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# QUARTERLY UPDATE FROM OUR COUNTY DIRECTORS

## From the Directors' Corner:

Summer is here and as the weather warms up outside, our plants and crops continue to grow. Unfortunately, warmer weather means that pests, diseases and irrigation management challenges also increase as well. This issue of the UCCE San Diego County Extension Connection Newsletter brings you a few articles to help you address these challenges.

Increased gopher activity in our backyards and production field can be devastating to our plants and also be a hazard. Our article about managing pocket gophers provides a number of strategies to help backyard gardeners, commercial growers and professionals manage this pest and reduce the damage they cause. Increasing water demand by plants makes irrigation and runoff management critical for our floriculture and nursery industry, which makes up more than \$1 billion of the county's agricultural output. Our advisors provide simple, detailed methods to help estimate and reduce irrigation runoff in nurseries to help improve water quality and regulatory compliance, while reducing irrigation costs.

Climate change is impacting us all, and our Healthy Soils Program is making strides to promote the adoption of Climate Smart Agriculture practices by connecting farmers and ranchers in San Diego County with information and funding opportunities to help improve their farming practices and reduce or mitigate the impacts of climate change. In addition, our office welcomed a delegation from the Caribbean for a discussion about integrated approaches to scaling up climate smart agricultural practices through research, advanced technologies, mitigation, and raising public awareness. Finally, we are also highlighting two new projects we are just getting started. The Farm Employer and Labor Supervisor Training Program aims to help local farmers with labor related issues and regulations including H2A; and our Agritourism Support Program to improve the viability of small scale farmers in San Diego County through agritourism networks. Stay tuned and visit our website for more details.

Speaking of growth, our office staff continues to grow as well and we would like to introduce Ana Pastrana, our new Plant Pathology Advisor covering San Diego and Imperial Counties, and Heidi Holmquist, one of our Administrative Assistants. We also would like to announce the hiring of Natalie Levy as our Soil Health and Organic Material Management Advisor covering San Diego, Orange and Los Angeles Counties, and Derrick Robinson, our Urban Agriculture, Environmental Issues and Food System Advisor. These new advisors are great additions to our team and their positions will make significant contributions to San Diego County. In addition, we have just released the search for an Indigenous Food Systems and Food Sovereignty Advisor to support indigenous communities and Tribes in San Diego County and Southern California.

In other newsworthy developments, our current five-year contract with the county of San Diego is ending on June 30th 2024. We have been unable to reach an agreement with the county on a new five-year contract and will operate under an automatic contract extension until December 31, 2024. We will continue working on a new contract and hope to have one in place by January of 2025 to avoid any disruption to the services and support our programs provide to all residents of San Diego County.

Last but not least, we ask that you join us to congratulate Levi Shaffner in our 4-H program. Levi has won the Golden Clover Award for his work in engineering and coding, and his project focused on the development of an object recognition system. Congrats Levi!

Have a great summer,

Ramiro and Chris

# Managing Pocket Gophers

Effective Strategies to Identify and Control Pocket Gophers in Your Landscape

Pocket gophers can cause significant damage to valuable turf, girdle trees, and chew irrigation lines. Their mounds can create tripping hazards and lead to erosion concerns when found on slopes. Luckily, there are multiple successful management options to choose from when it comes to managing pocket gophers.

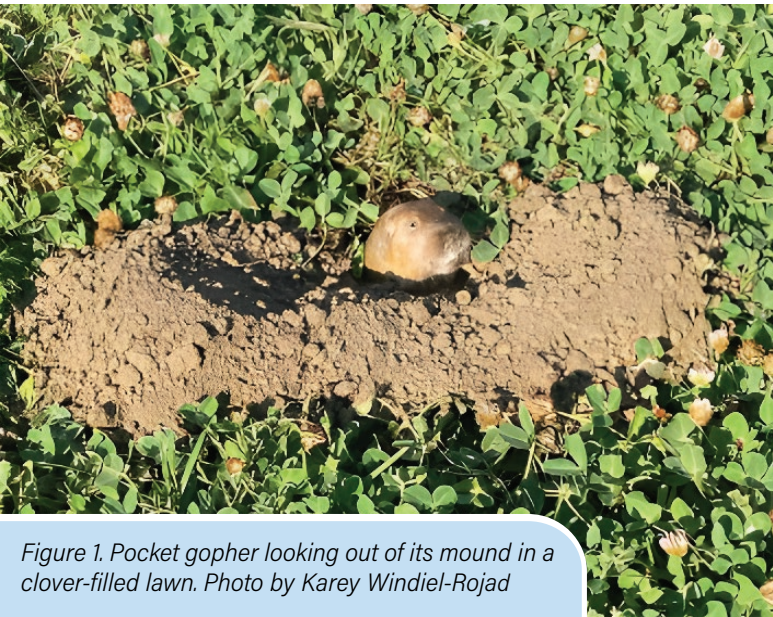


Figure 1. Pocket gopher looking out of its mound in a clover-filled lawn. Photo by Karey Windiel-Rojad

## Do I have a pocket gopher?

Pocket gophers are small, burrowing rodents that are often identified by the damage they cause, rather than a sighting of the animal itself. Pocket gophers spend most of their time below the surface, and while it is possible to see them above the ground or peeping out of a burrow (Figure 1), the easiest way to determine the presence of pocket gophers is by the crescent-shaped mounds they leave behind

on the surface, from excavating their burrows. Pocket gopher mounds can be differentiated from mole mounds by their shape—mole mounds will be round whereas pocket gopher mounds have the distinctive crescent shape. Pocket gophers do not hibernate and are active year-round, so it is important to be vigilant when managing pocket gophers.

