining Copper and Mancozeb has been shown to enhance control of walnut blight by helping to increase the penetration of cell membranes, which in turn helps the copper protect against bacterial diseases.

Additional benefits of using the combination of two active ingredients with multi-site modes of action helps to broaden the spectrum, reduce disease inoculum and incidence, and enhance resistance management. Growers have the option of buying individual copper and mancozeb products or purchasing a coordinated copper-mancozeb product.

Copper and Mancozeb are commonly used to control a number of diseases across a variety of crops, including:

Table 2: Common uses for Copper + Mancozeb	
Crop	**Disease**
Walnut	Walnut Blight
Almond	Blossom blight, Anthracnose, Shot hole
Onions	Bacterial Blight, Downy Mildew
Carrots	Bacterial Blight
Tomato	Bacterial Spot/Speck
Potato	Early blight, Late blight
Leafy Vegetables	Downy Mildew

Growers are encountering new challenges daily in today's dynamic agricultural environment; and, while new solutions are being introduced and offered, it's good to know that they have a proven, trusted and reliable pairing ready to be incorporated into their IPM programs with Copper and Mancozeb. ■



Best management practices for hybrid onion seed production

Rachael Long, UCCE Farm Advisor, Yolo County

Hybrid onion seed production involves planting distinct male and female (male sterile, no pollen) lines in the same field. At planting, 20 to 25 percent of the plants are typically male, with ratios of females to males depending on the hybrid being produced. Honey bees are relied on for pollination at ten hives per acre. Seeds produced from red, yellow, and white onion varieties adapted to different day lengths are shipped worldwide. Most of the hybrid onion seed production in California occurs in the Sacramento and Imperial Valleys.

A challenge in onion seed production is the significant variable and often unpredictable yields at harvest. Much of this yield variation is varietal and perhaps environmental, including inherent challenges in good nicks between lines (overlap in male and female blooms). However, agronomic management practices can also influence onion seed set. In a study we conducted in the Sacramento Valley on 30 onion seed production farms over two years, we found that insecticide use for onion thrips control and irrigation management practices can interfere with seed set via impacts on (1) nectar production, (2) honey bee behavior, and (3) pollen germination and pollen tube growth.

To measure pollinator activity, we counted honey bee visitors to flower umbels during bloom. For nectar production, we measured nectar volume per floret. To determine percent soil moisture, we took soil core samples within each field, obtained wet weights, then dried and re-weighed them. To quantify impacts of insecticide use on pollen tube growth, we bagged female umbels to prevent pollen deposition on stigmas and pollinated stigmas on each umbel with pollen from the same site. All stigmas were fixed and stained and the numbers of pollen tubes germinating at the tip of the stigma and reaching the base of the style counted using a microscope. Data on insecticide use was obtained from Agricultural Commissioner records from January through bloom. If a tank mix used two different insecticides on one day, we counted this as two applications. Our data showed the following results:

Nectar: Nectar production per floret peaked mid-bloom and at mid-range soil moisture, Figure 1.

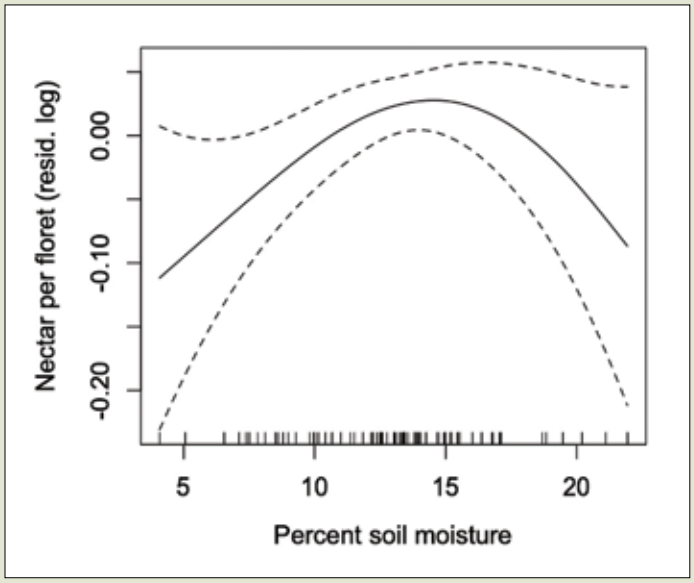


Figure 1. Nectar production per onion floret relative to soil moisture. Dashed lines show the variation in the nectar production per floret compared to averages (solid line). High nectar production favored more honey bee visitation.

Visitation: Honey bee visitation increased with higher nectar production with bees favoring flowers with high nectar rewards. Visitation was not directly affected by insecticide use, but there was an insecticide use by date interaction, such that sites with fewer insecticide sprays showed steady visitation over time, whereas sites with more sprays started at an overall lower level of honey bee visitation, then increased to match low-spray fields.

Pollen tubes: For pollen germination at the stigmatic tip, insecticide sprays applied closer to bloom time led to overall lower pollen germination and pollen tube growth than sprays applied earlier in the season.

New innovations provide solutions to farmers

BASF insecticides are made for the toughest pests

California growers face many challenges when it comes to controlling insects. Not only can pests such as aphids, whiteflies, and psyllids spread disease-causing pathogens that reduce yield and quality, but growers are also experiencing increased regulatory pressure to use products that are strong on listed pests, while less impactful to non-target species.

