

COOPERATIVE EXTENSION/
HANSEN AGRICULTURAL RESEARCH AND EXTENSION CENTER

VENTURA COUNTY | ANNUAL REPORT

2022 - 2023



UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Leveraging the power of **UC ANR**

*True to the mission
of the land
grant universities,
UC Agriculture and
Natural Resources
connects the power
of UC research in
agriculture, natural
resources, nutrition and
youth development
with local communities
to improve the lives
of all Californians.*

Staff Research Associate Maripaula Valdes-Berriz weighing celery plants in UC Davis celery breeding trial for Fusarium yellows resistance in Camarillo, CA.

September 1, 2023

Honorable CEO, Board of Supervisors and Members of the Community of Ventura County,

I am pleased to share with you the accomplishments of the University of California Cooperative Extension (UCCE) in Ventura County and the Hansen Agricultural Research and Extension Center (HAREC) during the 2022-2023 fiscal year. This annual report highlights research and outreach conducted by our advisors, educators, staff and volunteers.

Over the past year, a lot has happened. Foremost in mind is the remarkably rainy and cold winter and spring, which brought long-awaited precipitation and some snow to the county: groundwater basins and lakes were replenished and salts were leached from the soil, improving soil conditions for crop production. I, for one, was amazed – and somewhat trepidatious – at how much water can fall from the sky in a 24-hour period! While harvests were delayed due to flooding and wet soil conditions, and cool weather slowed crop development, the overall feeling was one of relief and gratitude.

The other big event was the acquisition by the University of California of a 114-acre farm west of Camarillo to become the new home of the Hansen Agricultural Research and Extension Center, dubbed HAREC 2.0. In the next few months, we will move from the old site in Santa Paula to the new location. While we have already started field research projects at the new site, it will take 4-5 years for a full-fledged research and education facility to be built. We will focus on the design and planning in the coming year.

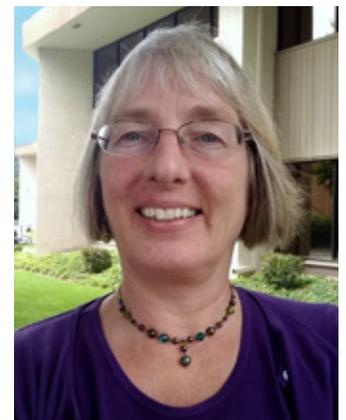
After losing almost half of our team to retirement and other departures last year, we are growing again. Hamutahl Cohen, an entomology advisor, joined us in June of 2023, and Emma Volk, a greenhouse and nursery advisor, will start in September 2023. We also hired a farm superintendent (Adam Novicki) as well as a new Master Gardener Coordinator (Jill Tyler). In support of the goals of the 2020-2040 Ventura County General Plan, we recently hired a Climate Community Education Specialist (Jill Sarick) and are in the process of recruiting a Climate Change Researcher and an On-Farm Technology Education Specialist.

Our gratitude goes out to Ventura County and other funding agencies and donors for their financial and logistical support. We also thank our UCCE Advisory Board members, members of our Research Advisory Committee as well as the HAREC 2.0 Planning Committee, stakeholders, partner organizations, and numerous volunteers who are invaluable in supporting our mission. We look forward to continuing to apply science in service of agriculture, natural resources and the people of Ventura County in 2023-2024!

Sincerely,



Annemiek Schilder, PhD
 Director, University of California
 Cooperative Extension in Ventura County
 and the Hansen Agricultural Research and
 Extension Center



Bugs Beware: Our New Entomology Advisor has Finally Arrived!

On June 1, 2023, Dr. Hamutahl Cohen (*pictured at right*) was appointed Entomology Advisor with UC Cooperative Extension in Ventura County. She will work on developing environmentally sustainable pest management in agricultural and natural systems. Dr. Cohen will address a myriad of issues related to pest management in berries, avocado, citrus, and more, such as identification and monitoring, pest biology and phenology, crop loss assessment, pesticide resistance prevention, and evaluating integrated pest management methods with an emphasis on biological and cultural controls.

Prior to joining UC ANR, Dr. Cohen worked as a Commercial Horticulture Agent with the Institute for Food and Agricultural Sciences at the University of Florida. She obtained her Ph.D. from the University of California, Santa Cruz, where she studied agricultural practices that promote diversity of beneficial insects and ecosystem services. She then conducted postdoctoral research at UC Riverside on pollinator health in Yolo County sunflowers.

Dr. Cohen will work with industry and university partners to evaluate the needs of the local grower community to design an applied research and extension program. She is excited to advance agricultural practices that reduce economic damage from pests while minimizing impacts on the environment, farmworkers, and consumers. She is looking forward to collaborating with growers, pest control advisors, land stewards, researchers, public organizations, and other regional stakeholders. Please contact Dr. Cohen to introduce yourself and talk bugs. She can be reached at hcohen@ucanr.edu.