## Management options

There are many management options for pocket gopher control, and in California, significant research has been conducted to better utilize and examine the effectiveness of many of these tools. While there continues to be restrictions on some of the toxic options for pocket management, there are still multiple non-chemical options to choose from that fit well into an integrative pest management (IPM) plan. Pocket gopher trapping has proven to be one of these very effective methods.

## Trapping

Trapping is an excellent option for managing pocket gophers, even if you think you have a large population. In general, there is only one pocket gopher per tunnel system, so once you have captured one, you can move to the next system. Be aware that during the breeding season, there could be both a male and female in the burrow system, and after the female gives birth and the pups are dispersing, you can find the pups in the burrow system with reproducing females. In these scenarios, you might capture more than one pocket gopher per trap set.

Trapping takes longer when compared to toxic bait application or burrow fumigation with aluminum phosphide, but it can be highly effective when done correctly.

Make sure you have the right tools when

it comes to trapping pocket gophers. It is important to have sufficient traps for the population you are dealing with. Focus trapping efforts on fresh mounds, as older mounds are less likely to be active. If you are unsure what mounds are active, you can knock over all mounds and trap at the new mounds that appear. Pocket gophers may not mound every day, so trap over more than one day to be successful. It is worth noting that it can be difficult to determine individual burrow systems from each other. Some practice is required to better define which mounds are likely from the same individual. If a trap set is not successful after 1 or 2 days, move the trap to a new tunnel location.

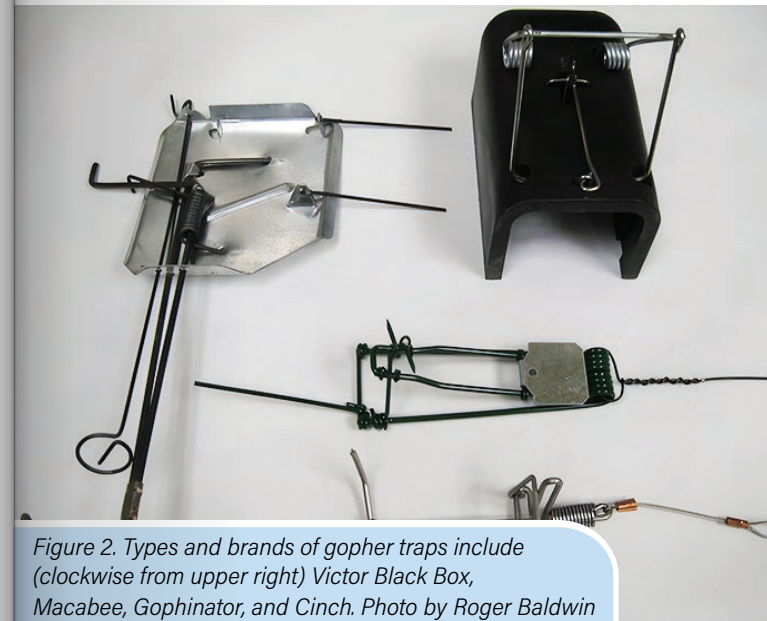


Figure 2. Types and brands of gopher traps include (clockwise from upper right) Victor Black Box, Macabee, Gophinator, and Cinch. Photo by Roger Baldwin

Trap selection (Figure 2) and placement may be important when choosing trapping as your pocket gopher control method. In studies, the Gophinator trap caught larger pocket gophers at a higher rate than the Macabee trap. In addition, these traps often require larger excavations in the soil. For areas like high value turf, these traps may not be the best option. An alternative trap is one resembling the GopherHawk, which may cause less damage because they don't require as large of an excavation in the soil.

When you set a pincher-style trap like the Macabee or the Gophinator, or a box-type trap like the Black Box or Black Hole, it is important to locate the main run of the burrow system. To do this, take a long metal rod like a screwdriver and probe around the mound. You will need to stick your probe into the ground at depths of about 4 to 12 inches. When you find the tunnel, you will experience a sudden drop in resistance. This skill is difficult to acquire but will improve with practice. Once you have located the main run, you need to excavate an opening in the tunnel to allow for setting of the trap. You can use a hori-hori knife or a trowel to make the correct sized hole depending on which style trap you choose.

If you are using a pincher-style trap that is set inside the tunnel, make sure that the tunnel you are setting the trap in is straight. You can check this by putting your excavator tool into the tunnel and making sure that at least 6 inches of it fits into the tunnel. Tunnels with turns often allow the pocket gopher to bypass the jaws when activating the trap, thereby resulting in triggered traps that miss the gopher.

Several attractants have been tested but did not influence visitation or capture rates of pocket gophers to traps. Attractants also did not influence the gender of pocket gophers captured. There is no impact of human scent on the success of trapping pocket gophers.

Is blocking light by covering trap sets necessary when trapping for pocket gophers? Covering and uncovering pocket gopher trap sets is time consuming and does not result in a greater number of captures; however, if you are trapping in areas with high foot traffic, there may be some benefits to covering your trap sets. You can cover the traps with sod, landscape cloth, or cardboard or plywood to prevent

people or pets from interfering with your trap sets. It is recommended that you cover sets when using box traps because pocket gophers will likely plug tunnels before hitting the trigger wire of these traps if you leave them uncovered.