“Pollinators are a key part of our ecosystem, and beneficial insects are an important component of Integrated Pest Management,” said Chad Asmus, Product Manager, Specialty Crop Insecticides. “BASF understands the vital role these two insect categories play in agriculture, and we recognize growers need products that are strong on harmful pests but gentle on pollinators and benefical insects.”

A powerful chemistry from BASF is now available in two recently-approved insecticides that quickly stops feeding of aphids, whiteflies and psyllids while also having no pollinator restrictions.

Sefina® Insecticide minimizes whitefly damage in cotton and cucurbit crops

Whiteflies can cause damage to crops by vectoring disease-causing pathogens and/or inducing stress and secreting honeydew, thereby lowering yield and/or quality. Sefina insecticide’s rapid feeding cessation allows it to be strong on whiteflies but soft on pollinators and beneficials. Sefina insecticide can also be used on citrus to control Asian citrus psyllids and to suppress citrus mealy bugs and citricola scale.

Versys® Insecticide fights off aphids

Aphids are a prominent pest in brassica-cole crops and leafy vegetables that can cause serious damage impacting crop quality, yield and growers’ bottom line. Alternating insecticides with different modes of action is important for managing insect resistance.

This year PCAs can rely on a new class of aphid control for these crops -- Versys insecticide.

Unique mode of action minimizes insecticide resistance

Sefina insecticide and Versys insecticide are used on different crops, but they do share a unique active ingredient as they are the only insecticides classified by the Insecticide Resistance Action Committee (IRAC) into subgroup 9D. This subgroup’s mode of action targets the chordotonal organs, leaving the labeled pests disorientated, uncoordinated, and unable to feed.

BASF insecticides provide aid to growers

Growers’ and PCAs’ jobs are never easy. Now with the addition of Sefina and Versys insecticides, they will have peace of mind knowing they’re well-armed to tackle some of the most problematic insects while still being gentle with beneficials.

To learn more about these two insecticides, contact your local BASF representative or visit www.versys-insecticide.com and www.sefina-insecticide.com.

Seed set: Seed set increased with honey bee visitation. Honey bee visitation is the single-most important variable for onion seed set in commercial fields, Figure 2.

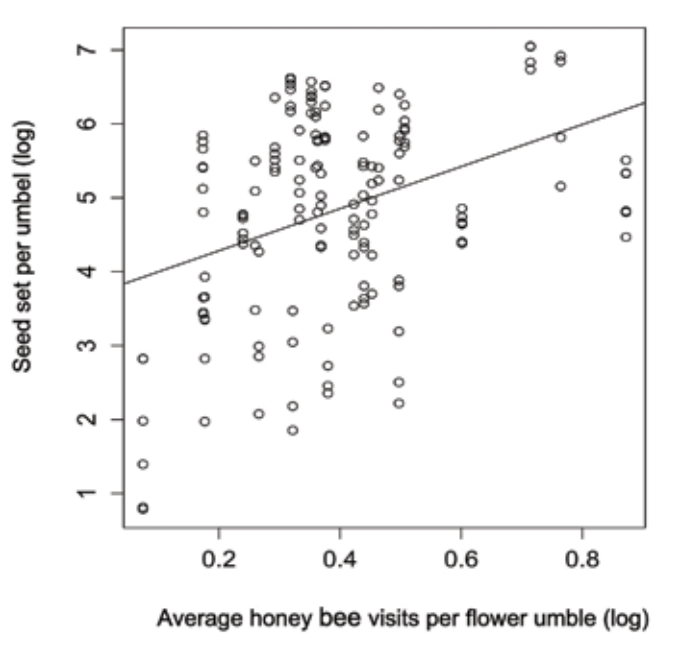


Figure 2: The average number of seeds per umbel per field was positively related to honey bee visitation.

Implications

Our study showed that management decisions such as irrigation regime and insecticide use can have negative effects on seed yield mediated by the pollination process. For example, low soil moisture can negatively impact nectar production, leading to reduced honey bee visitation and lower seed yield. We also saw a reduction in nectar production at extremely high soil moisture levels. Over-irrigation may lead to suffocation of the roots, and thus negatively impact nectar production.

Insecticide use affected both pollinator attraction and pollen-stigma interactions. We saw an effect of spray rates on the temporal pattern of visitation, where high spray sites began bloom with overall lower visitation, but saw an increase in visitation over time, whereas honey bee visitation to lower-spray sites was steady. This likely indicates the degradation of insecticide residues that repel pollinators. Furthermore, fields that were sprayed with insecticides close to bloom had lower pollen germination and lower pollen tube growth than fields that were sprayed at earlier dates.

Both these results represent a reduced impact of insecticides on pollinator visitation and pollen tube growth. Our data showed that pronounced effects of insecticides on pollinator behavior and seed set are more likely at rates of 3 sprays per year or higher; however, even at reduced insecticide use, we still see the potential for subtle effects on both the pattern of visitation over time, and pollen-stigma interactions. No such observations were observed for any fungicide used.

Our results highlight the importance of considering the indirect effects of agronomic management practices on the pollination process. Low irrigation and high insecticide use may both interfere with pollination via their impacts on honey bee pollinator activity, Figure 3. In hybrid onion, we continue to advise moderation in insecticide use, and recommend that growers consider impacts on nectar production when planning irrigation events during bloom.