Farewell to Ed Williams, the Ventura County Agricultural Commissioner

We would like to extend a special **“thank you”** to Ed Williams who recently retired as the Ventura County Agricultural Commissioner/Sealer. UCCE Ventura County has worked with or supported the Agricultural Commissioner’s Office on a variety of issues over the years, including invasive pests and weeds, forage assessment on rangelands, organic waste management, the hemp ordinance, and the Ventura County General Plan. UCCE is represented *ex officio* on the Agricultural Policy Advisory Committee (APAC), while the Ag Commissioner serves on the UCCE Ventura Advisory Board. We all enjoyed Ed’s spirit of collegiality and his strong support of Cooperative Extension. We wish him an enjoyable and well-deserved retirement!



Retirement lunch for Ed Williams (middle) with UCCE staff Julie Clark (far left), Oleg Daugovish (left) and Matthew Shapero (right).

Hansen Agricultural Research and Extension Center Moving to New Site in Ventura County

UC ANR News release written by Mike Hsu, published on February 15, 2023

The University of California [Hansen Agricultural Research and Extension Center](#) – the site of popular school field trips, 4-H programs, a UC Master Gardener demonstration garden, and numerous research trials on crops and landscape plants – is moving to a new location on the west side of Camarillo. The center was established through an endowment bequeathed to the UC by Saticoy farmer Thelma Hansen, who sought to support university research and extension activities benefiting Ventura County.

For the past 25 years, Hansen REC has been located on the historic Faulkner Farm in Santa Paula. At 27 acres, Hansen REC was the smallest of the [nine RECs](#) across the state operated by UC Agriculture and Natural Resources; in 2019, UC ANR leadership decided a larger property was needed to expand the center's capacity. The Faulkner Farm was sold in March 2021, but a portion was leased back to the UC to sustain its programs until a new location was identified.

In December 2022, the UC acquired a 114-acre farm property in Camarillo to serve as Hansen REC's new home. Moving structures and equipment from Faulkner Farm will take place over the next six months. Public programs at the new location are on hold until seismic retrofitting and other building upgrades are completed. A new research and educational facility also will be built, with an estimated opening date in 2027 or 2028.

The new HAREC site, located on the Oxnard Plain, is conducive to research on high-value crops, such as strawberries.



Master Gardeners touring the new farm location in Camarillo, led by Adam Novicki.



HAREC

“Our planning committee looked for a site on the Oxnard Plain that is representative of the coastal agriculture environment and conducive to research on Ventura County’s high-value crops, such as strawberries,” said [Annemiek Schilder](#), Hansen REC director. “We also sought a location with diverse soil types, access to sufficient irrigation water, and a low risk of flooding – and we’re pleased that this Camarillo property meets most of our search criteria.”

Of the approximately 104 cultivable acres, 28 are certified organic, which will allow researchers to study organic as well as conventional crop production methods, Schilder noted. She said another bonus of the new location is its proximity to California State University, Channel Islands and the Rodale Institute California Organic Center, which are both potential partners for future research and a student organic farm on site.

Initial plans for the new Hansen REC facility include offices, conference rooms, laboratories, greenhouses, a demonstration kitchen, and indoor and outdoor education areas. The center will aim to be water-efficient and energy-neutral, relying on solar panels for much of its energy usage. The UC Cooperative Extension Office in Ventura is also slated to move to the new facility.

“We fully expect Hansen REC to become a vibrant research and education hub that provides science-based solutions and is responsive to the needs of agricultural, rural and urban communities and the environment in Ventura County,” said Glenda Humiston, UC vice president for agriculture and natural resources. “We’re excited to expand current programming while bringing in new educational opportunities, such as the UC Master Food Preserver and Master Beekeeper programs.”

Danish agriculture students learn about Ventura County agriculture

A group of 30 students, two teachers and their tour leader from Kjærgård School of Agriculture in Bramming, Denmark, visited HAREC and nearby farms in Ventura County on April 12, 2023. This was their first stop on a 2-week field trip of farms in California and Arizona. The students were 18-21 years old and either specialized in livestock or crops. A number of them grew up on farms and are set to take over the farm from their parents. The students had a great time learning about Ventura County agriculture, research and extension.



Welcome to new farm superintendent Adam Novicki

Adam Novicki started as the new farm superintendent of the [Hansen Agricultural Research and Extension Center](#) in October 2022. Adam has a Master’s degree in Plant Sciences from California State University, Fresno; studied soil science and botany at Pierce College and has a Bachelor’s degree in Theater from San Jose State University. He is also a registered beekeeper. Adam supervises two senior field technicians: Jose Hernandez and Santos Ramirez. He is excited to participate in developing the new location for HAREC.



Danish agriculture students learning about avocado production at Chris Sayer’s farm in Saticoy.