It can be helpful to tie a flag to the traps to easily remember where they were set, which can also help you recover the trap if the gopher drags it away.

When you recover a dead pocket gopher, remove it from the trap, put the gopher back in the tunnel, and cover it up. You can also double bag the animal and place it in the trash. Always wear gloves when handling pocket gopher or any other wildlife carcasses.

### Toxic baits

There are several options for pocket gopher management using toxic baits. It is important to ensure that bait is placed correctly in the tunnel either by using a probe with a bait applicator, or by hand using a funnel and spoon. Always read and follow the label. Many toxic baits that are used to manage pocket gophers require a restricted materials permit; however, there may be exemptions for products applied for structural pest control, industrial use, and institutional use.

Strychnine is the most effective type of bait used for pocket gopher management. This toxicant is an acute rodenticide where a lethal dose can be acquired after a single feed. Pocket gophers can develop behavioral resistance to strychnine. This enables pocket gophers to consume what is normally more than the lethal amount by periodically eating sublethal amounts. Pocket gophers also can become physiologically tolerant to strychnine by ingesting a series of increasingly higher doses. It is important to rotate strychnine in with other management tools to avoid this type of resistance.

Zinc phosphide is also an acute rodenticide that is lethal after a single feeding. Bait shyness or taste aversion can be associated with this management option. Because of this, zinc phosphide may not perform as well as strychnine.

First generation anticoagulant rodenticides, including chlorphacinone and diphacinone, are multiple-feeding anticoagulants that are less toxic than strychnine and zinc phosphide. These baits require multiple feedings over 3-5 days, so it is important to make sure that there is a continuous supply of bait during your treatment period.

### Fumigation

Aluminum phosphide is highly effective, especially in moist soils; however, aluminum phosphide is a highly restricted material. It must be applied by a certified applicator, or the application must be supervised by a qualified applicator. You must have a restricted materials permit, a written recommendation to apply on production or non-production agricultural sites, and a Notice of Intent (NOI) from your local Agricultural Commissioner. You are also required to have a Fumigation Management Plan. You are not permitted to apply this product within 100 feet of a potentially occupied structure. The only place on school grounds where it is permitted to apply this product is on athletic fields.

Gas cartridges are not effective because pocket gophers seal off their burrow when they detect the smoke.

Carbon monoxide producing machines and carbon dioxide are registered for use in California against burrowing rodents. Carbon monoxide producing machines are registered devices, while carbon dioxide used for rodent control is considered a registered pesticide.



Figure 3. Owl box in a walnut tree. Barn owls can provide limited pocket gopher control in orchards. Photo by Jack Kelly Clark

Carbon monoxide devices generate carbon monoxide, which fills the burrow system and asphyxiates the pocket gopher. These devices include the BurrowRx, Cheetah Rodent Controller, CO Jack, and Pressurized Exhaust Rodent Controller (PERC) Machine. Research has shown that the PERC machine can be moderately effective at managing pocket gopher populations, and its efficacy increases in moist soil conditions. Some of these devices are more suited for urban applications and some for larger scale production agriculture. You are not permitted to use a carbon monoxide pest control device within 100 feet of a structure inhabited by people or domestic animals, whether occupied or not.

Carbon dioxide gas is a pesticide that is registered for use on several sites that include production agriculture, non-production agricultural sites, and residential areas. There are no distance restrictions for the application of this pesticide. It is important to follow the label. Solid carbon dioxide (dry ice) is not registered for use on pocket gophers.

### Natural predators

Vertebrate predators—including owls, snakes, cats, dogs, and coyotes—eat pocket gophers; however, they will rarely control all pocket gophers in an area. Predators rarely remove every prey animal, but instead, move on to hunt in areas with more prey. Additionally, pocket gophers have defenses against predators. For example,

pocket gophers can evade snakes in their burrows by pushing up an earthen plug to block the snake's advance. Relying solely on natural predators might not control pocket gophers to the desired level. Research has shown that pocket gophers appear to be an important prey animal for barn owls nesting in perennial crops, and thus barn owls may be able to provide some pest control services in those areas.

### Exclusion

Exclusion can be difficult and expensive for pocket gopher management, but it may be justified if you are trying to protect individual or high-value landscape plants. You can use hardware cloth (1/2-3/4-inch mesh) buried at least 2 foot deep, with an additional 6 inches of hardware cloth bent at a 90° angle. You should also extend fences at least 1 foot above the ground because pocket gophers may move above ground to access the planting you are trying to protect. There are wire baskets available to protect individual plants or bulbs from pocket gophers. These baskets can also be fashioned from chicken wire. Remember that it is important not to restrict the growth of the plant inside the basket, so ensure the wire basket is large enough to accommodate the adult plant's root structure.

For more information about pocket gopher management, see the **UC IPM Pest Notes: Pocket Gophers**.

[Originally featured in the Spring 2024 edition of the **Green Bulletin Newsletter** for structural and landscape pest professionals.]