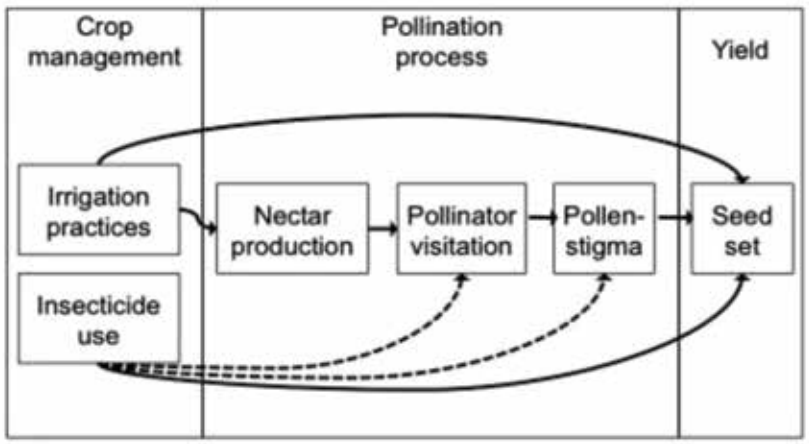


Figure 3. Diagram showing potential pathways for crop management to impact hbrid onion seed set via the pollination process. Solid lines represent direct effects. Dashed lines are indirect effects.

Thanks to Dr. S. Gillespie, University of Fraser Valley BC and former UC Davis Post Doc and Dr. Neal Williams, UC Davis Entomology. Project funding was obtained from the CDFA Specialty Block Grant, Sakata Seeds, Nunhems Inc., Hazara, Seminis, Enza USA, and the California onion and garlic research advisory board. ■

GROWING EFFICIENCY AND PROFITABILITY WITH IRRIGATION CHEMISTRY

Pests, diseases and limited access to irrigation water: Three challenges nearly every vineyard producer encounters. Over time, this trifecta can have a profound and expensive impact on an operation from reduced yield and grape quality to, in extreme cases, vineyard removal.

For Napa producer, Frank D'Ambrosio, this was the exact situation he faced. Season after season, D'Ambrosio Vineyards attempted to maintain a block of petit verdot limited by disease, phylloxera and nematodes, but to no avail. As part of a final effort to revive the underperforming section before removing it altogether, D'Ambrosio and Daniel Robledo, his viticulture consultant, initiated a trial on this block with an Irrigation Water Optimizer (IWO) from Precision Laboratories.

"The IWO is a water surfactant that helps the soil retain and expand water like a sphere around the root system. This also makes any nutrients applied through irrigation available to the plants much more easily," Robledo said.

Water and soil interactions depend on many different variables, such as soil type, particle size, porosity and organic matter. When those variables are insufficient, the availability of water is reduced and plant establishment, yield and crop quality can be hindered. This is where IWOs even the balance.

Daniel Robledo, PCA | Viticulturist

IWOs, a category of irrigation chemistry, help maximize plant health and the environment around the plant. Treating water with IWOs reduces surface tension, moving water into and throughout the root zone and decreasing runoff. By holding water in the root zone, IWOs not only optimize water usage, they also make soil-applied chemistries and nutrients more available to the plant. These efficiencies lead to better plant health, yield, crop quality and ROI.

ENHANCING THE VINEYARD AND THE BOTTOM LINE

Throughout the 2018 season, three applications of the IWO were made to the struggling petit verdot block. As the season progressed, D'Ambrosio and Robledo began to see significant improvement in the once unproductive block.

"When we started the trial, we had phylloxera and nematodes we were treating with a drip-applied insecticide," Robledo said. "The blocks that were treated with the IWO [in combination with the insecticide] now have zero phylloxera, and the nematode numbers dropped dramatically from 2018 to 2019. [It] is a powerful tool."

In addition to reduced pest populations, the trial yielded a 21% increase in wine grape weight, a 16% increase in production and a $6,300 per acre increase in ROI. Worth noting is that these enhancements in the vineyard and on the balance sheet were achieved even though irrigation of the block was reduced to three hours, twice a week.

"Five years ago, that vineyard had all kinds of problems," D'Ambrosio said. "Now, it's looking good."

"We're proud to provide a lineup of IWOs that help growers like D'Ambrosio Vineyards create a more ideal environment for the root systems of their plants for healthier, more productive crops and a more fruitful bottom line," said Dr. Rob Osburn, technical and commercial product manager. "At Precision Laboratories, we're always looking for new ways to improve producer profitability. IWOs are a great example of that commitment in action."

CAPCA 2021 Sustaining Membership Levels

BENEFITS	BRONZE	SILVER	GOLD	CHROME	DIAMOND	PLATINUM
	$600	$2,000	$3,000	$5,000	$10,000	$25,000
Sustaining Member Acknowledgement on the CAPCA website and in each issue of the *Adviser*	✔	✔	✔	✔	✔	✔
Subscription(s) to *Adviser* Magazine	1	1	1	1	2	2
Job Opportunities Posting in *Adviser*	1	2	Unlimited	Unlimited	Unlimited	Unlimited
½ Page *Adviser* Ad (October issue excluded)		✔				
One-Page Ad in *Adviser*					1	3
Adviser Advertorial*			1	1**	1**	1**
Complimentary Mailing Labels		1	2	2	3	5
Comp Conference Registration(s)***			1	2	2	3
Priority Reservation for Conference Exhibit Booth***				✔	✔	✔
CAPCA Online CE Host or Collaboration Discount			$250	$500	$500	$750

* October issue fills quickly, first come, first served

** October issue guaranteed if booked by April 2021

*** Pending the availability of hosting In-Person events in 2021. Due to still unknown/potential space limitations or gathering restrictions, CAPCA reserves the right to limit one booth per sustaining member. In the event of a virtual CAPCA Conference in 2021, CAPCA will prioritize sustaining members in placement. Comp Conference Registrations will apply to virtual pricing.