HAREC

Ventura County Farm Day draws crowds to HAREC

The UC Hansen Agricultural Research and Extension Center (HAREC) was one of 22 farm locations open to the public on Ventura County Farm Day, organized by Students for Eco-Education and Agriculture (SEEAG) on November 5, 2022. Visitors took a self-guided walking tour of the Center. The Master Gardeners provided the bulk of the activities for the day inside the immaculate demonstration gardens. There was truly an activity for all ages to enjoy, from a scavenger hunt and “plant-a-seed” to composting and tree pruning demonstrations.

A honeybee exhibit was a popular attraction: visitors were able to see the bees and their queen in an observation hive presented by T&A Farms. One could also learn how to install a drip irrigation system for water-wise gardening. In addition, visitors observed some of the research trials at the heart of the mission of the Center, such as cover crops, apple tree pruning, rose fertilization, and climate-ready landscape trees.

In the 4-H area, youth and adults alike learned about 4-H and enjoyed hands-on activities, such as a felting craft and an interactive “cow milking” booth. Visitors seemed to be most impressed by the solar cooking exhibit, demonstrating how you can harness the power of the sun to cook a meal. A U-Pick activity aimed at children age 12 & under was a highlight for many, watching the little ones pick their own snap peas, pumpkins, and herbs. Helping children understand where their food comes from is an important educational goal of HAREC.

Approximately 250 visitors entered through the gates of HAREC on November 5th. Many departed with goodies but all walked out with a little more knowledge of the importance of agriculture and sustainability. We would like to extend a huge **“thank you”** to the many Master Gardener and 4-H volunteers and UC staff who made the 10th Ventura County Farm Day a resounding success!



Participants of the “decorating pumpkins with succulents” workshop.



Little boy harvesting vegetables from the U-pick plot.



“When I became the general manager at Crisalida Berry Farms, a subsidiary of Good Farms in Ventura County, I worked extensively with Advisor Andre Biscaro to upskill myself and my staff. He provided both recommendations and in-field guidance on how to move from our schedule/spreadsheet-based fertigation program to a more plant-needs-sensitive program, including soil moisture monitoring, distribution uniformity assessments, and infrastructure upgrades like backflow-regulating valves. We also began to host UCCE research projects with him, including a 3+ year CropManage trial and a robust biostimulants trial. Because of the effectiveness of Andre’s recommendations, our irrigation team became highly motivated to upskill. Our lead irrigator began advising irrigation teams at other Good Farms subsidiaries and began hosting a company-wide monthly irrigation virtual team meeting that implemented standardized climate monitoring and nitrogen quick testing in over 7 locations. I can’t emphasize enough the importance and value of UCCE and the generosity of advisors like Andre.”

MAUREEN McGUIRE
CEO Farm Bureau of
Ventura County

Celery field near Santa Paula, CA.



Master Gardener Program

Welcome to Jill Tyler

In November 2022, we welcomed Jill Tyler as the new Master Gardener Program Coordinator. She has been a committed Master Gardener volunteer since 2019 and is thrilled to now support the program as a staff member. Jill has extensive experience working with volunteers in non-profit and government agencies.



Jill Tyler, new Master Gardener Program Coordinator.

Riding off into the Arizona sunset

Dr. James Downer retired in June 2023, after 37 years as a horticulture and plant pathology advisor with the University of California Cooperative Extension. His research focused on mulch, soil microbiology and disease suppression in mulched soils, diseases of shade trees and cultural practices to maintain landscape plants. Dr. Downer served as founder and advisor of the UC Master Gardener program in Ventura County and will continue as a training instructor and advisor in his emeritus role.

We thank him for his countless contributions to Ventura County. Dr. Downer now has ample time to pursue his love of shade trees, Shinrin roku (forest bathing), woodworking, horses, gardening, horticulture, and the study of plants and their biology. He divides his time between Ojai, CA and Portal, AZ.



Dr. James Downer (left) at his retirement party in June 2023.



Master Gardeners



Michael Murray, HAREC Master Gardener Volunteer of the Year in 2023.

Master Gardener volunteers say goodbye to the Faulkner Farm.

Saying goodbye to the Faulkner Farm

Master Gardeners and the public have always been charmed by the historic Faulkner Farm with its classic red barns in Santa Paula, home of the Hansen Agricultural Research and Extension Center (HAREC) since 1997. "I'm off to the farm," was a common response of Master Gardeners who volunteered at this location.

In 2004, the Master Gardeners established an educational demonstration site with theme gardens that hosted school field trips in both spring and fall, a 2-week youth summer camp, and public education workshops, e.g., on composting and vermicomposting. Many visitors toured and marveled at the gardens during the annual Ventura County Farm Day. It was also an important hands-on training site for new and continuing Master Gardeners volunteers. A hoop house, named The HOPE Shed, housed plant propagation activities, classes, plant giveaways and sales in the community. Master Gardeners also played an important role in assisting Farm Advisors with field research projects whose results were published and shared with commercial growers and home gardeners in Ventura County and throughout California.

Due to the impending move of HAREC, the volunteers said goodbye to their beloved Faulkner Farm in June 2023. Both plants and friendships were cultivated and nurtured during their time there. For the time being, the volunteers will provide assistance at the other eight demonstration gardens located throughout Ventura County. In 2024, they will break ground to establish educational gardens at their new home, a 114-acre farm near Camarillo.