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# A Simple Equation To Estimate Runoff In Sprinkler Irrigated Container Nurseries

Improving Irrigation Management to Reduce Runoff, Comply with Regulations and Protect the Environment

The preferred irrigation methods for container nurseries in California are overhead sprinkler irrigation, micro-sprinklers (spray stakes) and drip emitters. The first method applies water to the whole irrigation block uniformly, while the second and third method apply water directly to the containers and are therefore called localized systems. The disadvantage of localized systems is that each container needs to be served by an individual emitter and tubing; each row of containers needs an irrigation line that the spaghetti tubing is connected to; each irrigation line needs a valve and sometimes a pressure regulator, making these systems expensive, cumbersome, and labor intensive when used in small containers. As a result, overhead sprinkler irrigation is the preferred method for small containers, while spray-stakes and drip is commonly used for large containers. The container size that separates the two methods depends on the grower's labor and operational costs and varies from 3-gal or 5-gal for some growers to 15-gal for others.

One of the main challenges associated with sprinkler irrigation is the production of large quantities of runoff. Since the system applies water to the whole irrigation block, the spacing between containers determines the quantity of irrigation water that is intercepted by the containers' surface and the quantity that instead falls on the ground, developing weeds, creating erosion, and producing runoff. When

containers are arranged in such a way that they touch each other (aka can-to-can), the quantity of runoff is minimized (although not zero, due to the diamond-shaped areas that remain between four round containers). As the spacing increases, the probability that a drop of irrigation water will hit the surface of one container decreases and therefore runoff increases.

This challenge is well known by industry operators that try to arrange containers can-to-can as much as possible to save water and nursery space, another critical resource affected by the increasing cost of land. Conversely, tight can spacing can negatively affect plant quality as plants often need to be spaced apart to develop retail quality. This brings up another point, the infamous tradeoff between saving water and saving labor, because spacing containers half way through the growing cycle increases labor expenses. Additionally, this poses another logistical challenge since a can-to-can block that gets spaced to can spacing (a distance equal to a container diameter between containers) takes twice the space it did before. As a result, some growers space the containers directly to the finishing spacing, making inefficient use of water and land, but saving in labor and logistics.

Irrigation scientists have defined "Interception Efficiency" as the ratio between the sum of the surface area of all the containers in a block and the area of the irrigation block itself. This ratio represents the fraction of overhead irrigation water that is intercepted by the container surfaces. The rest becomes runoff and eventually waste water. Not only is runoff a waste of resources, but also represents a liability, because it often carries fertilizers, pesticides and picks up sediment, creating erosion while on its way to pollute surface water which is the main challenge for compliance with water quality regulations. For this



Examples of nurseries with different container spacings

reason, managing water quality in nurseries and greenhouses often has to do with reducing the quantity of runoff produced. The highest Interception Efficiency achievable and thus the lowest amount of runoff produced occurs when containers are arranged can-to-can.

Consider a circle inscribed in a square. This represents the area of the nursery container over the area the container occupies in a can-to-can spacing. Imagine the diameter of the circle is 6 inches and the side of the square is as well. The area of the square is  $6 \times 6 = 36$  square inches. The area of the circle, with a 3-inch radius is:  $3 \times 3 \times 3.14 = 28$  square inches. The ratio between the two is 0.785 which is the highest Interception Efficiency possible which corresponds to can-to-can spacing. Now instead, imagine the spacing has one diameter in between the perimeter of pots, or if you prefer, containers are spaced two diameters center-to-center. Now the square that belongs to each container is larger, because there are six inches between the perimeters of circles. So now the square has three inches on one side and three inches on the other side of the circle, so the total side of the square increases to 12 inch and its area to 144 square inches. In this configuration, Interception Efficiency is  $28/144 = 0.196$ . This means that only about 20% of the water gets into contact with the surface of containers to produce the intended irrigation benefits, while the rest hits the bare ground and produces nasty runoff.

We are talking about fractions here, not whole numbers. Once you figure out the irrigation block flowrate (e.g. 50 gpm) or irrigation volume from the irrigation depth (e.g. 0.2 inch) and the block area, you can multiply by each fraction to calculate the absolute values. In the example above, if your irrigation block takes 50 gpm, with a can-to-can spacing  $50 \times 0.785 = 39$  gpm were received by containers, while 11 produced runoff. Similarly, if an irrigation applied 0.2 inches (0.0167 ft), over a 10,000 ft<sup>2</sup> block, the total volume of water applied is  $10,000 \times 0.0167 = 167$  ft<sup>3</sup> or 1259 gallons. With a can spacing, only  $1258 \times 0.196 = 247$  gallons were retained by containers, while 1011 produced runoff.

The science of growing plants in containers also produced another concept, called Leaching Fraction, defined as the fraction of the water applied to a container that drains out from the bottom of the container. If I apply one gallon of water to a container and a quarter of a gallon drains out at the bottom of the container as a result of irrigation, then the leaching fraction is 0.25. One may imagine that applying a leaching fraction is wasteful, but leaching some quantity of water is a needed practice for salinity management. All irrigation water contains some salts and plants leave most of them behind as they use water. Day after day, irrigation after irrigation, these salts would accumulate in the container substrate if we didn't apply a Leaching Fraction. There is more complexity to this

concept, and the right Leaching Fraction can be calculated from irrigation water electrical conductivity (a measurement of salinity) measurements and from plant salt tolerance. However, for the purposes of this article, let's just say that during each irrigation event, some of the water applied to the containers should drain out at the bottom. Typical recommended values for Leaching Fraction range between 10% and 25%.

