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California dairy farmers generate renewable energy from waste



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To help manage cow manure, the California Department of Food and Agriculture provides funds to California dairy farms to install dairy digesters.

By Saoimanu Sope

California ranks number one in the nation for dairy production, with 1,100 to 1,200 dairy farms, each with an average of 1,436 cows, mostly concentrated in Tulare County in the San Joaquin Valley. A major dairy waste is cow manure, a byproduct that can require millions of dollars for each dairy to manage.

To help manage the manure, the California Department of Food and Agriculture provides funds to California dairy farms to install dairy digesters, a technology that can break down manure and produce methane (a form of renewable energy). The digesters provide additional benefits such as capturing greenhouse gases while improving the nutrient value of manure and water quality.

Pramod Pandey, UC Cooperative Extension specialist in the School of Veterinary Medicine Extension at UC Davis, has been studying dairy digesters for over 20 years to understand the conversion of manure into renewable energy. He also is trying to determine the effects of anaerobic processes (in low-oxygen conditions) on dairy manure quality, biogas production and the environment.

Between 2015 and 2022, CDFA supported approximately 133 dairy digester projects in California, with grants of more than \$200 million to various dairy farms.

"The California state government plays a big role in the success of this technology because the majority of dairy

farmers are not financially able to invest in implementing the manure management technology, which assist both dairy farms and community," said Pandey.

For dietary components that cannot be completely digested by a cow's stomach, dairy digesters use a variety of bacteria to break down the manure under anaerobic conditions. This provides an option for sustainable waste treatment. The process not only reduces greenhouse gas emissions by capturing the gases released from manure, but also produces renewable energy in the form of biogas, which can be used as an alternative fuel for cars to further bring down greenhouse gas emissions. In addition, the dairy digester helps reduce odor and pathogens that pose a risk to human health.

According to Pandey, one cow can theoretically produce roughly 100 pounds of wet manure daily, and this manure contains nitrogen and phosphorous, which are important for soil. About 40 cubic feet of biogas is produced from the manure of one cow under anaerobic conditions, and this biogas has a potential to produce around 24,000 btu per cow. In California, a 1,000-square foot home uses 45,000 to 55,000 btu per day for heating and cooling. That means manure from two or three cows could meet the daily energy demand of a small home.

By using digesters, farmers can prevent greenhouse gas emissions and simultaneously generate energy and soil amendments, which provide nutrients to cropland, lessening the amount of commercial fertilizer needed. By connecting technologies, the liquid from digesters can be improved to produce water that can be used for irrigation and for meeting the water demands of a dairy farm.

"The main purpose of a dairy farm is to produce milk, and current low milk prices make it difficult for dairy farmers to focus on manure management without the support from government," Pandey said, adding that managing waste is not only expensive but time-consuming. Although dairy digesters can cost \$5 million to \$10 million to build and install, the technology is helpful in manure management.

Dairy farmers traditionally use anaerobic or manure lagoons to store their liquid manure waste until they are ready to apply it to farmland as fertilizer. The issue is that the lagoons emit greenhouse gases such as methane into the atmosphere.

"It is important to not overexpect from a dairy digester because it doesn't reduce all forms of pollution from manure completely," Pandey said. "But given the available resources, funding and technology, I would say that we're off to a good start."

Dennis Da Silva, a dairy farmer in Escalon, has been working in the industry his entire life and used to be "totally against" digesters. In the late 1970s, Da Silva's father, who immigrated from Portugal, started Da Silva Dairy Farm, which Da Silva currently runs.

See California Dairy Farmers page 7



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Blue Diamond Growers 113th "Growing Together" Annual Meeting Highlights a Year of Resilience

Blue Diamond Growers CEO, Kai Bockmann, Acknowledges Industry Challenges and Outlines Strategic Growth Plan

At the 113th Blue Diamond Growers "Growing Together" Annual Meeting on Nov. 15 in Modesto, Blue Diamond Growers' CEO, Kai Bockmann, reflected on his first ten months in the leadership role by acknowledging significant challenges faced by growers and the world's largest almond cooperative.

In Bockmann's remarks – along with those of Blue Diamond Growers' Board Chairman, Dan Cummings – both pointed to remarkable headwinds for the almond industry, including higher input costs and inflationary pressures, depressed market prices, shifts in consumer shopping patterns, unfavorable weather conditions, and reduced crop sizes. To help counter these challenges, Blue Diamond Growers is advancing an aggressive strategic growth plan to navigate the marketplace conditions and drive substantial growth.

"Volatility is our new normal, but our destination is set – and it is one of growth," said Bockmann. "While this past year brought many challenges for our growers, no challenge is insurmountable. We have a rich history, an exceptional brand, and the right people and culture to deliver against our ambitious growth plan."

In laying out the plan, Bockmann shared with the annual meeting audience that what has helped bring the cooperative to where it is today, will not get it to where it is going in terms of growth and market expansion. The new growth plan prioritizes expansion into the massive foodservice channel and strategically selected international markets, while strengthening the value-added business, doubling down on product innovation, and driving for operational efficiencies.

"Foodservice is a trillion dollar industry that represents a significant growth opportunity for Blue Diamond, and we will directly target that sector as a strategic priority," said Bockmann. "Additionally, we will diversify and innovate our product portfolio beyond our flagship Blue Diamond Snack Almonds® and Almond Breeze® brands. We will build on the tremendous success of these products – which are both the #1 brands in America for almonds and almondmilk."

Bockmann shared that flavor-focused product innovation remains a top priority, commenting that "no one does flavor like Blue Diamond" as evidenced by the widely popular Chile N Lime flavored snack nuts. The flavor was launched as a limited time offer at Costco and won the "Best Nuts" award in PEOPLE Magazine's 2023 Food Awards.

The Blue Diamond Research & Development team will continue to innovate with new flavors, while advancing new and existing categories, including plant-based yogurt, chocolate, baking, beverages and plant-based cheese. On the foodservice front, the strategic growth plan focus is already delivering results. The Blue Diamond International Consumer and R&D teams worked closely with Maeil Dairies in the past year to develop Almond Breeze® Barista Blend, which was introduced in 6,500 Starbucks across China earlier this year.

"I'm confident that Blue Diamond Growers is poised to thrive in the years to come because we are stronger together," said Bockmann. "We are excited to grow together as we bring our strategic plan and collective vision to life."

Supporting Grower Success and Advancing Sustainability

In addition to tackling the marketplace challenges with strategy, innovation, and expansion, Blue Diamond Growers also conceived and launched a new grower-focused buying coalition. To help connect growers with trusted, well-known suppliers and build local, long-term relationships, the Blue Diamond Growers Connect Marketplace aims to reduce production costs for farmers by negotiating better discounts with suppliers via Group Purchasing Organizations and the co-ops' own internal platform. The goal of the marketplace is to reduce growers' costs by 5-15%.

Additionally, a notable highlight from the year is Blue Diamond Growers' advancement in sustainability. To continue growing the cooperative's commitment to stewardship, Blue Diamond's Member Relations team held several online webinars, including hosting the Almond Board of California Almond Stewardship Platform and the Pollinator Partnership to discuss and educate growers on Bee-Friendly Farming.

Along with the offered webinars, growers were encouraged to participate in Blue Diamond's Orchard Stewardship Incentive Program (OSIP), a program where growers can earn financial incentives for implementing best practices related to orchard management, environmental issues, occupational health and safety, and community investment.