To submit your Sustaining Membership form for 2021
visit www.capca.com/sustaining-membership

CAPCA

ADVERTORIAL

THE *NOT* SO HUNGRY, HUNGRY CATERPILLAR

BT NOW® controls lepidoptera in California agriculture

Over the years, caterpillars' voracious appetite for leafy green and cole crops has spurred growers to seek out effective means of management. The naturally occurring soil bacterium *Bacillus thuringiensis* (*Bt*) has been the most widely used bioinsecticide for controlling lepidoptera pest populations for decades. *Bt*'s popularity is attributed to its track record of effectively controlling caterpillars, remarkable environmental and mammalian safety profile, and for specifically targeting only the pest while preserving beneficial species.

The newest member of BioSafe Systems' suite of sustainable and OMRI-Listed insecticides, BT NOW is a remarkably effective lepidopteran pest control solution. Utilizing a novel strain of the *Bt* bacterium, BT NOW® halts the pest's ability to feed within minutes. Possessing several unique features useful in California agronomy, BT NOW is a truly valuable tool that makes those hungry, hungry caterpillars A LOT less hungry.

BioSafe Systems®

BT NOW and *Btk*

The key to understanding how BT NOW works is to first understand the unique properties of *Bacillus thuringiensis*. BT NOW's active ingredient, *Bacillus thuringiensis* subspecies *kurstaki* (*Btk*), exclusively targets lepidopteran larvae (i.e. caterpillars or 'worms'). This bacterium produces spores and proteins containing cry toxins. Activated by the alkaline environment found in the lepidoptera's digestive system, these toxins promptly bind to special gut receptors, paralyzing the mouthparts and halting caterpillar feeding within minutes. This exclusivity to lepidopteran pests allows growers to apply *Btk* products without harming beneficials, including pollinators. This particular feature is especially useful for early season caterpillar infestations, allowing beneficial species populations to proliferate, further augmenting pest management on the crop. With low resistance potential, *Btk* is also often used in conventional and organic grows to target lepidoptera populations that have quickly developed resistance to newer chemical insecticides. The most effective IPM programs incorporate sprayable *Btk* products that are rotated with other modes of action. Furthermore, *Btk* provides critical caterpillar management right up until harvest (0-day PHI) and has no maximum residue limits (MRLs).

Not all *Btk* is the same...

There are multiple subspecies of *Bt* with specific activity on different orders of insects. *Bacillus thuringiensis* subspecies *kurstaki* is specific to lepidoptera. BT NOW effectively suppresses beet armyworm and imported cabbageworm. These highly destructive and exceptionally common pests in leafy vegetable and cole crop production are quickly incapacitated by BT NOW's unique blend of cry toxins. In addition to its low resistance potential, BT NOW shows activity on known *Btk* resistant diamondback moths and has increased activity against caterpillars such as armyworms. Furthermore, BT NOW's easy-to-use and OMRI-Listed, water-based formulation contains UV inhibitors for increased field persistence and compounds to shorten the time it takes to immobilize the pest.

This article was written by Entomologist, Dr. Gretchen Pettis, PhD. With many years' experience researching entomology, Dr. Pettis boasts an impressive resume that includes running her own horticultural consulting business, work in forestry, agricultural spray equipment, arboriculture and teaching as a college professor.

1.888.273.3088 | biosafesystems.com/btnow

ONLINE CE OPPORTUNITIES

https://capca.com/onlinece

CAPCA's mission is to serve as a leader in the industry and continue to provide quality education. In a changing world, that mission and our service to members hasn't changed. Monthly subscriptions for our online CE are available now.

The Monthly Subscription is good for access to the catalog of online CE content for one month from date of first access and expires December 31, 2020 regardless of when first accessed.

Field Worker Safety Training
1.0 DPR (1.0 Laws)

Field Worker Safety Training is an interactive, click-driven course that includes some video segments. This course primarily focuses on the requirements of a fieldworker training course that would meet compliance with the California Code of Regulations. The course is designed for licensees with the content suited best for Categories D and O.

This course was developed in partnership with the Riverside County Ag Department. CAPCA would like to thank County Ag Commissioner Ruben Arroyo and his staff for helping transition this outreach to an online course.

CAPCA Spring Online CE
2.0 DPR (0.5 Laws, 0.5 Aerial, 1.0 Other)

A three-part video series featuring speakers from CAPCA's 2019 Annual Conference. Sessions are 15 minutes, 30 minutes and 38 minutes, each followed by a quiz. (Please note: at this time, once begun, a session cannot be paused or returned to without losing progress.)

Turfgrass & Aquatics IPM
2.0 DPR (2.0 Other)

This course is a two-part presentation from landscape specialist Pete Gumas, covering detailed weed identification in landscapes and turf, as well as pesticide and IPM controls for summer weeds; and from aquatic specialist Eli Kersh with Alligare discussing the environmental factors that cause pests in aquatic sites and IPM principles for managing aquatic sites, including control methods.

Our thanks to Mr. Kersh and Mr. Gumas for supporting quality education for CAPCA Members.

Laws and Regs Update
1.0 DPR (1.0 Laws)

Riverside Agricultural Commissioner Ruben Arroyo provides a statewide update on Agriculture and Pesticide concerns of Ag Commissioners: latest Active Ingredient issues such as 1,3-D mitigation, neonicotinoids and bee notification; PPE alternatives, 2ee reminders and agriculture/pesticide concerns for the Southern California Region.