Now we are ready to talk about our equation. We are not too worried about equations, what's important is that the reader understands the conceptual framework that the equation represents and the variables at play that the equation contains. The water produced by the nozzles of the irrigation system can be quantified in terms of flowrate by multiplying nozzle flowrate (generally in the order of 3 gallons per minute) by the number of nozzles in the irrigation block. It can also be quantified in terms of depth of water applied, expressed in inches. You can calculate the depth of water applied by multiplying the irrigation run time by the application rate, expressed in inch/hour. Check out a video about the application rate below (See QR code). To calculate irrigation volume from irrigation depth, you multiply by the block area and convert to gallons like we did above.



Whether we use flowrate or irrigation volume, there is a fraction of that water discharged by sprinklers that hits the containers and another fraction that does not. We already said that the first is called Interception Efficiency (IE), so the other fraction, that does not hit the containers is

1-IE. This is the first component of our runoff equation. The second component is represented by the fraction of water that hits the containers (IE) and that drains out of the bottom of them, also defined as the Leaching Fraction (LF). So, the second runoff component is IE\*LF. Our complete overhead irrigation runoff equation is:

$$\text{Runoff Fraction} = (1-IE) + (IE * LF)$$

Note that this equation also gives you a unitless fraction (or a percentage), not a whole number. You can multiply your flowrate (in gpm) or your applied volume (in gallons) by the equation result to calculate the amount of runoff produced as we did above.

In conclusion, we recommend that you understand the factors at play in the equation above, since they are the factors that ultimately generate runoff and affect your compliance with water quality regulations. A few simple field measurements allow you to calculate IE with a tape measure and to estimate LF with a pan or bucket under containers. These, used in the equation above, can substantially empower the operator to assess the potential of producing runoff of any nursery sprinkler irrigation system. Such a procedure can be used during irrigation system design, to inform management and when deploying corrective measures.



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## Levi Schaffner Honored with the 2024 4-H Brownlee Clover Award for Extraordinary Achievement

Thirteen-year-old Levi Schaffner has been recognized this year in the Brownlee Science Category of the Golden Clover Awards. He was awarded for his efforts as a junior leader in his 4-H club's new electronics and engineering project. Schaffner has been a member of the 56 Ranchers 4-H club, located in Escondido, for about three years. From becoming a junior leader, to earning this award, Schaffner is excited to see his hard work pay off.

The 4-H Golden Clover Awards recognize outstanding achievements of members, volunteers, program staff, and groups within the 4-H Youth Development Program and has six different categories to which applicants can apply. Schaffner was recognized with this award because of his involvement in the creation and presentation of a course on a computer program called Scratch, which is a free web-based educational coding environment that was created by MIT to improve coding skills. In addition to teaching this course, Schaffner consistently provides support to others in the class whose age group is mostly 11-18 years old.

Schaffner's project is an object recognition system that uses a camera to identify physical objects in its vicinity. "I went to the county and regional presentation days and I'm excited to go to the state with it," Schaffner says.

For last year's presentation day, Schaffner made a pencil vending machine that keeps track of pencils in a classroom.