Master Gardeners

Accomplishments 2022-2023

- 172 Master Gardener volunteers contributed 12,163 volunteer hours valued at \$386,783 (source: Independent Work Sector at \$31.80/hour).
- Provided Home Gardener Helpline support to 393 Ventura County residents.
- Hosted 51 public education events throughout the County that were attended by 1,224 residents.
- Each month, volunteers taught hands-on drip irrigation classes in partnership with Calleguas Municipal Water District to reduce water usage in home gardens.
- Designed and staffed an award-winning horticultural display at the Ventura County Fair with total attendance of 270,486 (source: Ventura County Fair).
- Formed new partnerships with CSU Channel Islands, Simi Valley Public Library, Santa Monica Mountains Fund – National Park Service Native Plant Nursery, Prototypes Women’s Center Oxnard, and Strathearn Historical Park and Museum (Simi Valley).

The Master Gardener Helpline: Steady help for home gardeners

In the past year, Helpline volunteers responded to 393 enquiries from the public on home gardening issues throughout Ventura County, with a preponderance coming from Ventura, Thousand Oaks, and Camarillo. In comparison, the Helpline fielded an average of 433 enquiries per year from 2010-2019. People called in with all kinds of questions:

- 51% asked about a specific plant or tree
- 23% had general questions about horticultural topics
- 10% asked about the Master Gardener program or MG-sponsored events
- 9% percent contacted us about pests: rodents, insects, and birds

As a result of attending **Master Gardener** public education classes:

76%
of participants are using plants that support pollinators, increasing the number and diversity of pollinating insects

.....

73%
improved food growing practices and eat more fresh fruits & vegetables

.....

63%
report spending more time outdoors in ways that foster improved mental health and overall well-being



Succulent display in the HAREC Demonstration garden.

Renovation of the Oxnard Historic Farm Park Vineyard

A group of Master Gardener volunteers has been working diligently over the past four years to renovate a small vineyard at the Oxnard Historic Farm Park, the original site of the Maulhardt family farm in Oxnard. The vines are offspring of Zinfandel vines grown on Santa Cruz Island over a century ago. Back in the day, the Maulhardt family also grew grapes for sacramental wine, and a small winery building at the site remains.

The volunteers have installed metal posts with trellis wires to support the vines. Every spring, a pruning class is held by Farm Advisor Mark Battany from San Luis Obispo County and/or Director Annemiek Schilder to train interested volunteers who then prune and tie up the vines. The vines need continuous care through the growing season to protect them from fungal diseases like powdery mildew and bunch rot. The volunteers hope to harvest enough grapes this fall to make wine to for fundraising purposes. The Oxnard Historic Farm Park is open to visitors from 9:00–11:00 a.m. every Tuesday and Saturday throughout most of the year.



Top: Director Annemiek Schilder demonstrating how to prune grapevines at the Oxnard Historic Farm Park in early March 2023.

Bottom: Zinfandel vines at the Oxnard Historic Farm Park in summer 2023.





Ventura County 4-H program Expands Youth Education Activities



In August 2022, Julie Salomonson took over as the Community Education Specialist leading the 4-H program for Ventura County with support from 4-H Advisor Liliana Vega, who was based in San Luis Obispo County (currently in San Diego County). Julie and Liliana worked to expand 4-H in the County beyond the community club model to include other modes of educational program delivery, such as:

- An after-school partnership with the City of Thousand Oaks Library, featuring agricultural literacy lessons, which provided an opportunity to reach east-County youth.
- A new partnership with the Agricultural Museum in Santa Paula, facilitating hands-on learning at Saturday community events.
- The 4-H/military partnership with the two Naval bases in Ventura County, Port Hueneme and Pt. Mugu were re-established helping youth learn leadership skills through hands-on learning.
- Farm field trips at the UC Hansen Agricultural Research & Extension Center were conducted with 4-H and Master Gardener volunteers. Over 400 youth from local schools received education on composting, pollination, and parts of the plant.
- The 4-H office is working to establish an after-school program with the Ventura County Housing Authority in the next school year.



Top-Left: 4-H program coordinator Julie Salomonson.

Above: Schoolchildren on a 4-H school field trip to HAREC learn from Master Gardener volunteer Sylvia Van Wagner.

4-H

Community 4-H Clubs continued to grow as did participation in popular County-wide events, such as Presentation Day, honing public speaking skills; Fashion Revue, featuring clothing design; and Large and Small Animal Livestock Field Day, practicing showing livestock and participating in knowledge-based competitions. 4-H Club members also participated in Ventura County Farm Day and the “Trick or Treat So Others Can Eat” event with Food Share.