We thank Mr. Arroyo for his time and willingness to provide education to CAPCA Members.

Handler Training Requirements
1.0 DPR (1.0 Laws) | 1.0 CCA (1.0 PM)

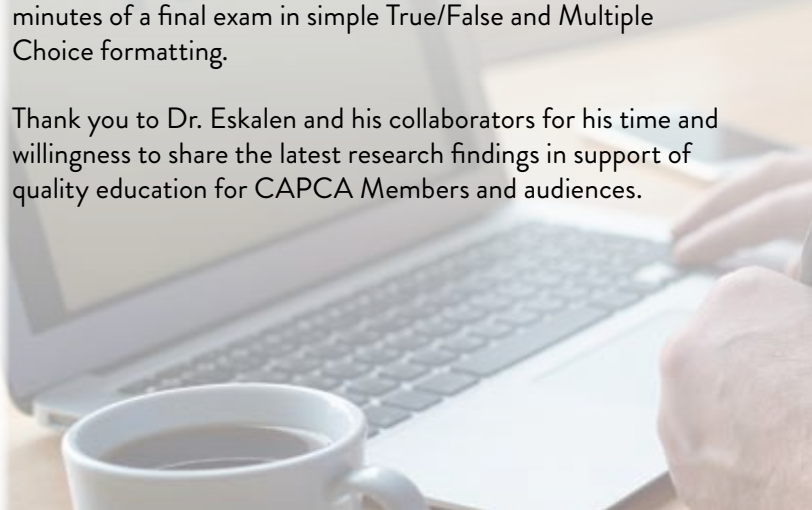
This course covers the guidelines and requirements for establishing a pesticide handler training program that would meet compliance with the California Code of Regulations. Approx. runtime 60 minutes with 10 minutes of a final exam in simple True/False and Multiple Choice formatting.

Thank you to Ahmed Elhawary with the Department of Pesticide Regulation Southern Regional Office for his time and willingness to support quality education for CAPCA Members and audiences.

Grapevine Trunk Diseases in CA
1.0 DPR (1.0 Other) | 1.0 CCA (1.0 PM)

Presentation from Dr. Akif Eskalen covers efficacy trials that were run in 2019 to control powdery mildew, bunch rot and grapevine trunk diseases with synthetic, biological and organic pesticides; and the integrated disease management of fungal diseases of grapevine. Approx. runtime 60 minutes with 10 minutes of a final exam in simple True/False and Multiple Choice formatting.

Thank you to Dr. Eskalen and his collaborators for his time and willingness to share the latest research findings in support of quality education for CAPCA Members and audiences.



Invasive Species Update

2.0 DPR (2.0 Other)

A two-part presentation from Dr. Beatriz Nobua-Behrmann, Urban Forestry Advisor with UCCE on the Invasive Shot Hole Borer, and from Dr. Mark Hoddle, Dept. of Entomology, UC Riverside on the South American Palm Weevil.

Thank you to Dr. Hoddle and Dr. Nobua-Behrmann for their time and support to provide quality education to CAPCA Members and audiences.

Paraquat Dichloride Toxicity, Label Changes, and Closed System Requirements

1.0 DPR (1.0 Laws)

Paraquat Dichloride: Toxicity, Label Changes, and Closed System Requirements is an interactive, click-driven course that includes some video segments. This course primarily focuses on understanding the toxicity of paraquat-dichloride, label changes and closed system requirements.

This course was developed in partnership with the Kings County. CAPCA would like to thank Mario Gutierrez, Elvis Martinez and Jimmy Hook for helping transition this outreach to an online course. Thank you to our course sponsor Syngenta for supporting the publication of this education.

For CCA-only CE Hours, please turn the page.

The California Weed Science Society 73rd Annual Conference

"A Virtual Conference to Discuss Real World Weed Management."

January 25th – February 26th, 2021

Register and view agenda at

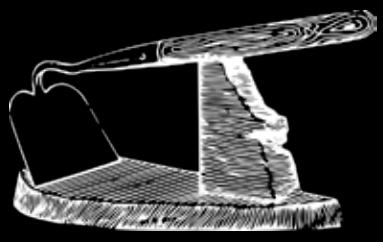
www.cwss.org

Featured Sessions Include:

- **Virtual Weed School**
- **Updates and the latest in weed biology and management in CA agricultural crops & orchards, turf & ornamentals, roadside & industrial sites, forestry, range & natural areas, and aquatic sites**
- **What's New featuring new products and industry updates**
- **Laws and Regulations Sessions**

DPR CEU hours have been requested

For more information and to register online please visit www.cwss.org.



CCA CE HOURS ONLY:

CAPCA Ed ONLINE

Post Harvest Nutrition

CCA-only hours: 1.0 NM

This 45 minute presentation from QualiTech research agronomist Saiful Muhammad, PhD covers post-harvest nutrition in almonds. Topics include: the importance of post-Harvest nutrition, tree nutrient cycle, nutrient storage and remobilization, and recommended programs.

FREP & CAPCA Nitrogen Management Update

CCA-only hours: 1.0 NM & 1.0 SW

This three-part series includes the following presentations:

- Fertigation Maintenance and Troubleshooting from Franklin Gaudi, with Irrigation Training and Research Center, Cal Poly San Luis Obispo
- Citrus and Avocado Fertilization, from Ben Faber with the UC Cooperative Extension, Santa Barbara and Ventura Counties
- Nitrogen Management in Tree Nuts from Mae Culumber with the UC Cooperative Extension, Fresno County

Our thanks to CDFA FREP for supporting quality education for CAPCA Members.