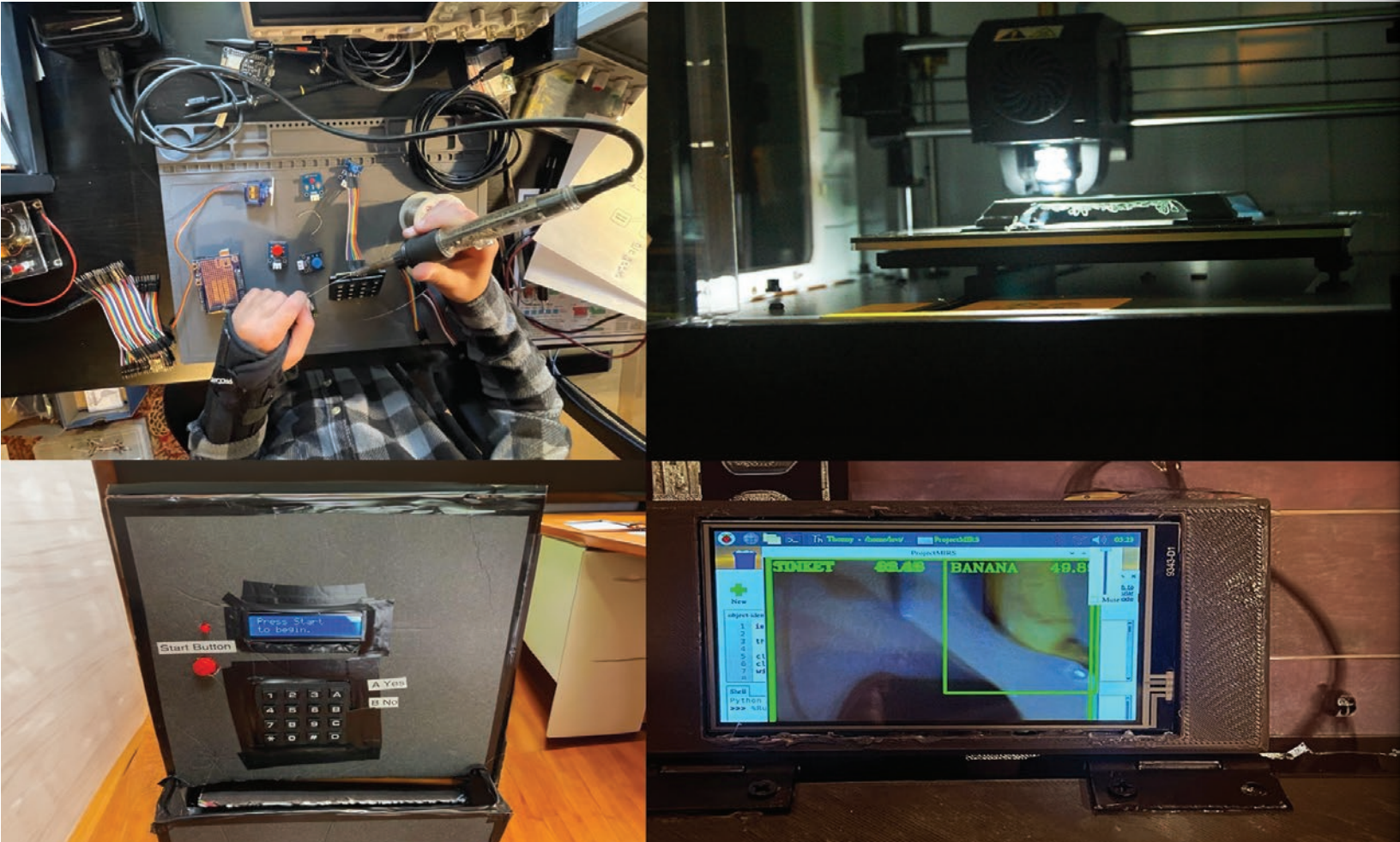


Photo of Levi Schaffner, Courtesy of Jacob Schaffner

He coded the vending machine to dispense pencils by request and then keep a log of how many were dispensed. At the end of class, one could then check how many pencils had been dispensed and use those numbers to calculate how many pencils are due back to the machine. Schaffner was inspired to create this vending machine when he noticed that fellow students were breaking pencils, throwing them around, and generally not being mindful of the teacher's pencils.

Schaffner is looking forward to learning more about game development and cyber security. His current hobbies include game development, computer programming, and 3-D printing items in his garage. Schaffner has also recently been exploring some CAD (computer-aided design) services which are used to digitally create 2D and 3D design simulations of real-world objects to optimize designs.

Last year Schaffner was awarded a grant from the Amateur Radio Digital Communications Group, which paid for equipment and supplies needed for Schaffner's other hobby, HAM radio. As licensed HAM radio operators, Schaffner and his father say that they have been getting into amateur radio and encouraging



others in his club project to join in on the fun. “We’ve also had another member of his project and his dad get licensed last year. And we just did our radio night last week and we had a couple more kids interested in trying for it as well.”

From a young age, Schaffner raised backyard chickens and wanted show them at the fair, but the breed was banned at the time. According to Schaffner, his parents said “Hey, if we can’t do it here, we’re going to try out 4-H.” In the three years since joining, he has cherished his experience in 4-H and has appreciated being able to collaborate with people who are different from him. Schaffner reports that this exposure to differing ideas and personalities has heightened his determination to persevere. Schaffner’s time as a member of 56 Ranchers 4-H has taught him about responsibility, leadership, and how to collaborate with others. It’s awesome to see this young leader be awarded for his

passions, and we are excited to see what he will do next.

4-H club membership is an important outlet for many kids like Schaffner to work hard to learn new skills, delve further into their interests, and showcase their abilities. From raising livestock to learning how to code a computer program, 4-H hosts a variety of projects in a learn-by-doing model. In addition to fostering extracurricular development, 4-H aims to develop members’ essential lifelong interpersonal and leadership skills. Looking to the future, 4-H is aiming to increase the availability of STEM projects to be able to support members’ interest in these fields. To learn more about the San Diego County 4-H program, visit <https://ucanr.edu/sites/4HSanDiegoCounty>.



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## San Diego Climate Smart Agriculture

Funding Programs and Outreach Initiatives In California

The California Department of Food and Agriculture continues to offer three funding programs that are focused on **Climate Smart Agriculture** and are overseen by the Office of Environmental Farming and Innovation. These programs include the Healthy Soils Program (HSP), State Water Efficiency and Enhancement Program (SWEET), and the Alternative Manure Management Program (AMMP). The goal of these incentive programs is to encourage farmers and ranchers to invest in practices that conserve water and other resources, facilitate healthy soil, reduce greenhouse gas emissions, and ultimately build resilience to climate change.

In preparation for future SWEET and HSP grant solicitations, Michael Jaquez, Climate Smart Agriculture Community Education Specialist, has been conducting various outreach efforts to educate local growers on these funding opportunities and prepare them for when the applications re-open. This includes visiting farmer’s markets to speak directly with growers, attending monthly grower meetings, and conducting farm visits. Michael has spoken with the San Diego County Vintners Association, Ramona Valley Vineyard Association, Small Winegrowers Association, and the Avocado Growers of California.

Through these efforts, additional farmers and ranchers will continue to be exposed to funding opportunities that further the goals of Climate Smart Agriculture as well as mitigate potential barriers to adoption of climate-smart practices. If you or someone you know is



Michael Jaquez, UCCE Community Education Specialist II, presenting Climate Smart Agriculture program information.

interested in these incentive grant programs, please reach out to Michael Jaquez for technical assistance.



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## Ag Employer and Labor Supervisor Training Program


The UC Cooperative Extension, San Diego, in collaboration with the Western Extension Risk Management Education Center, is pleased to present the Ag Labor Management Training Program. This program is aimed at educating agricultural employers, HR managers, and supervisors throughout the State of CA, on crucial labor management and regulatory compliance topics.