Julie recently transitioned into another job and we are in the process of recruiting a new 4-H Coordinator. We thank Julie heartily for breathing new life into the Ventura County 4-H program and accomplishing so much in a short period of time! In addition, Gwyn Vanoni left her part-time position in the 4-H program in September 2022. We thank Gwyn for the many years of excellent support she has given the program.

Ventura County Forever 4-H Endowment established!

Under Julie’s leadership, the “**Ventura County Forever 4-H Endowment**” was established in spring 2023 with a donation of \$10,000 from the Ventura County 4-H Council. This endowment will be managed by the University of California. The interest will help sustain the Ventura County 4-H program into the future, which is especially helpful in light of variable state funding. After 5 years of growing the endowment, the distribution of the annual payout will be overseen by the County Director with advisory input from 4-H staff and 4-H Council. The funds will be used according to greatest need and will not be limited to any specific location or program within Ventura County.



Top: Master Gardener volunteers Susan Carter and Gisele Hamersley educate children on the parts of a plant during a 4-H school field trip to HAREC.

Middle: Ventura County 4-H member Laird Pidduck showing his Grand Champion Steer at the 2022 Ventura County Fair.

Bottom: Ventura County 4-H member Travis Smith with his Grand Champion Turkey at the 2022 Ventura County Fair.





Ventura County Prescribed Burn Association Formed

After four years of planning and capacity building, the Ventura County Prescribed Burn Association (PBA) successfully completed its first broadcast prescribed burn in June 2023. Working in close collaboration with the Ventura County Fire Department and Ventura County Air Pollution Control District, the PBA assisted in the burning of approximately 40 acres of grassland in the Ojai Valley. The primary goal of the burn was to control an invasive, noxious weed – yellow star-thistle (*Centaurea solstitialis*) – but the burn also had other benefits, such as providing training for fire agency personnel and PBA members; community organizing; and fuel reduction. The Ojai Valley Land Conservancy and the Nye Ranch both generously provided land and personnel to assist with the burning.



The Ventura County PBA is a community project led by the Ventura County Resource Conservation District, UC Cooperative Extension, and SureFire Training Academy. The mission of the organization is to provide the tools, training, education, and resources to conduct prescribed burns in a safe and effective manner that will reduce the threat of devastating uncontrolled wildfires. Range and Livestock Advisor Matthew Shapero is also adding a research component to these efforts. The burns in the Ojai Valley, for example, were instrumented and monitored before and after the burn to test for fire effects and for the efficacy of using fire to control yellow star-thistle.

Top: Yellow star-thistle flower.

Bottom: Singed yellow star-thistle after broadcast grassland burn in the Ojai Valley, June 2023.

Below: Members from the Ventura County PBA after the June 2023 burn, from left to right: Jim Roth (working on Fire Training Academy); Jeremy Zagarella (Pala Tribe); Michael Leicht (Ventura Brush Goats); Rich Atmore (RA Atmore & Sons); Mason Thurmond (Ventura County RCD); Sophie McLean (Ojai Valley Land Conservancy); Jamie Whiteford (VCRCD); Monica Matthews (VCRCD); Matthew Shapero (UCCE Ventura); and Woody Bouska (SureFire Training Academy).



Master Gardener demonstration garden at HAREC.





News from the Fruit Tree Front

Apple transplant pruning trial sheds light on establishment of young trees

Traditionally, deciduous fruit trees like apple, peach and almond are planted in the field with all of their branches removed. This is because when they arrive from the nursery, they have had no training at all. The goal of the tree manager is to create a strong scaffold that can carry a heavy load of fruit when the tree is older and bigger. Over the next 1–2 years, scaffold branches are selected and others are pruned off. However, new shoot growth comes at the expense of root growth, which can affect tree establishment.

A field trial with ‘Fuji’ apple was conducted at HAREC by Advisors Ben Faber and James Downer with assistance from field technicians Hernandez and Ramirez and staff research associates Valdes-Berriz and Zendejas. The objective was to study whether new trees get established better by not pruning them at planting and only selectively pruning the branches a year after planting. The treatments were: 1) unpruned and 2) pruned to a single stem. The treatments were imposed on May 1, 2022 and the trees were harvested and root and shoot biomass measured in January 2023.

The results showed that both canopies and root systems were significantly larger in unpruned trees than pruned trees. The next goal is to see whether unpruned trees also establish better in a commercial orchard and whether good tree scaffolds can be selected from existing branches.



Top: Young apple trees in pruning trial.

Bottom: Harvesting apple trees at end of trial.

Fruit Tree Front

Can Flower Gardens Improve Avocado Pollination and Pest Control?

'Hass' avocado has an alternate bearing cycle, that is, a large crop is often followed by a light crop. Fruit set is predominantly affected by the weather and may be reduced by cool nights, winter frosts and hot winds. Poor pollination due to sparse flower visitation by insects may also play a role. Can supplemental flower resources attract greater numbers and species of pollinators and improve fruit set?