Calcium in the Soil

CCA-only hours: 0.5 NM

In this first of three presentations, Yara North America's Dr. Steve Petrie breaks down the complexities of calcium in the soil, and the dynamic role it plays in performance of other nutrients and soil conditions. This presentation has received 0.5 CEUs in Nutrient Management from the CCA program.

Calcium in Crops

CCA-only hours: 0.5 NM

In this second of three presentations, Yara North America's Dr. Steve Petrie discusses the critical role of calcium related to cell development, reduction in environmental stresses, physiological disorders and pathogenic disease. The presentation has received 0.5 CEUs in Nutrient Management from the CCA program.

Calcium Fertilization

CCA-only hours: 0.5 NM

In this part third of three presentations, Yara North America's Dr. Steve Petrie presents on the importance of calcium as a critical nutrient, and the 4Rs of Nutrient Stewardship related to calcium application. The presentation also details key differentiators among calcium fertilizers. This presentation has received 0.5 CEUs in Nutrient Management from the CCA program.

https://capca.com/onlinece

THANK YOU 2020 SUSTAINING MEMBERS

PLATINUM

AgroLiquid
Bayer
Brandt
SQM North America

DIAMOND

Certis USA

Compass Minerals

Corteva Agriscience™

FMC Agricultural Solutions

Mar Vista Resources

Wilbur-Ellis Co. LLC/Connell Bros.

CHROME

Albaugh LLC

Amvac Chemical Corp

BioFlora - Global Organics

Gowan USA LLC

LIDA Plant Research

Netafim USA

Nichino America, Inc

NovaSource

Oro Agri, Inc

Simplot Grower Solutions

Trécé, Inc.

UPL NA Inc

Valent U.S.A. LLC

GOLD

Acadian Plant Health
AGQ Labs USA
Agrian,Inc.
Agro-K Corporation
Almond Board of California
ALZ Chem
BASF
BioSafe Systems
Buttonwillow Warehouse
FBSciences, Inc
GAR Bennet, LLC
Grow West
Helena Agri-Enterprises LLC
Heliae Development
JH Biotech
Marrone Bio Innovations, Inc
Meister Media Worldwide
Nutrien Ag Solutions
Nutrient Technologies, Inc
Ocean Organics
Plant Food Systems
Precision Laboratories
Quali Tech, Inc
Redox
Rotam North American
Suterra LLC
Syngenta Crop Protection LLC
Trical, Inc
Westbridge Agricultural Products
Western Farm Press/FARM PROGRESS
Yara North America

SILVER

ADAMA
AgroPlantae, Inc
Atticus LLC
Belchim Crop Protection
Central Life Sciences
EarthSol
Insero/AG OTTER
J.G. Boswell Company
Kemin - Crop Technologies
Miller Chemical and Fertilizer
NuFarm Americas, Inc
Spectrum Technologies
S.P. McClenahan Co., Inc
Target Specialty Products
Terramera
Valagro USA
Western Milling Agribusiness
Wonderful Nurseries

BRONZE

Actagro
Ag 1 Source
AG RX
Agrinos, Inc
Agro Logistic Systems, Inc
Arborjet
Arcadia Biosciences, Inc
Baicor, L.C.
Bio Ag Services Corp
Blue Mountain Minerals
California Organic Fertilizers, Inc
CDMS, Inc
Deerpoint Group, Inc
Dellavalle Laboratory, Inc
Diversified Waterscapes
Duarte Nursery, Inc
Eastman/Taminco
Ferticell®
HELM Agro US, Inc
Hortau, Inc
Hydrite Chemical Co.
Interstate Ag Plastics
Jet Harvest Solutions
Key Plex
Magna Bon II
Motomco
Nevada Irrigation District
North Valley Ag Services
OHP, Inc
Organic Ag Products
Pacific Biocontrol Corporation
Polymer Ag LLC
Produce Careers, Inc
Progressive Crop Consultant
San Joaquin Grower Services
Southern Valley Chemical Co.
SummitAgro - USA
The Morning Star Packing Co
Tiger-Sul Products, LLC
Trace Genomics
Van Beurden Insurance Svcs
Vestaron Corporation
Western Region Certified Crop Advisers
Zenith Insurance Company

CAPCA

Dedicated to Supporting PCAs

MISSION & PURPOSE

CAPCA's mission is to facilitate the success of the PCA and to represent our 3,000 members who provide pest management consultation for the production of food, fiber and ornamental industries of California.

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.