This program features a series of three half-day seminars tailored for agricultural employers. These seminars will delve into labor law issues, the current state of

regulations, and challenges specific to employers utilizing or interested in the H2A visa program. Emphasis will be placed on the vital role supervisors play in ensuring compliance and fostering positive workplace environments.

Additionally, we are offering five full-day training programs designed specifically for Spanish-speaking supervisors and mayordomos. Led by bilingual instructors with over 60 years of combined experience in agricultural training, these sessions will cover a range of compliance requirements with a focus on effective communication and management practices such as implementing essential policies to manage work injuries, harassment claims, union matters, and wage and hour compliance.

The first seminar for agricultural employers and training for supervisors are scheduled for August 14 and 15, 2024, at the San Diego County Farm Bureau in Escondido, California. For those in other regions, seminars and workshops will follow in February and March 2025 in Santa Maria, Coalinga, Palm Desert, and Imperial Valley, accommodating seasonal preferences. Registration details with program descriptions will be mailed soon and you can visit our program website at <https://ucanr.edu/aglabormanagement> for more information!



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## Advancing Agritourism in San Diego County

Extreme climate, rising land, labor and water costs and local environmental policies are increasing challenges for economically



Participants gathering fresh strawberries at the Carlsbad Strawberry Company during the Agritourism Gathering, May 22, 2024. (R.Lobo)

viable agricultural production. It is critical that alternatives are provided to our farmers and ranchers to ensure their success and increase opportunities for economic development and local enterprise. Agritourism continues to be one such alternative to consider – especially in San Diego County where the tourism industry is the second leading industry contributing to San Diego’s economy and the climate allows for year-round activities. Agritourism or agricultural tourism is any business conducted by a farmer or rancher for the enjoyment or education of the public, and to promote the products of the farm, and thereby generate additional farm income (Hilchey 1993). Recent studies indicate there are gaps in training and support systems to address concerns and reduce barriers for established agritourism operators and those planning to enter this industry sector.



**Left to Right:**  
 Ramiro Lobo, UCCE San Diego Farm Advisor;  
 Rachael Callahan, UC SAREP Agritourism Coordinator;  
 and Darlene Ruiz, UCCE San Diego Staff Research Associate at the Carlsbad Strawberry Company during the Agritourism Gathering, May 22, 2024. (J. Gonzales)

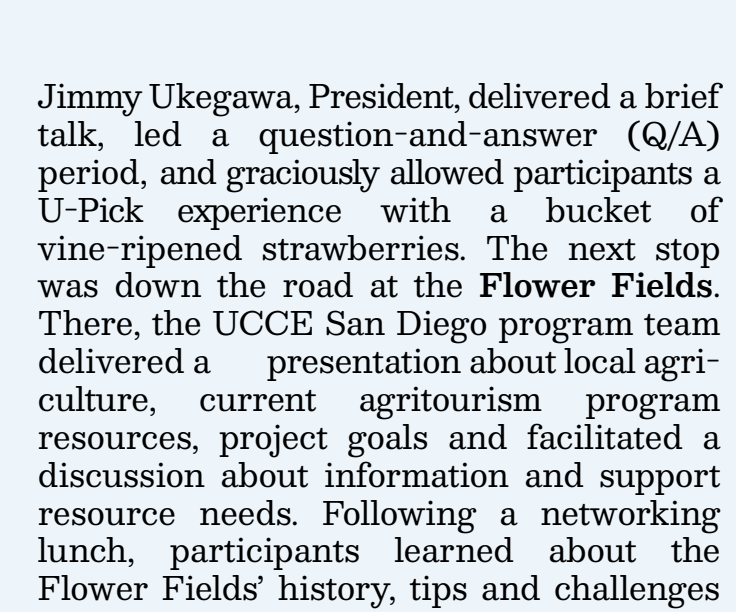


Agritourism considerations were discussed by Jess Williams, Flower Fields’ Farm Production Manager, at the Agritourism Gathering on May 22, 2024. (R.Lobo)

The University of California Cooperative Extension San Diego County (UCCE San Diego) is pleased to announce the recent funding award from the Western Extension Risk Management Center to expand the Agritourism program. Projects will focus on the agritourism sector in the San Diego County region to:


- foster an agritourism network association;
- develop, sponsor, and promote education and training that advance agritourism;
- enhance the online agritourism map and directory ([www.AgTourSD.org](http://www.AgTourSD.org)): re-designing the user interface and expanding databases;
- and host a southwestern agritourism conference.

Last month, UCCE San Diego partnered with Rachael Callahan, Agritourism Coordinator with the UC statewide Sustainable Agriculture Research and Education Program (SAREP) and two locally established agritourism enterprises to host an Agritourism Gathering for existing and aspiring agritourism businesses and supporting stakeholders. This was a successful event starting at the **Carlsbad Strawberry Company** where



Jimmy Ukegawa, President, delivered a brief talk, led a question-and-answer (Q/A) period, and graciously allowed participants a U-Pick experience with a bucket of vine-ripened strawberries. The next stop was down the road at the **Flower Fields**. There, the UCCE San Diego program team delivered a presentation about local agriculture, current agritourism program resources, project goals and facilitated a discussion about information and support resource needs. Following a networking lunch, participants learned about the Flower Fields’ history, tips and challenges from Joan Miringoff, Event Coordinator. Jess Williams, Farm Production Manager, gave a brief field visit and talk, highlighting production and operational considerations and also led a Q/A session.