In July of this year, the U.S. Department of Agriculture (USDA) awarded Blue Diamond a five-year, \$45 million "Partnerships for Climate-Smart Commodities" grant, a program designed to help farmers implement "climate-smart" practices on their land. The program offers growers no-cost cover crop seed and a financial incentive to plant cover crops and/or conservation cover on their land. These practices not only work toward taking carbon out of the atmosphere, but they also enhance orchard biodiversity and improve soil health. The USDA grant complements Blue Diamond's OSIP by lowering the cost of initiating the pollinator-friendly practices required to receive Bee-Friendly Farming certification.

"Without question it has been a challenging year, but the loyalty and leadership demonstrated by our board – combined with the resilience of our growers and dedication of Blue Diamond employees – will allow us to overcome the challenges together," said Cummings. "I'm confident Blue Diamond will deliver great prosperity and a sustainable future for our growers, employees, their families, and the communities we call home."

Blue Diamond Annual Report Now Available

In conjunction with the Annual Meeting, the Blue Diamond Growers 2023 "Growing Together" Annual Report is now available on the Blue Diamond website at www.bluedia

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California Dairy Farmers

continued from page 4

"I spend a lot of money getting solids out of my lagoons every year," Da Silva said.

Although he does not have digesters set up on his farm just yet, Da Silva agreed with Pandey that the government has made it much easier for farmers like himself to tackle waste.

"I used to be against the dairy digester idea, but there's a lot more incentive to invest these days," said Da Silva. "It's also likely that, in the future, there'll be regulations that

will crack down on dairy farms if you don't already have digesters," he added.

Currently, he is in the permitting phase, waiting for approval to begin building the digester on his farm, which is expected to take about two years.

Pandey said that the process is slow and there is still a lot of room for improvement, but the intention is a step in the right direction. "The only thing that the digester doesn't produce is milk," Pandey said jokingly.



Applications Open for National Pork Industry Foundation Scholarship to Honor NPPC's Dierks

The National Pork Industry Foundation, a nonprofit research and educational organization led by pork industry leaders and managed by the National Pork Producers Council, opened applications for the Neil Dierks Scholarship to honor NPPC's previous longtime CEO, Neil Dierks.

The \$5,000 scholarship is given annually to a college student pursuing a graduate degree at a land-grant university in a field related to the pork industry.

"The National Pork Industry Foundation is privileged and excited to continue this scholarship in Neil's name," said Dwight Mogler, a pork producer in northwest Iowa and the NPPC representative on the foundation's board of directors. "His more than 30 years of dedicated service to the pork industry has included countless contributions, many of which included nurturing future leaders and seeking and elevating talented people with a variety of skills to serve as pork industry resources and decision-makers for today and tomorrow. Therefore, it is very fitting that the foundation honors Neil through this scholarship opportunity."

Applications for the scholarship, which are funded through contributions to the pork industry foundation, are due at the end of December, with each year's recipient announced at the pork industry's annual meeting – the National Pork Industry Forum – which will be held in Chicago, Illinois from March 5-7, 2024.

The Neil Dierks scholarship program compliments the Lois Britt Memorial Pork Industry Scholarship, which the National Pork Industry Foundation sponsors along with the CME Group. Named after the late NPPC board member Lois Britt, the program annually gives \$2,500 scholarships to 10 college undergraduates intending to pursue careers in the pork industry. NPPC administers the program, and winners are announced at the National Pork Industry Forum.

Full eligibility and application requirements can be found here. The application deadline is December 31, 2023. Please contact Lucy Russell, NPPC Manager of Producer Engagement, with any questions about the scholarship at 515-864-7983 or russelll@nppc.org.

For more information on the Neil Dierks Scholarship and on making a contribution to the National Pork Industry Foundation, please visit the NPIF webpage: <https://nppc.org/get-involved/education-programs/national-pork-industry-foundation/>

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Researchers create app to help drones improve farm efficiency



Unmanned aerial vehicles, or drones, can help farmers monitor the state of fields and orchards but data can be affected by the position of the sun. A web application developed at the UC Davis Digital Agriculture Lab helps farmers and researchers find the best time to fly for their date and location to avoid creating errors in data. Photo courtesy of Digital Agriculture Lab

By Jessica Heath, UC Davis College of Engineering

When flown at the right times, drones can help farmers adapt to a changing climate

Researchers at the University of California, Davis, have developed a web application to help farmers and industry workers use drones and other uncrewed aerial vehicles, or UAVs, to generate the best possible data. By helping farmers use resources more efficiently, this advancement could help them adapt to a world with a changing climate that needs to feed billions.

Associate Professor Alireza Pourreza, director of the UC Davis Digital Agriculture Lab and postdoctoral researcher Hamid Jafarbiglu, who recently completed his doctorate in biological systems engineering under Pourreza, designed the When2Fly app to make drones more proficient and accurate. Specifically, the platform helps drone users avoid glare-like areas called hotspots that can ruin collected data.

Drone users select the date they plan to fly, the type of camera they are using and their location either by selecting a point on a map or by entering coordinates. The app then indicates the best times of that specific day to collect crop data from a drone.

Jafarbiglu and Pourreza, who is also a UC Cooperative Extension specialist of agricultural mechanization, said that using this app for drone imaging and data collection is crucial to improve farming efficiency and mitigate agriculture's carbon footprint. Receiving the best data — like what section of an orchard might need more nitrogen or less water, or what trees are being affected by disease — allows producers to allocate resources more efficiently and effectively.

"In conventional crop management, we manage the entire field uniformly assuming every single plant will produce a uniform amount of yield, and they require a uniform amount of input, which is not an accurate assumption," said Pourreza. "We need to have an insight into our crops' spatial variability to be able to identify and address issues timely and precisely, and drones are these amazing tools that are accessible to growers, but they need to know how to use them properly."

Dispelling the solar noon belief

In 2019, Jafarbiglu was working to extract data from aerial images of walnut and almond orchards and other specialty crops when he realized something was wrong with the data.

"No matter how accurately we calibrated all the data, we were still not getting good results," said Jafarbiglu. "I took this to Alireza, and I said, 'I feel there's something extra in the data that we are not aware of and that we're not compensating for.' I decided to check it all."

Jafarbiglu pored through the 100 terabytes of images collected over three years. He noticed that after the images had been calibrated, there were glaring bright white spots where they were supposed to look flat and uniform.

But it couldn't be a glare because the sun was behind the drone taking the image. So Jafarbiglu reviewed literature going back to the 1980s in search of other examples of this phenomenon. Not only did he find mentions of it, but also that researchers had coined a term for it: hotspot.

A hotspot happens when the sun and UAV are lined up in such a way that the drone is between the viewable area of the camera's lens system and the sun. The drone takes photos of the Earth, and the resulting images have a gradual increase in brightness toward a certain area. That bright point is the hotspot.

The hotspots are a problem, Jafarbiglu said, because when collecting UAV data in agriculture, where a high level of overlap is required, observed differences in the calibrated images need to come solely from plant differences.

For example, every plant may appear in 20 or more images, each from varying view angles. In some images, the plant might be close to the hotspot, while in others it may be situated further away, so the reflectance may vary based on the plant's distance from the hotspot and spatial location in the

See Drones next page

Drones

continued from previous page

frame, not based on any of the plant's inherent properties. If all these images are combined into a mosaic and data are extracted, the reliability of the data would be compromised, rendering it useless.