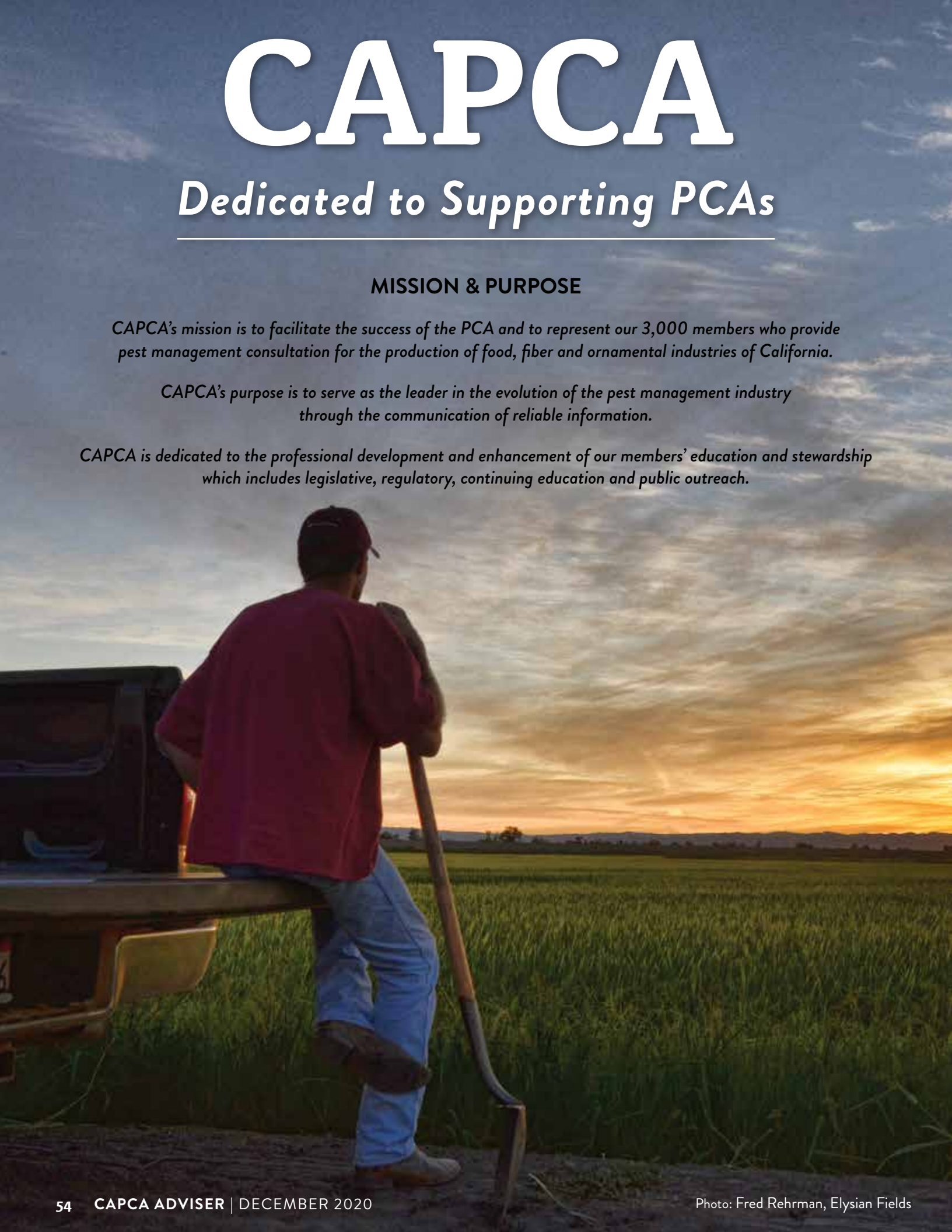


Photo: Fred Rehrman, Elysian Fields

CAPCA STAFF CONTACTS

RUTHANN ANDERSON
CAPCA President/CEO
Adviser Editor
ruthann@capca.com
(916) 928-1625 x7

KENT HINSON
Director of Engineering & Technology
kent@capca.com
(916) 928-1625 x8

SYLVIA STARK
Advertising Sales Manager
Advertising/Publications
sylvia@capca.com
(916) 607-0059
or (916) 928-1625 x9

RACHEL TAFT
Executive Assistant
rachel@capca.com
(916) 928-1625 x5

JOYCE A. BASAN
Programs/Communications Dir.
Adviser Deputy Editor
joyce@capca.com
(916) 928-1625 x2

CAPCA

CRYSTELLE TURLO
Chief Operations Director
crystelle@capca.com
(916) 928-1625 x1

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

Director of Procurement & Supplier Relations – Woodland, CA

Grow West

Description: This position is responsible for setting strategy, oversight, and management of all inputs. This includes, but is not limited to, the interaction and management of suppliers, procurement personnel, product selection, rebates, net, and field pricing. Additionally, this position will require the interface with our Retail and Senior Management team regarding the implementation of our Strategic Planning initiatives.

Duties, Qualifications & Requirements: B.A. or B.S. degree with relevant (operations, business) field of study preferred; 7+ years relevant materials management & purchasing experience; Previous experience with multi-million-dollar product and supplier negotiations; 5+ years relevant sales, marketing and/or sales management experience. For full list of duties and responsibilities please reach out to HR@growwest.com

Apply: For full job description please email HR@growwest.com

Account Manager, CA/AZ-Ag Sales (Crop Protection) - Southern California/Arizona Territory

Verdesian Life Sciences US, LLC

Description: The Account Manager will be responsible for prospecting, acquiring, and building Verdesian's base of retailers within an assigned territory selling nutritional & polymer products, including servicing & training potential/newly acquired retailers on product benefits and usage. Sales efforts to be supported by strategic marketing plans & product trainings. See full job description @ www.vlsci.com.

Duties, Qualifications, & Requirements: Minimum work experience of 5 years full time exempt sales experience in Ag industry; Minimum education of BA or BS degree in Agriculture-related field, PCA/CCA; Proven ability to develop deep working relationships; Ability to clearly articulate key product benefits and selling points based on retailer needs; Proven persuasion and negotiation skills; Drive business growth in assigned region calling on and building business with new retailers, establishing a recurring book of business, to achieve territory revenue and profit targets; Own the entire sales cycle.

Apply: Apply @ www.vlsci.com, Careers, View Current Opportunities

---

Crop Advisor/Pest Control Adviser – California Central Coast

Buttonwillow Warehouse Company

Description: Crop Advisors are knowledgeable about plants, soil and water. They maintain a close relationship with their client and scout their fields for problems that may arise during the growing season. They make recommendations ranging from seed to fertilizer and from pest management to disease treatment.