The UCCE San Diego team are processing and analyzing all the feedback provided by participants and are organizing the next gathering to be held mid-summer. Ramiro Lobo (Farm Advisor), Darlene Ruiz (Staff Research Associate) and Jan Gonzales (Program Coordinator) are the lead team members. The team looks forward to coordinating with current partners: **SAREP, the San Diego Farm Bureau, County of San Diego**, several established agritourism enterprises, interested growers and other industry supporters to cultivate a thriving regional agritourism sector.



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# MEET THE TEAM

Get to know the people behind Cooperative Extension San Diego! Each issue we like to highlight some members of our amazing team.

## Meet our Advisors



**Ana M. Pastrana, Ph.D.**  
Plant Pathology Advisor

Ana M. Pastrana joined UC ANR on January 16, 2024, assuming the role of Plant Pathology Advisor for Imperial, Riverside, and San Diego counties. Before this position, Dr. Pastrana contributed her expertise as a Research Scientist in the Department of Agronomy at the University of Seville, Spain, from 2022 to 2024. During her time there, she not only conducted valuable research, but also shared her knowledge by teaching a graduate-level Plant Health course. From 2020-2022, Ana played a significant role as a Research Scientist-Plant Pathology at Vineland Research and Innovation Centre in Canada.

Dr. Pastrana earned her Ph.D. in 2015 from IFAPA, Spain, and subsequently advanced her research during post-doctoral studies at the University of California, Davis.

With over a decade of experience, Ana's work has focused on investigating the etiology, epidemiology, and management of plant diseases within agricultural ecosystems.

She is excited about her new role as Plant Pathology Advisor based in Southern California. The varied and intense crop cultivation in this area requires focused research to address disease management challenges and efficient outreach programs to engage a diverse audience. With her background and enthusiasm for community service, Ana is well-equipped for this role, and is excited to connect with local growers and Pest Control Advisors.

## Meet our Staff



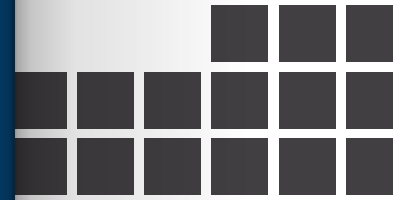
**Heidi Holmquist**  
Administrative Assistant 2

Heidi Holmquist, M.S., grew up in Ventura County, CA and was inspired as a teenager to begin working in agriculture by her grandfather, who raised ostriches and grew citrus and avocados in Somis, CA.

Through the years, Heidi has directed her effort towards the application of agronomy as well as the study of plant diseases important to ornamental and agricultural environments. Before joining UCCE, Heidi worked as a lab assistant at a private plant pathology lab and conducted field research on agricultural soil amendments to gather marketable product data. Additionally, Heidi worked as a greenhouse assistant while obtaining her B.S. and M.S. in Plant Science at Cal Poly Pomona.

Heidi joined UC Cooperative Extension San Diego in December of 2021 as a Staff Research Associate II and began working on a dragonfruit cost benefit study within our Small Farms program. In May 2022 Heidi moved to the position of Community Education Specialist II to work on the continued development of the Invasive Tree Pests education and outreach program. In her current role of Administrative Assistant II, Heidi is a member of UCCE's administrative team that supports the San Diego office's advisors, staff members, and volunteers throughout a wide variety of programs.

2024



# CALENDAR

Stay up-to-date with seminars, webinars, trainings, events, and more!

## JULY

### DRAGON FRUIT WORKSHOP

- July 17, and July 18, 2024
- Virtual/Online, 'Miami-Dade County'
- [Link to event page](#)

### INVASIVE SHOT HOLE BORER, 2024 SYMPOSIUM

- July 18, 2024
- Virtual/Online
- [Link to event page](#)

### AGROTOURISM GATHERING

- July 24, 2024
- Ramona Ranch Vineyard and Winery
- [Link to event page](#)

## AUGUST

### AG LABOR MANAGEMENT: AG EMPLOYER SEMINAR

- August 14, 2024
- San Diego County Farm Bureau, Escondido, CA
- [Link to event page](#)

### AG LABOR MANAGEMENT: AG SUPERVISORS' TRAINING

- August 15, 2024
- San Diego County Farm Bureau, Escondido, CA
- [Link to event page](#)



## Professional Exchange: Addressing Climate Change and Agriculture

UCCE San Diego welcomed a delegation from the Caribbean for a discussion about integrated approaches to scaling up climate smart agricultural practices through research, advanced technologies, mitigation, and raising public awareness. Ramiro Lobo, Michael Jaquez, Darlene Ruiz and Jan Gonzales met with the group on June 6th while they were visiting the area as participants in the U.S. State Department's International Visitors Leadership Program. It was an engaging and educational time of information exchange between agricultural professionals. We were honored to be selected as one of the organizations they visited.

Photo by: Marcelo Gandaria, U.S. Dept. of State



**We hope you have enjoyed this issue of the Extension Connection!**

We will continue bringing you the latest news from UC Cooperative Extension San Diego, and we would also like to hear from you.

**What Do You Think?**

**TAKE OUR SURVEY**



Please consider subscribing to this quarterly newsletter and following us on social media!

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