Pourreza and Jafarbiglu found that the hotspots consistently occurred when drones were taking images at solar noon in mid-summer, which many believe is the best time to fly drones. It's an obvious assumption: the sun is at its highest point above the Earth, variations in illumination are minimal, if not steady and fewer shadows are visible in the images. However, sometimes that works against the drone because the sun's geometrical relationship to the Earth varies based on location and the time of year, increasing the chance of having a hotspot inside the image frame when the sun is higher in the sky.

"In high-latitude regions such as Canada, you don't have any problem; you can fly anytime. But then in low-latitude regions such as California, you will have a little bit of a problem because of the sun angle," Pourreza said. "Then as you get closer to the equator, the problem gets bigger and bigger. For example, the best time of flight in Northern California and Southern California will be different. Then you go to summer in Guatemala, and basically, from 10:30 a.m. to almost 2 p.m. you shouldn't fly, depending on the field-oriented control of the camera. It's exactly the opposite of the conventional belief, that everywhere we should fly at solar noon."

Grow technology, nourish the planet

Drones are not the only tools that can make use of this discovery, which was funded by the AI Institute for Next Generation Food Systems. Troy Magney, an assistant professor of plant sciences at UC Davis, mainly uses towers to scan fields and collect plant reflectance data from various viewing angles. He contacted Jafarbiglu after reading his research, published in February in the ISPRS Journal of Photogrammetry and Remote Sensing, because he was seeing a similar issue in the remote sensing of plants and noted that it's often ignored by end users.

"The work that Hamid and Ali have done will be beneficial to a wide range of researchers, both at the tower and the drone scale, and help them to interpret what they are actually seeing, whether it's a change in vegetation or a change in just the angular impact of the signal," he said.

For Pourreza, the When2Fly app represents a major step forward in deploying technology to solve challenges in agriculture, including the ultimate conundrum: feeding a growing population with limited resources.

"California is much more advanced than other states and other countries with technology, but still our agriculture in the Central Valley uses technologies from 30 to 40 years ago," said Pourreza. "My research is focused on sensing, but there are other areas like 5G connectivity and cloud computing to automate the data collection and analytics process and make it real-time. All this data can help growers make informed decisions that can lead to an efficient food production system. When2Fly is an important element of that."

This article was originally published on the UC Davis College of Engineering News page.



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Innovative collaborations boost soil health outreach in Colusa County



Liz Harper (Colusa RCD) and Gerry Hernandez (UCCE Colusa) collecting data in cover crop plots

By Linda J Forbes Director of Strategic Communications

In 2020, agencies and experts in Colusa County came together for a project evaluating winter cover crops (planted in the fall and terminated in late winter or early spring) in annual crop rotations. This project had a large outreach component and various cover crops were planted each year to demonstrate how well they grew in the region.

During the three-year project, the team has significantly increased soil health outreach in the region and built a strong regional collaboration that continues for other projects. The research findings will be published upon completion of analysis.

Funded by the California Department of Food and Agriculture Healthy Soils Program, the collaboration involved measuring changes in soil health between two cover crop treatments and a fallow control and led to innovation in outreach methods to make healthy soil practices more accessible.

Promoting soil health during a pandemic lockdown was a major challenge for the project team, comprising Sarah Light, UC Cooperative Extension agronomy farm advisor; Liz Harper, executive director of the Colusa County Resource Conservation District; Davis Ranch; Richter Ag; and the USDA Natural Resource Conservation Service.

Unable to conduct in-person field days or workshops, Light and Harper created a YouTube channel called “The Soil Health Connection” and produced 29 episodes in English and five in Spanish. These episodes featured soil health experts from around the state. In addition, field demonstrations were recorded including soil sampling demonstrations, a cover crop field tour, soil health field

assessments following NRCS protocols, and more.

“The collaboration was effective not only in sharing information on how to manage cover crops, but also allowed us to continue to extend knowledge and do outreach during COVID, when regular in-person programming was not available,” Light said.

Interviewees included researchers, farmers, ranchers, industry representatives, technical assistance providers and natural resource conservation agency representatives. The YouTube channel has over 200 subscribers and won the 2021 Conservation Education Award from the California-Nevada Chapter of the Soil and Water Conservation Society.

NRCS collaborated on six of the episodes and featured them in their statewide Soil Health newsletter. Participants included Resource Soil Scientist Jacqueline Vega-Pérez, Regional Soil Health Specialist Kabir Zahangir, California Plant Material Director Margaret Smith-Kopperl, Colusa County Soil Conservationist Brandi Murphy, California State Conservationist Carlos Suarez, and USDA Research Soil Scientist Claire Phillips.

Other innovations included hosting a virtual field day with continuing education credits and two drive-by, in-person field tours. The project itself was innovative in terms of conducting virtual and in-person outreach in Colusa County.

“We were one of the first in the region to organize virtual soil health events and because of our strong project team we were able to quickly pivot to comply with state and local regulations during the pandemic,” Light said.

Outreach is critical to advancing soil health because it demonstrates successful, economically viable practices that farmers can implement. “The opportunity for growers to see these practices first-hand in our growing conditions can break down barriers to implementation,” said Light.

A lasting benefit of the project has been the interagency collaborative relationship they developed.

“Colusa County RCD loves partnering with UC Cooperative Extension on research to improve soil health in the Sacramento Valley,” said Harper. “It’s wonderful working with Sarah as our agencies both share a vision for scaling the adoption of conservation in agriculture.”

“We brought together our different strengths and created something even stronger,” said Light. “This has brought other advantages as well, like workforce and career development, reduced isolation and a stronger natural resource community, and conservation technical assistance enhancement.”

Building trust and demonstrating a mutual commitment to service have been personally rewarding for Light as well. She emphasized the importance of seeking out people with complementary skill sets and maintaining the relationships effectively.

The team is continuing to work together on other soil health-related work in the region.

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USDA's 100th Annual Agricultural Outlook Forum, "Cultivating the Future" will take place on February 15-16, 2024, at the Crystal City Gateway Marriott in Arlington, Virginia.

The forum is USDA's longest-running and largest public event and aims to help our stakeholders understand and plan for the opportunities and challenges facing the agricultural sector at home and abroad. Each year it attracts more than 1,800 people in person, and nearly 5,000 virtual attendees from the U.S. and around the world.

The program will include remarks from the Secretary of Agriculture and other top Department officials, along with 30 breakout sessions featuring more than 120 leading experts on a wide range of timely food and agriculture-related topics.

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- Get insights from experts on topics ranging from trends in agriculture markets and trade to climate change and innovation.
- Connect and network with a diverse group of stakeholders in the sector.

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Registration will open at the end of October.

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NRCS California Increases Minimum Annual Payment for Conservation Stewardship Program

The USDA Natural Resources Conservation Service (NRCS) is increasing the minimum annual payment for agricultural producers participating in the NRCS Conservation Stewardship Program (CSP) from \$1,500 to \$4,000 starting this fiscal year 2024 (which began October 1, 2023).

The increase addresses challenges faced by small-scale, underserved, and urban producers and improves equity in the program by making participation more financially beneficial for smaller operations. The new minimum payment is available for new and renewed CSP contracts.

"Increasing the minimum payment to CSP participants regardless of the size of their operation helps to make participation worthwhile for California's agricultural producers," said NRCS California State Conservationist Carlos Suarez, "By broadening the appeal of CSP, we can further expand implementation of the Inflation Reduction Act funding for conservation programs."