Duties, Qualifications, & Requirements: Keep agronomic and financial records of customer accounts; Scout crops for pests and diseases that may arise during various parts of the growing season; Build relationships with growers that you service; Collaborate with other advisers in your area in order to understand disease and pest outbreaks in the area; Work with sales manager to develop sales plans and pricing strategies. Requirements: Valid Driver's License; Certified Crop Adviser License; Qualified Application License; Bachelor's Degree in Viticulture; 3-5 years' experience.

Apply: Submit your resume and application to the following link: https://apply.workable.com/buttonwillow-warehouse-company/j/6B231B81D5/

Ferroxx AQ and Sluggo Maxx.

The most powerful MRL-exempt slug and snail baits—period.




Slugs and snails simply can't resist Ferroxx AQ® and Sluggo Maxx® slug and snail baits. Their highly palatable Micro-pellets® deliver the **iron phosphate formulation** to the maximum number of baiting points.

Their broad labels cover a wide variety of agricultural and turf/ornamental crops. They're effective in ground and aerial applications and can be used around pets and wildlife. An unlimited number of treatments are allowed each year, with no retreatment interval.

FERROXX AQ® SLUG AND SNAIL BAIT

- Has superior activity in wet and cool weather
- Waterproof for aquatic or wet conditions
- Broadcast applications unrestricted

SLUGGO MAXX® BRAND

OMRI LISTED® For Organic Use

- The most powerful slug and snail bait for organic agriculture with **3X the iron**
- Water resistant
- OMRI Listed®

Ferroxx AQ or Sluggo Maxx.

Make your choice. Then, Bait Back!

NEUDORFF®

NeudorffPro.com

Agricultural Sales Representative, PCA License – Manteca, CA

Wilbur Ellis

Description: The Sales Representative is responsible for managing existing and attracting new customers within the sales territory, assist branch customers with proper product selection and use based agronomic needs, and maintain and develop profitable customer relationships.

Duties, Qualifications & Requirements: Ability to work independently with minimum supervision; Willingness to travel; Experience in the retail agronomy industry; Bachelor's degree or higher in Agriculture or Business-related field is preferred; PCA required. Key Personal Attributes Include: Demonstrate excellent written and oral communication skills to small and large groups with an ability to lead and influence; Detail and accuracy orientation with an ability to handle multiple projects simultaneously; Good interpersonal and team-building skills with a positive attitude.

Apply: Apply online at www.wilburellis.com/careers

Sales Representative – Pro Markets - Ontario, CA

Wilbur Ellis

Description: The Sales Representative is responsible for managing existing and attracting new customers within the sales territory, assist branch customers with proper product selection and use based agronomic needs, and maintain and develop profitable customer relationships.

Duties, Qualifications & Requirements: Demonstrate excellent written and oral communication skills to small and large groups with an ability to lead and influence; Detail and accuracy orientation with an ability to handle multiple projects simultaneously; Good interpersonal and team building skills with a positive attitude and ability to establish relationships with field personnel, peers and customers.

Apply: Apply online at www.wilburellis.com/careers

Location Operations Manager – Elk Grove, CA

Wilbur Ellis

Description: The Location Operations Manager directly manages the work and interaction of all employees and support groups within the location. With a focus on safety, compliance, efficient operation, and customer service, the Location Operations Manager oversees all daily functions within a specified location.

Duties, Qualifications & Responsibilities: Establish a culture of safety that features respect for fellow employees, the public, and the environment; Execution of operational activities that include: Order Processing and Accounting practices and procedures, EHS programs, DOT, forecasting tools, location assets, inventory control, product warehousing, product distribution, location production (fertilizer manufacturing), field services scheduling and execution, maintenance and upkeep of location assets; Have a strong understanding of large site operations and how it functions.

Apply: Apply online at www.wilburellis.com/careers

CAPCA
NORCAL

NorCal Chapter Raises Funds for Scholarships

The NorCal Chapter held their annual Sporting Clay Shoot on September 24, 2020. The Chapter had 24 participants at the Clear Creek Hunting Club and raised $4,000 for the NorCal scholarship program from entry fees and sponsorships. Thank you to every one who attended and sponsored the NorCal Chapter Trap Shoot event.

HOLIDAY HOURS FOR CAPCA STATE OFFICE

The CAPCA State Office will be closed from Thursday, December 24, 2020 to Friday, January 1, 2021 in observance of the Christmas & New Years holidays.

Troubleshooting support is only available during CAPCA business hours.

For Continuing Education printouts, current members can download and print out their official certification report directly from the CAPCA website. **See page 31.**

BRANDT®

Prime Your Soil for Success

With BRANDT® EnzUp® Zn Patent Pending Enzyme Technology

- Delivers a high concentration of enzymes that are treated with a patent pending process
- Enzymes break down organic matter and convert nutrients into smaller, digestible units
- Easy addition to fertilizer program with exceptional yield potential
- Contains 4% zinc

UP TO
15%
YIELD INCREASE[1]

Learn more: info@brandt.co.
Download the BRANDT Product Finder App:

Download on the App Store

GET IT ON Google Play

Brandt Consolidated, Inc.
www.brandt.co

BRANDT® EnzUp® may not be sold in states where it is not registered. To check registration status contact BRANDT at info@brandt.co

[1]Source: BRANDT Field Trials 2016-2018