Researchers from UC Davis working with Advisor Ben Faber set out to try to answer this question by planting small gardens within and at the edges of three local avocado orchards in 2016. Native bees, honeybees and other flower visitors were monitored on the garden plants and the avocado trees three times a year for seven years. The results showed that:

- The most abundant avocado visitors in all years were syrphid flies
- 105 bee taxa and 60 other insect taxa were recorded over 7 years
- *Ceratina*, *Halictus*, and *Agapostemon* were the most numerous native bee species observed
- The European honeybee, *Apis mellifera*, was found at all sites with or without gardens
- Bee visitation and pollinator diversity was greatest near gardens
- Highest visitation occurred during lowest-rainfall winters

While effects on yield were difficult to detect, gardens did attract more and diverse insects, including biological control agents, such as parasitic wasps and syrphid flies that also rely on the nectar and pollen provided by these gardens.



Top: Garden planted next to an avocado orchard in Ventura County.

Bottom: Syrphid flies, whose larvae are predators of aphids, are common pollinators of avocado flowers. (Photo: Susan Ellis, Bugwood.org)

Fruit Tree Front



Damage on avocado leaf caused by Avocado leaf roller/miner.

Identifying and Learning to Manage New Pests: The Case of the Avocado Leafroller

Pests invade new regions on a regular basis. Some go after agricultural crops and it's important to learn about their biology to assess if they are worthy of significant control efforts. A recent introduction in Ventura County is the Avocado leaf roller (*Caloptilia* sp.), discovered in 2021. This moth has a larval stage that tunnels within leaves and later causes the leaf to curl in on itself. The insect then pupates in the rolled leaf and emerges as an adult moth. While the insect causes some aesthetic damage on leaves, it doesn't pose much of a problem for established trees as it is only active in the spring on the new leaf flush. However, it can be a problem for newly planted trees, which may need to be protected. This knowledge calms growers' concerns and results in the use of fewer pesticides. Information on this insect was published in both a weekly blog ([No Longer A New Pest](#)) and quarterly newsletter ([Topics in Subtropics](#)).

Update on the Asian Citrus Psyllid and Huanglongbing Disease

Huanglongbing (HLB) disease, also called citrus greening, is a serious disease that has devastated citrus production in Florida and is also present in other southern US states, China, Mexico, and Brazil. It is caused by a bacterial pathogen (*Candidatus Liberibacter asiaticus*), which is vectored by the Asian citrus psyllid (ACP). ACP is an invasive insect, which has been present in Ventura County since 2010 and aggregates on young citrus leaves. As it feeds, it can acquire the bacteria from infected plant sap and inject them into healthy plants, causing new infections. The disease has been spreading in backyard trees in Los Angeles, Riverside, San Bernardino, Orange and San Diego Counties, and an eradication effort is underway. Recently, the bacterium was detected in ACP from residential citrus trees in Ventura County, which indicates that the disease may already be present in local trees. This is very concerning to local citrus growers.

UCCE Ventura collaborates fully with the California Department of Food and Agriculture's monitoring program and helps coordinate control measures that are formulated through the local ACP-HLB Task Force. The Master Gardener Program plays a key role in disseminating information to the public about the pest and disease at events, such as the County Fair and garden shows, as well as through their Help Line. Advisors Ben Faber and Hamutahl Cohen are participating in research from the University of Riverside investigating hydrogels for control of Argentine ants that "farm" psyllids for their sugary honeydew and protect them from predators and parasitoids, thereby impeding biological control.



Adult and immature Asian citrus psyllids. The latter produce waxy tubules to direct honeydew away from their bodies.

Tracking the Diamondback Moth in Ventura County

Diamondback moth is a devastating pest of cole crops, including cabbage and Brussels sprouts, in Ventura County and around the world. The larvae cause major economic damage by chewing holes in the leaves and flowers and are difficult to control. To understand how diamondback moth populations change over time and help growers avoid hot spots, Advisor Oleg Daugovich and his team have monitored adult male moths since February 2022. To attract and capture the moths, they used pheromone-baited traps in three areas of Ventura County.