CSP offers technical and financial assistance to help agricultural and forest producers take their conservation efforts to the next level. The program is designed to compensate agricultural and forest producers who agree to increase their level of conservation by adopting additional conservation activities and maintaining their baseline level of conservation.

Examples of CSP enhancements that are suitable for being adopted by smaller scale and urban producers include:

- Planting multi-species cover crops
- Mulching with natural materials
- Establishing pollinator habitats
- Soil health crop rotation
- And much more!

Inflation Reduction Act and CSP

Currently, an unprecedented amount of funding is available for CSP through the Inflation Reduction Act and Farm Bill. The Inflation Reduction Act provided \$19.5 billion in additional funding for NRCS' oversubscribed programs like CSP for five years. Inflation Reduction Act funds are available to help producers adopt climate-smart practices.

NRCS recently announced it increased the number of Climate-Smart Agricultural and Forestry Mitigation Activities eligible for Inflation Reduction Act funding for fiscal year 2024 through CSP, the Environmental Quality Incentives Program (EQIP) and the Regional Conservation Partnership Program (RCP) To learn more, download the list of practices and a fact sheet.

How to Apply

NRCS accepts producer applications for its conservation programs year-round, but producers interested in this cycle of Inflation Reduction Act funding should apply as soon as possible. Producers interested in CSP should apply by March 22, 2024, for consideration this year.

Funding is provided through a competitive process and will include an opportunity to address the unmet demand from producers who have previously sought funding for climate-smart conservation activities.

Please visit www.ca.nrcs.usda.gov for more information.

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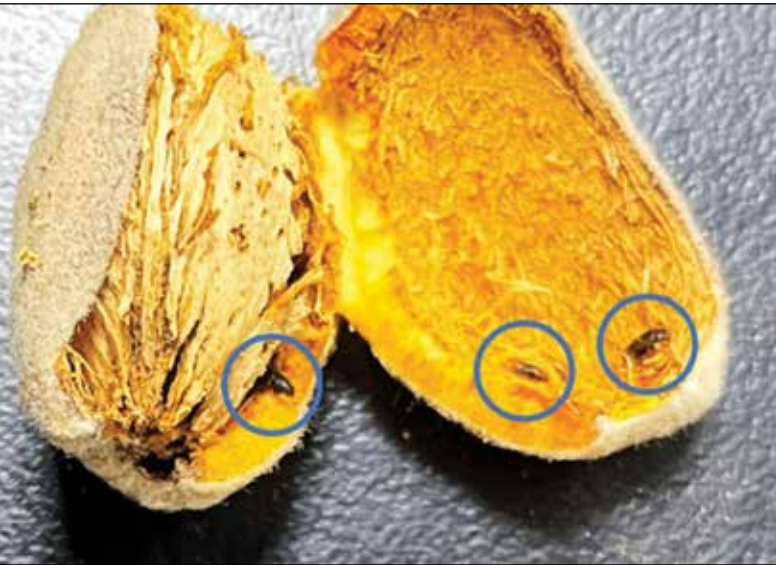
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New pest infesting almonds and pistachios in the San Joaquin Valley

Crop sanitation will be key to controlling the invasive carpophilus beetle



Adult carpophilus beetles, indicated by blue circles, inside of a hull split almond. Photo by Jhalendra Rijal

By Houston Wilson, Jhalendra Rijal, David Haviland

Growers and pest control advisers (PCAs) should be on the lookout for a new pest called carpophilus beetle (*Carpophilus truncatus*). This pest was recently found infesting almonds and pistachios in the San Joaquin Valley, and is recognized as one of the top two pests of almond production in Australia. Damage occurs when adults and larvae feed directly on the kernel, causing reductions in both yield and quality.

Populations of carpophilus beetle were first detected in September in almond and pistachio orchards by University of California Cooperative Extension Specialist Houston Wilson of UC Riverside's Department of Entomology. Pest identification was subsequently confirmed by the California Department of Food and Agriculture.

Wilson is now working with Jhalendra Rijal, UC integrated pest management advisor, North San Joaquin Valley; David Haviland, UCCE farm advisor, Kern County; and other UCCE farm advisors to conduct a broader survey of orchards throughout the San Joaquin Valley to determine the extent of the outbreak.

To date, almond or pistachio orchards infested by carpophilus beetle have been confirmed in Stanislaus, Merced, Madera and Kings counties, suggesting that the establishment of this new pest is already widespread. In fact, some specimens from Merced County were from collections that were made in 2022, suggesting that the pest has been present in the San Joaquin Valley for at least a year already.

"It has likely been here for a few years based on the damage we've seen," Rijal said.

This invasive beetle overwinters in remnant nuts (i.e. mummy nuts) that are left in the tree or on the ground

following the previous year's harvest. Adults move onto new crop nuts around hull-split, where they deposit their eggs directly onto the nut. The larvae that emerge feed on the developing kernels, leaving the almond kernel packed with a fine powdery mix of nutmeat and frass that is sometimes accompanied by an oval-shaped tunnel.

Carpophilus beetle has been well-established in Australia for over 10 years, where it is considered a key pest of almonds. More recently, the beetle was reported from walnuts in Argentina and Italy as well. *Carpophilus truncatus* is a close relative to other beetles in the genus *Carpophilus*, such as the driedfruit beetle (*C. hemipterus*) that is known primarily as a postharvest pest of figs and raisins in California.

Monitoring for carpophilus beetle is currently limited to direct inspection of hull split nuts for the presence of feeding holes and/or larvae or adult beetles. A new pheromone lure that is being developed in Australia may soon provide a better monitoring tool for growers, PCAs and researchers.

"We're lucky to have colleagues abroad that have already been hammering away at this pest for almost a decade," said Haviland. "Hopefully we can learn from their experiences and quickly get this new beetle under control."

The ability to use insecticides to control carpophilus beetle remains unclear. The majority of the beetle's life cycle is spent protected inside the nut, with relatively short windows of opportunity available to attack the adults while they are exposed. The location of the beetles within the nut throughout most of their life cycle also allows them to avoid meaningful levels of biological control.

In the absence of clear chemical or biological control strategies, the most important tool for managing this beetle is crop sanitation.

"Given that this pest overwinters on remnant nuts, similar to navel orangeworm, crop sanitation will be fundamental to controlling it," Wilson said. "If you needed another reason to clean up and destroy mummy nuts – this is it."

In Australia, sanitation is currently the primary method for managing this pest. And here in California, new research and extension activities focused on carpophilus beetle are currently in the works.

"It's important that we get on top of this immediately," said Wilson. "We're already starting to put together a game plan for research and extension in 2024 and beyond."

If you suspect that you have this beetle in your orchard, please contact your local UC Cooperative Extension farm advisor (<https://ucanr.edu/About/Locations/>), County Agricultural Commissioner (<https://cacasa.org/county/>) and/or the CDFA Pest Hotline (<https://www.cdfa.ca.gov/plant/reportapest/>) at 1-800-491-1899.

Nearly \$35 Million To Support Greenhouse Gas Reductions From Dairy And Livestock

The Department of Food and Agriculture's Office of Environmental Farming and Innovation and the California Dairy Research Foundation (CDRF) is pleased to announce the award of \$21.41 million in grant funding to 1 projects for the Alternative Manure Management Program (AMMP), and \$14.23 million in grant funding to 12 projects for the Dairy Plus Program.

"California has set ambitious climate goals, and agriculture is an important contributor to these achievements," said CDFA Secretary Karen Ross. "Dairy farmers and livestock ranchers are putting effective new technologies and best practices to work in their barns and fields, and these projects keep that progress in motion."

These projects reduce greenhouse gas emissions from manure on California dairy and livestock farms while improving water quality and nutrient management. Funding for AMMP is made possible by the California General Fund and state Greenhouse Gas Reduction Fund, which puts billions of Cap-and-Trade dollars to work reducing emissions, strengthening the economy, and improving public health and the environment.

Funding for the Dairy Plus Program comes from a collaboration between CDFA, CDRF, and USDA as part of the Partnerships for Climate-Smart Commodities grant. Together, recipients will improve their manure management practices and reduce greenhouse gas (GHG) emissions by an estimated annual total of 87,350 metric tons of carbon dioxide equivalents (MTCO_{2e}).

"Dairy families work hard every day to produce healthy and nutritious dairy products," said Paul Sousa, Director of Environmental Services & Regulatory Affairs for Western United Dairies and a long-time AMMP Technical Assistance Provider. "At the same time, they look to be sustainable in how they care for their cows, the land, and the environment. AMMP and Dairy Plus help provide the incentives needed to implement Climate Smart Agriculture practices. However, addressing just one challenge at a time is not enough, and that is why Dairy Plus is addressing water quality in addition to methane reduction with the same practice. With these programs, dairy families are benefiting the environment and our communities while providing healthy food choices for all Californians."

Dairy manure produces methane when it decomposes. Methane is a powerful greenhouse gas that significantly contributes to global warming.

The Alternative Manure Management Program incentivizes practices such as solid waste separation and creating ways to store more manure in a dry form while reducing methane production. Implementing these practices provides other important co-benefits, like reducing odor and air pollutants. The program also facilitates compost production from manure solids, which may be recycled as fertilizer and animal bedding.

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Department of Pesticide Regulation Proposes Regulation to Provide Public Access to Pesticide Information Prior to Applications

The Department of Pesticide Regulation (DPR) noticed a proposed regulation for a statewide system that will provide the public with information prior to intended applications of restricted material pesticides in California.

DPR's proposed regulation builds on the process in the state of California to regulate restricted material pesticides. Applicators must be licensed, obtain a permit and provide notice to the county agricultural commissioner prior to applications of restricted material pesticides. The proposed regulation would require information about restricted material applications for the production of an agricultural commodity to be submitted electronically to DPR for public posting through a new statewide information system 24 hours prior to intended restricted material pesticide applications except for soil fumigant restricted materials, which would be posted 48 hours before an intended application.

The proposed regulation complements California's existing regulatory system that includes the evaluation and registration of pesticides before use, restrictions on pesticide use to reduce risk to people and the environment, and the enforcement of pesticide laws and regulations by DPR and the state's 55 county agricultural commissioners.

DPR is holding three public hearings on the regulation: Dec. 13 in Clovis, Dec. 14 in Ventura and Dec. 19 in a virtual setting. The department is additionally accepting written comments on the proposed regulation between Nov. 3, 2023, and Jan. 12, 2024.

"This proposed regulation and statewide pesticide application information system are an important advance in increasing transparency and equitable access to information for all Californians," said DPR Director Julie Henderson. "The proposed regulation builds on and complements the strict regulatory programs carried out by the Department of Pesticide Regulation and county agricultural commissioners that keep people and the environment safe."

The proposed regulation follows a two-year period of outreach conducted by DPR to inform development of the statewide information system, including four focus groups and eight public meetings held between 2021-2022 and a series of pilot projects hosted by four counties to test elements of system design in 2022. The department is currently conducting beta testing to inform the ongoing development of the technology needed to support the statewide system. The department began system development in 2021 after the state's 2021-2022 budget allocated an initial \$10 million over four years for that purpose.

The draft regulation can be viewed on DPR's website. Public Comment Period Open Nov. 3, 2023, through

Jan. 12, 2024

Public comments may be submitted via email sent to dpr23003@cdpr.ca.gov or by mail sent to DPR 1001 I Street, P.O. Box 4015 Sacramento, CA 95812-4015.

Public Hearings Held on Dec. 13, 14 and 19, 2023

DPR is hosting three public hearings to collect oral and written comments on the proposed regulation.

- Wednesday, Dec. 13, 2023, at 4:30 p.m.

Clovis Veterans Memorial District
Memorial Auditorium
808 4th Street

Clovis, California 93612

- Thursday, Dec. 14, 2023, at 4:30 p.m.

Ventura County Fairgrounds
Santa Rosa Hall
10 West Harbor Boulevard
Ventura, California 93001

- VIRTUAL Tuesday, Dec. 19, 2023, at 4:30 p.m.

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For more information on the development of the statewide notification system, visit DPR's Statewide Pesticide Application Notification System Updates webpage: https://www.cdpr.ca.gov/docs/pesticide_notification_network/



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USDA invites agriculture producers to respond online to the 2023 Irrigation and Water Management Survey

The USDA's National Agricultural Statistics Service (NASS) mailed survey codes to a selected sample of irrigators across the 50 states with an invitation to respond online to the 2023 Irrigation and Water Management Survey.

The survey is a special study to the 2022 Census of Agriculture and provides the only comprehensive dataset of irrigation activities and water use across American farms, ranches, and horticultural operations. Producer input through this survey will aid USDA's efforts to promote efficient irrigation practices and long-term sustainability of water resources across the United States.

The survey will be mailed in phases, with paper questionnaires following in January. Producers need only to respond once, whether securely online or by mail. The online option offers timesaving features ideal for busy producers. All responses are due Feb. 15, 2024.

"Water is arguably the most important resource for agriculture and horticulture operations," said NASS Administrator Hubert Hamer. "This survey is an opportunity to provide data that will influence policy decisions that have a tremendous impact on the industry for years to come."

Responding is more convenient than ever due to the USDA NASS Online Respondent Portal at www.agcounts.usda.gov where producers can view and complete NASS surveys, view historical reports, and access other resources.

"I strongly encourage all farmers, no matter how large or small their operation, to promptly complete and return their questionnaire. This is your opportunity to share your voice, uplift the value and showcase the uniqueness of American agriculture," said Administrator Hamer.

Responding to the 2023 Irrigation and Water Management Survey is required by law under Title 7 USC 2204(g) Public Law 105-113. The same law requires NASS to keep all information confidential, to use the data for statistical purposes only, and to publish in aggregate form to prevent disclosing the identity of any individual producer or farm operation. NASS will release the data on Nov. 14, 2024, at www.nass.usda.gov.

To learn more, visit nass.usda.gov/AgCensus. On the website, producers and other data users can access frequently asked questions, past ag census data, other special study information, and more. For highlights of these and the latest information, follow NASS on X @usda_nass.

2022 Census of Agriculture data release details, preliminary return rate, and upcoming special studies announced

The United States Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS) will release the 2022 Census of Agriculture data on February 13, 2024. NASS concluded the data collection this summer with a preliminary national return rate of 61%. The ag census, conducted once every five years, was mailed to more than 3 million producers across the United States and Puerto Rico late last year. NASS plans to release the data from the 2022 Puerto Rico Census of Agriculture in summer 2024. Early next year, NASS will conduct the Census of Agriculture in the U.S. territories of American Samoa, Guam, Northern Mariana Islands, and U.S. Virgin Islands.