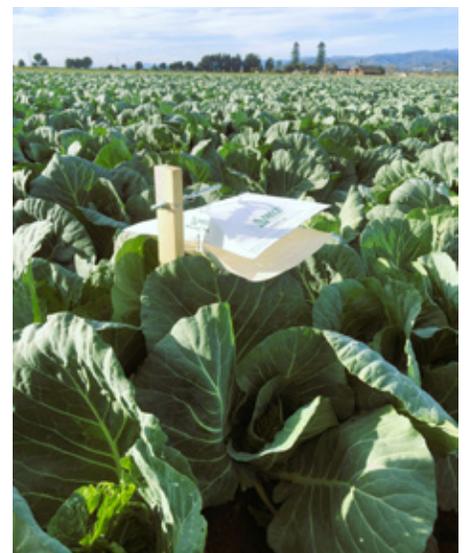
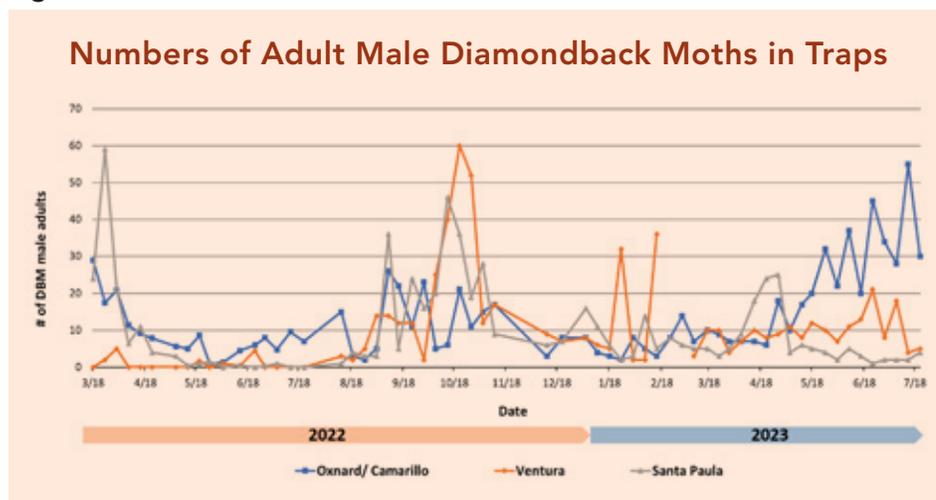
Trap counts increased in the warmer months of the year, with differences observed between the Camarillo-Oxnard, Ventura, and Santa Paula growing areas (Figure 1), which may be related to the temperature in each study area. There were differences between 2022 and 2023 as well. Overall counts were higher in 2023 and started to increase earlier in the year, especially in the Camarillo-Oxnard area.

In 2023, we also collected data on other landscape factors such as the presence of cole crops and their wild relatives, such as mustard to help growers predict if diamondback moth will become an issue in their fields and plan accordingly. Optimizing management of this pest is necessary due to the build-up of insecticide resistance, the limited efficacy of biological control products and a lack of resistant cultivars.

By doing this research, we have also found three species of parasitic wasps in diamondback moth larvae in Ventura County. These biocontrol organisms can play an important role in controlling this pest if they are preserved in fields and the surrounding landscape. We will be exploring this topic in future research focused on diamondback parasitoids in the fields and in natural vegetation, such as that found in agricultural ditches.

Managing diamondback moth in Ventura County will require an integrated approach that starts with understanding the seasonal and regional patterns of abundance of this pest and also includes insecticide resistance management and the preservation of beneficial predators and parasitoids.

Figure 1



Top: Diamondback moth larva (photo: Jack Kelly Clark, UC IPM).

Middle: Feeding damage on leaf by Diamondback moth larvae

Bottom: Diamondback moth trap in cabbage field. A pheromone lure in the trap attracts male moths.

Left: Diamondback moth abundance in three areas in Ventura County in 2022 and 2023.

Climate-Smart Agriculture Program Continues

In 2022, the California Department of Food and Agriculture announced its decision to restructure the Healthy Soils Program (HSP) and State Water Efficiency and Enhancement Program (SWEEP) grants to a block-style grant, administered by other agencies. The original grant structure will remain and will be open to farmers and ranchers at the end of 2023. In the meantime, our climate-smart agriculture Community Education Specialist Nicki Anderson has continued to engage with Ventura County's farming and ranching communities by educating, supporting and encouraging Healthy Soils practices.

Part of these efforts included a cover crop demonstration project, which was planted in late summer 2022 at HAREC. The project showcased cover crops for different purposes: biomass production, pollinator and beneficial insect habitat, nitrogen fixation, and soil regeneration. In addition to four large plots with different seed mixes, 35 single cover crop species were planted for observation. On December 14, 2022, a Cover Crop & Hedgerow Field Day was held at the site. The event was well attended, sparking much discussion and conversation that lasted long after the official programming ended.

Cover crop demonstration trial at HAREC, fall 2022.

Statewide specialists speaking at field day

- **Dr. Gordon Frankie**, a research biologist at UC Berkeley spoke about pollinators in avocado in relation to cover crops and hedgerows.
- **Dr. Elizabeth Scordato**, Assistant Professor of Biology at Cal Poly Pomona, spoke about native vegetation restoration to improve ecosystem services in citrus and avocado orchards.
- **Nic Anne Irvin**, Biological Control Specialist in the Hoddle Lab at UC Riverside covered integrated pest management tools for California citrus growers.
- **Brent Mossman**, a conservation agriculture specialist at the Ventura County Resource Conservation District, spoke about technical assistance for conservation programs.