"On behalf of everyone at USDA, I would like to thank the millions of producers who gave their time and effort to complete the 2022 Census of Agriculture," said NASS Administrator Hubert Hamer. "Ag census data will inform decisions about policy, farm and conservation programs, rural development, research, technology development, ag education, and more over the next several years. These data will have a very real impact on producers, their farming operations, and communities."

The ag census data will be available at nass.usda.gov/AgCensus and in NASS's searchable database, Quick Stats. Publication dates for the various ag census data products can be found on NASS's online 2024 Agricultural Statistics

Board Calendar. Like all NASS data, ag census data will be available in aggregate form only, ensuring that no individual operation or producer can be identified, as required by federal law.

"NASS staff are currently doing extensive analyses of each response," said NASS's Census and Survey Division Director Barbara Rater. "We use trusted statistical methods to account for nonresponse, under-coverage, and misclassification to continue to produce accurate data down to the county level. Per usual, these methodologies will be published in the final report."

In addition to the U.S. territory ag census data collection, two ag census special studies that will provide more in-depth information on certain industries will be conducted this fall and winter: the 2023 Census of Aquaculture and the 2023 Irrigation and Water Management Survey. These questionnaires will be mailed to the producers who reported these activities in the 2022 Census of Agriculture. For more information about these upcoming special studies, visit nass.usda.gov/AgCensus.

The Census of Agriculture provides the only source of impartial and comprehensive agricultural data for every state and county in the nation. Watch for additional news about the ag census at @usda_nass on X (formerly known as Twitter).

CDFA and State Board To Host First Public Listening Session On Defining Regenerative Agriculture – December 6, 2023

The California Department of Food and Agriculture, in collaboration with State Board of Food and Agriculture, will be hosting the first of five public listening sessions to receive comments that will help define "regenerative agriculture" for state policies and programs.

Public Listening Session - Defining Regenerative Agriculture for State Policies and Programs.

Wednesday, December 6, 2023, Noon

Webinar Link: <https://csus.zoom.us/j/92121212121>

As interest in "regenerative agriculture" continues to grow, we are seeing the introduction and evolution of the term in California policies and programs.

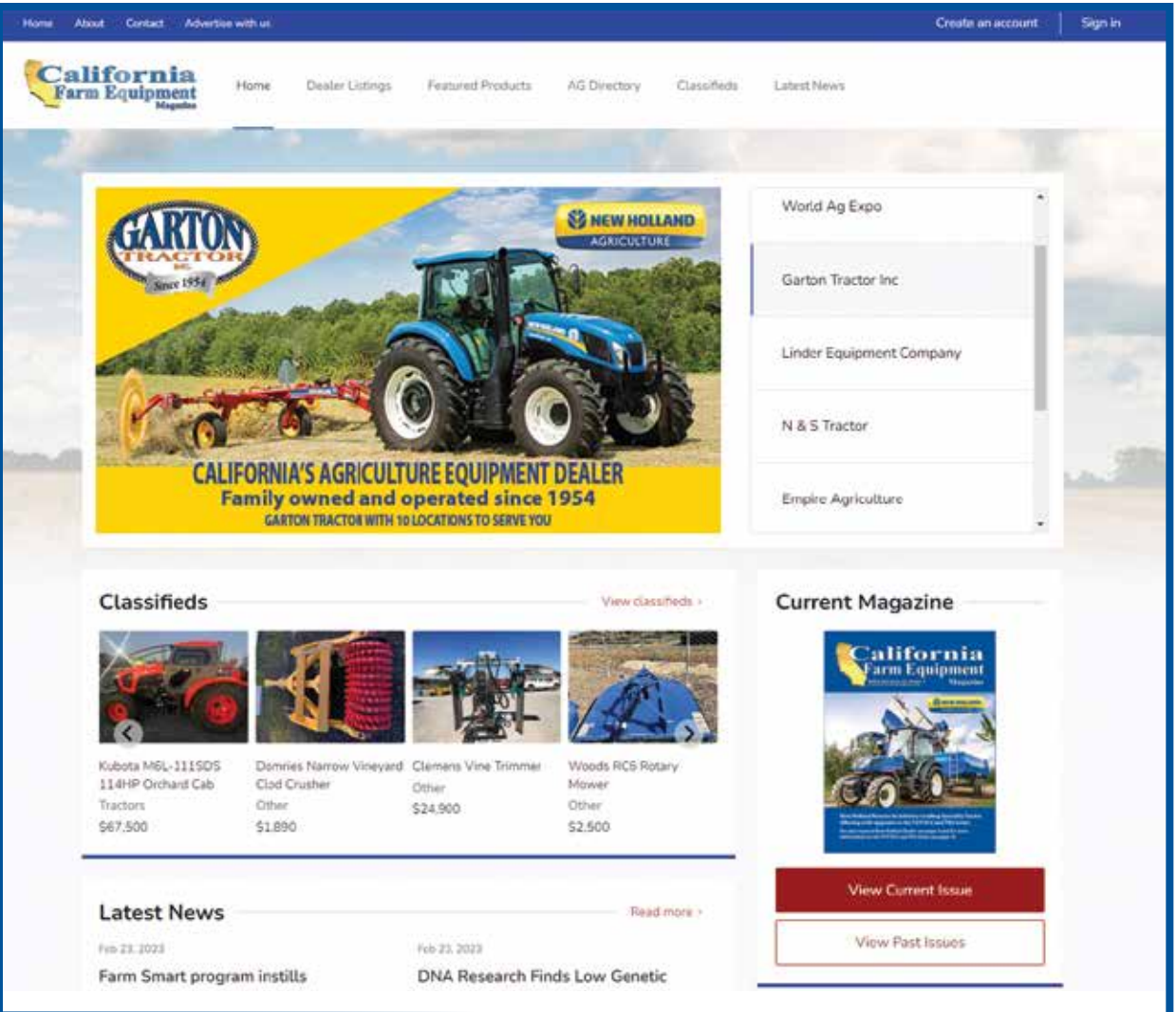
The California State Board of Food and Agriculture, as advisory body to the Governor and CDFA Secretary, is positioned to advise on how the State's farmers, ranchers and consumers may be best served by agricultural policies in the state. Incorporating a definition of regenerative agriculture for state policies and programs provides a science-based criterion for the designation or recognition of the term "regenerative" in agriculture-related policies of the state. By defining "regenerative agriculture" and its associated practices, we are working to formalize holistic methods of farming that are designed to protect, sustain and enhance natural resources on our farms

and farming communities throughout California.

In October 2022, the State Board requested CDFA's Environmental Farming Act Science Advisory Panel (EFA SAP) to assist by conducting a review of existing definitions and literature to help determine common science-based practices related to "regenerative agriculture." In May 2023, the EFA SAP responded with a recommended framework.

The framework included the following characteristics. 1) Being applicable, relevant and useful for California agriculture; 2) Leading to positive impacts on California's environmental, social, human health and economic goals, including climate goals; 3) Providing measurable and verifiable outcomes, keeping in mind variability throughout the state, and emphasizing outcomes farmers and ranchers can easily measure and that are not economically burdensome to measure; 4) Allowing for context specific outcomes; 5) Soil health, including elements of physical quality, carbon sequestration, soil biodiversity, and alleviation of climate change as a foundational element.

The public listening sessions will help to inform the State Board's process, to help provide recommendations on a definition of "regenerative agriculture." Updates on the public listening sessions and the process for defining "regenerative agriculture" are available at: <https://www.cdfa.ca.gov/RegenerativeAg/>



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Climate change to drive surge in insects that attack almonds, peaches, walnuts

By Pamela Kan-Rice

Assistant Director, News and Information Outreach

UC study predicts three major pests to emerge earlier, produce more generations

As a result of climate change, the Golden State's farms are expected to face a surge in agricultural pests, which poses a threat to California's specialty crops industry. Populations of three major insect pests – codling moth, peach twig borer and oriental fruit moth — are projected to increase mainly due to rising temperatures, according to a study recently published in the journal "Science of the Total Environment" by a team of researchers at University of California Agriculture and Natural Resources and the U.S. Department of Agriculture California Climate Hub.

"These three pests are notorious for infesting most of the walnut, almond and peach orchards of California, causing extensive damages by reducing quality of fruits and nuts," said study co-author Jhalendra Rijal, UC Cooperative Extension integrated pest management advisor and entomologist for Stanislaus, San Joaquin and Merced counties.

Climate change can lead to shifts in the timing of seasons, including warmer winters, earlier springs and hotter summers, and these conditions can disrupt the natural life cycles of pests.

The new research, led by Prakash Jha, UC Agriculture and Natural Resources assistant project scientist based at UC Merced, compared pest populations in recent and future climates. The scientists used temperature projections from scientific models to predict the potential impact of climate change on codling moth (*Cydia pomonella*), peach twig borer (*Anarsia lineatella*) and oriental fruit moth (*Grapholita molesta*).

The UC study revealed that due to increases in temperature, these insects are expected to appear up to 28 days earlier in the spring and the time between generations is expected to shorten by up to 19 days. The changes may be gradual, but the study predicts that we may see up to a half-generation of these pests added within the next 20 to 30 years.

The increase in these pest populations poses a serious threat for future pest management, which would subsequently affect the state's economy and employment related to specialty crops, warns Rijal.

"Codling moth is the primary pest of California's walnuts, which occupies over 365,000 acres," Rijal said. "Similarly, peach twig borer and oriental fruit moth are two major economic pests of peaches. Growers must control almost every generation of these pests to protect the fruit.

"Additional generations of these pests within the same growing season will likely increase crop damage. It certainly increases the number of sprays needed to control these pests, increasing the production cost for growers. Plus, more use of

insecticides has consequences for beneficial insects and the environment."

Growers may need to adapt their pest management strategies to address the impact of climate change on these pests.

For years, the UC Integrated Pest Management guidelines have suggested putting oriental fruit moth traps out in peach orchards by Feb. 15 in the San Joaquin Valley and Feb. 20 in the Sacramento Valley.

"In the last seven years, likely due to warmer winter, as suggested in this study, we observed the beginning of the moth's activity in traps (also called biofix) as early as Feb. 14," Rijal said, "meaning that the trap placement date must move earlier to capture the first moth activity. We are revising the guidelines to change the trap placement date to Feb. 7 for the entire Central Valley."

Developing a holistic climate-smart pest management strategy will build resilience, Jha said. This approach combines pest control with prevention and reduction, such as planting pest-resistant crop varieties, sanitizing the orchards during the winter, harvesting early to avoid later pest generation infestation, using biological control such as natural enemies, and deploying mating disruption techniques.

"More importantly, adoption of pest forecasting – including the long-term prediction and short-term potential outbreak, pest-scouting and early detection – will be essential to combat the growing threat posed by these pests," Jha said.

Research will be crucial to provide growers support and guidance about the latest developments in pest management and how to adapt their practices.

"Climate change impacts on pests and resulting impacts on agricultural production are significant but not often researched or quantified," said Tapan Pathak, UC Cooperative Extension specialist in climate adaptation in agriculture based at UC Merced.

"Information from this research will not only help farmers to understand impacts for strategic planning, but also will inform the agricultural industry to invest in making varieties more resilient to these damaging agricultural pests," Pathak added. "We will use this information to update the CalAgro-Climate tool, which informs farmers on the progress of these pests during the season so that they can take steps for effective pest management."

In addition to Jha, Rijal and Pathak, the study was co-authored by Ning Zhang, Lauren E. Parker and Steven Ostoja of UC Davis Institute of the Environment and U.S. Department of Agriculture California Climate Hub.

The article "Climate change impacts on insect pests for high value specialty crops in California" can be accessed for free online at <https://doi.org/10.1016/j.scitotenv.2023.167605>.

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5-7: The Almond Conference 2023 at the SAFE Credit Union Convention Center, Sacramento, CA. For more information see <https://www.almonds.com/about-us/programs-and-events/almond-conference>

12: California Association of Winegrape Growers for a webinar providing a roundup of state labor legislation, guidelines, and regulations that recently took effect or will take effect in January 2024. Webinar Registration: https://us02web.zoom.us/webinar/register/WN_UfXuDSnMS-rqCV-Dlc9IZzA#/registration

JANUARY 2024

23-25: 2024 Unified Wine & Grape Symposium. Program features sessions and a two-day trade show. Safe Credit Union Convention Center, Sacramento, CA. For more information visit our website at : <https://www.unifiedsymposium.org/contact-us/>

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5-6: 2024 California Poultry Federation (CPF) Winter Board of Directors Meeting at the Hyatt Regency Sacramento, CA. Any questions please call the CPF office at (209) 576-6355 or email: info@cpif.org if you have any questions or concerns. Thank you. We hope you can join us at this special event.

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New UC studies estimate production and harvest costs for coastal apples



Gala apples are among the varieties grown on the Central Coast and crushed to make juice and sparkling cider.

Photo by Peggy Greb USDA

By Pamela S Kan-Rice
Assistant Director, News and Information Outreach

Two new studies that can help Central Coast growers and other readers estimate costs and potential returns for both organically and conventionally produced apples for processing were recently released by University of California Agriculture and Natural Resources, UC Cooperative Extension and the UC Davis Department of Agricultural and Resource Economics.

“These studies provide growers with a baseline to estimate their own costs, which can help when applying for production loans, projecting labor costs, securing market arrangements, or understanding costs associated with water and nutrient management and regulatory programs,” said Brittney Goodrich, UC Cooperative Extension specialist and co-author of the studies.

The new studies, “2023 Sample Costs to Produce and Harvest Organic Apples for Processing” and “2023 Sample Costs to Produce and Harvest Apples for Processing,” can be downloaded for free from the UC Davis Department of Agricultural and Resource Economics website at <https://coststudies.ucdavis.edu>.

The studies focus on processing apples, not fresh market apples, which makes a difference in farming practices. Apples grown for processing on the Central Coast are mostly pressed for juice and sparkling cider.

“Ready-to-eat means that looks matter – blemishes and so forth are a big deal. Juice not so much, it all gets smushed in the end,” said co-author Mark Bolda, UC Cooperative Extension farm advisor for Santa Cruz, Monterey and San Benito counties. “Varieties grown here are Gala, Newtown Pippins, Mitsui and some Granny Smith.”

The cost studies model a management scenario for a 100-acre farm, 20 acres of which are planted to a mature orchard that produces apples for processing. The remaining acres are planted to apples not yet in production, caneberries, strawberries and vegetables. In each study, the authors describe the cultural practices used for organically or conventionally produced apples, including land preparation, soil fertility and pest management, irrigation and labor needs. Harvest costs are also shown.

In six tables, they show the individual costs of each operation for apples, material input costs, and cash and non-cash overhead costs in a variety of formats. A ranging analysis shows potential profits over a range of prices and yields.

For a detailed explanation of the assumptions and calculations used to estimate the costs and potential returns for each crop, readers can refer to the narrative portion of each study.

For more information, contact Mark Bolda at mpbolda@ucanr.edu; Laura Tourte, emeritus UCCE advisor, at ljtourte@ucanr.edu; or Jeremy Murdock of UC Davis Department of Agricultural and Resource Economics at jmmurdock@ucdavis.edu.

Sample cost of production studies for many other commodities grown in California are also available for free at <https://coststudies.ucdavis.edu>

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Reforms needed to expand prescribed burns

By Kat Kerlin, UC Davis

Study highlights 4 strategies to overcome barriers to prescribed fire in the West

Prescribed fire, which mimics natural fire regimes, can help improve forest health and reduce the likelihood of catastrophic wildfire. But this management tool is underused in the fire-prone U.S. West and Baja California, Mexico, due to several barriers.

A paper from the University of California, Davis, pinpoints those obstacles and suggests four key strategies that policy-makers and land managers can take to get more “good fire” on the ground in North America’s fire-adapted ecosystems. The paper also provides examples of how people are surmounting some of these obstacles.

“Prescribed fire is one of the most important tools we have for restoring natural fire regimes and undoing the effects of a century of fire suppression,” said lead author John Williams, a project scientist with the UC Davis Department of Environmental Science and Policy. “But there are a number top-down barriers at the upper levels of management that keep us from growing the workforce and getting burns done at the scale and extent needed. We point out some of the big ways that agency leaders and policymakers can dismantle those barriers and empower the full range of people capable of doing this work, from burn bosses and citizen-prescribed burn associations to nonprofits and tribal groups.”

The paper, published in the journal *Frontiers in Ecology and the Environment*, centers on the North American Mediterranean climate zone, which includes most of California, southwestern Oregon, western Nevada and northern Baja California in Mexico. Lenya Quinn-Davidson, director of UC Agriculture and Natural Resources’ Fire Network, is a co-author of the paper.

A natural process

Fire is a natural process that has helped shape this region, but the area has experienced a spike in destructive, high-severity wildfires over the past decade. In fact, three of the five largest wildfires in continental U.S. history occurred in this region in just the past five years. This is due to a combination of climate change and fuel accumulation driven by a century of policies that encouraged fire suppression, curtailed Indigenous cultural burning, and favored harvest of the largest, most fire-tolerant trees, the study notes.

While scientists and resource managers recognize the need for more prescribed fire, its application has not kept pace with the enormity of the challenge. The study said that is because management policies prioritize fire suppression over prevention. There is also a limited fire workforce; regulatory hurdles like permitting, insurance and liability; and few incentives or protections for landowners, tribal members and other people who burn responsibly.

4 key strategies

Researchers identified four key areas where supportive institutional and agency leadership can help expand prescribed fire in the region:

1) Fire culture. After decades of emphasizing wildfire

suppression, current fire management culture “does not adequately promote prescribed fire as a management tool,” the study said. Support for prescribed fire along the entire chain of command within agencies is needed to foster a new culture that incentivizes and enables prescribed fire practitioners within and outside of government agencies.

2) Funding. Prescribed fire is considerably more cost-effective than wildfire suppression, which can cost more than \$2 billion a year in the U.S., but there is little dedicated funding for prescribed fire projects and lack of flexibility as to when such money can be spent. This impedes fire staffing and limits the kinds of projects that can be done. Year-round, dedicated funding and resources could help increase prescribed fire capacity.

3) Capacity building and cooperation. Connecting agencies with landowners, community members, tribes, prescribed burning associations (PBAs), prescribed fire training exchanges (TREXs) and others can facilitate responsible, effective prescribed fire and cultural burning exchanges. Such groups have limited reach and require investment and support to meet demand.

Inter-organizational agreements can also help local, state and federal agencies share resources and staffing. Formalizing and fully integrating such agreements into fire management plans remains a challenge, the study said. Collaborations that support Indigenous cultural burning are also key.

Partnerships must recognize the unique dimensions of cultural burning, which are inseparable from Indigenous culture. Educating land managers and decision makers about tribal sovereignty and federal American Indian law is critical. Introducing legislation that supports cultural burning can also foster such collaborations.

4) Monitoring and adaptive management. Designated funding and personnel for quantitative monitoring after a prescribed burn can help practitioners better measure success and then apply lessons to future burns.

“All of the barriers identified in the study can be overcome, and they have been at least partially resolved in other parts of the U.S., as well as in other Mediterranean climate regions, such as southwestern Australia,” said co-author Hugh Safford, a research ecologist in the UC Davis Department of Environmental Science and Policy and director of the California Prescribed Fire Monitoring Program. “Fundamental to setting the situation right is developing a culture of safe and regular fire use in California and neighboring states by all landowners and managers, and reducing the officiousness, risk aversion and bureaucracy that hinders access to the tool by the public.”

Additional co-authors include Ashley Grupenhoff and Beth Rose Middleton of UC Davis; Joe Restaino of CAL FIRE; Edward Smith of The Nature Conservancy; Chris Adlam of Oregon State University; and Hiram Rivera-Huerta of Autonomous University of Baja California, Mexico.

This research received financial support from the California Department of Forestry and Fire Protection (CAL FIRE).

This story was originally published on the UC Davis News site.

Ribbon-Cutting Ceremony for the Sam Farr United States Crop Improvement and Protection Research Center in Salinas, CA.



The newly constructed Sam Farr United States Crop Improvement and Protection Research Center is located in Salinas, California. The over 117,000-square-foot research center features state-of-the-art laboratories and greenhouses for fruit and vegetable research. (Photo by Bill Wintermantel, ARS)

The U.S. Department of Agriculture's Agricultural Research Service (ARS) held a ribbon-cutting ceremony today for the opening of the newly constructed Sam Farr United States Crop Improvement and Protection Research Center in Salinas, California.

The over 117,000-square-foot research center features state-of-the-art laboratories, greenhouses, and the capacity for additional scientists. It expands on the current ARS Crop Improvement and Protection Research Laboratory, which has been located at the site since the end of World War II, and will house employees from ARS, USDA's Animal and Plant Health Inspection Service, and the University of California, Davis.

During the ceremony, attendees celebrated the past, present and future of fruit and vegetable research between USDA and research partners in California and throughout the United States.

"This research center is on the cutting edge of technology and within its walls are solutions to address viral, fungal and bacterial diseases impacting our nation's fruit and vegetable industries," said USDA Chief Scientist and Under Secretary for Research, Education and Economics Dr. Chavonda Jacobs-Young. "This expansion is part of USDA's commitment to support innovative crop research that will best serve our customers, stakeholders and

the scientific community."

The research center is dedicated to retired Representative Sam Farr, who represented California's Central Coast in the United States House of Representatives for more than 23 years until his retirement from office in 2016. Farr also served six years as a member of the Monterey County Board of Supervisors and 12 years in the California State Assembly. Farr led the charge for the new research facilities.

Other leaders who spoke at the dedication and ribbon-cutting ceremony included:

Agriculture Secretary Tom Vilsack (provided virtual remarks)

Former U.S. Secretary of Defense Leon Panetta

Former Rep. Jack Kingston

Robert Rivas, Speaker of the California State Assembly

Dr. Simon Liu, ARS Administrator

Dr. Tara McHugh, ARS Pacific West Area Director

Dr. Bill Wintermantel, Research Leader and Location Coordinator of the Sam Farr United States Crop Improvement and Protection Research Center

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