"Oakttober" Provides Opportunities to Learn About Oaks and Tree Pests

UCCE Ventura is a member of the Ventura Tree Coalition, helmed by the VC Office of Sustainability. It is a consortium of public, private, non-profit, and academic organizations. This group endeavors to educate the public about tree planting and care and environmental benefits, such as during the first annual "Oakttober". In October, 2022, coalition members hosted 15 oak-focused activities, such as art exhibits, classes, restoration activities, tree plantings, and tree sales. UCCE Educator Julie Clark and Administrative assistant Patricia Rodriguez developed a 3-page handout on: *Growing California Oaks*; *Oak Tree Facts*; *California Oak Woodland Wildlife*. We also participated in two events:

- **Oak Trees Master Workshop** – Co-hosted with the VC Office of Sustainability and VC Conservation District on October 15, 2022, this event was attended by 23 people. Taught by UCCE Advisor James Downer, topics included oak health requirements, growing conditions, planting, and care. Oak planting followed the lecture. Oak saplings were donated for each attendee by Devil Mountain Wholesale Nursery in Fillmore.
- **Trail to Treat** – Hosted by Pleasant Valley Recreation and Park District at Camarillo Grove Park on October 22, 2022, and attended by 200 participants. This event offered exhibits by the park naturalist of local animals, a self-guided hike to treats, invasive tree pest outreach by UCCE, a Ventura Audubon booth, and vendors.



Top: UCCE Advisor James Downer with an oak sapling.

Bottom: The Trail to Treat event hosted by Pleasant Valley Recreation and Park District at Camarillo Grove Park on October 22, 2022.

Pierce's Disease-Resistant Grape Varieties Give Growers Hope

ANR News release, written by Saoimanu Sope, published Aug 22, 2022

[UC Cooperative Extension Ventura County](#) recently hosted a Pierce's disease grapevine demonstration meeting at [Ojai Vineyard](#), in collaboration with owner and long-time winemaker Adam Tolmach. Participants were invited to taste wines made from the new varieties as well as examine the vines. On July 29, Andy Walker, emeritus viticulture professor at UC Davis, discussed his success breeding for PD resistance, which produced five new grape varieties that were released in 2020. Pierce's disease is caused by the bacterium *Xyella fastidiosa*, which kills plants by clogging their water-conducting system. Glassy-winged sharpshooters spread the bacteria, which can also move vine to vine. "Most of what you've heard is true about Pierce's disease. But in reality, when you see symptoms, and they are distinctive and consistent, those vines are dead. And if they're not dead then, they will be very soon," said Walker.

Unfortunately, PD cannot be resolved with the use of insecticides alone because PD is transmitted by vectors that often live in nearby wooded areas and landscapes. The "obvious solution," as Walker puts it, is resistance. But the downside of breeding for resistance is twofold: the species you need for PD resistance are "not very good and have a lot of faults" and grape breeding takes too long. Walker persevered and discovered that *Vitis arizonica* located in Northern Mexico has high resistance and does extremely well against PD. Many American grapes have strong flavors that some find incompatible with fine wine. The classic is the "foxy" flavor of Concord grapes. *V. arizonica*, however, has fruit characteristics that are relatively neutral. "The resistance in *V. arizonica* was homozygous and dominant," explained Walker. "What does that mean? It means that both forms of the resistance gene had an effect, an overwhelming effect, and every progeny from crosses to this *V. arizonica* was resistant to Pierce's disease."

Dr. Andy Walker, UC Davis grapevine breeder, talking about breeding disease-resistant grapevines.



Giving Hope

After producing about 5,000 seedlings over several years of crosses, Walker and his team began screening for features such as size and color with high resistance being top priority. The PD-resistant varieties resulted in two whites and three reds: Caminante blanc, Ambulo blanc, Paseante noir, Errante noir and Camminare noir. When learning about this breakthrough, Tolmach jumped at the opportunity to grow Walker's varieties. "I'm growing these for my own personal pleasure, and it's been a really fun project because you're taking something that you don't have any idea what the quality is going to be like," said Tolmach.

Tolmach admits to having challenges growing the plants. "We spent an excessive amount of time thinning the vines," he said. "I fumbled a little bit at times and had not been completely happy, but each year made a teeny tiny bit of progress." Despite not knowing what to expect, Tolmach was shocked when he realized how good the wines are, referring to them as "worthy and special." "People expect hybrids not to be good," he said. "They taste different, but they are an example of what exist beyond Cabernet and Chardonnay. People are interested in the obscure and environmentally more sound." The Ojai Vineyard is in their fifth year of growing Walker's varieties and Tolmach appreciates that they can be grown without the use of insecticides. "It's unusual to have a vineyard that is so healthy, and these vines are happy," he said.

Walker and Tolmach hope to reassure growers and winemakers that these varieties are worth the investment and encourage them to champion this message. "The biggest problem is getting [winemakers] to spread information to consumers and convincing them to try [the wine]," explained Walker. During a past wine tasting, Tolmach shared that a group of visitors including wine experts mistook the wine that Tolmach presented as Syrah – the varietal Tolmach is known for. In fact, the wine was Walker's Paseante noir. It was a testament to the quality of these varietals, according to Tolmach. All five varieties with high PD resistance are currently available at most nurseries in California, including [Novavine](#), [Sunridge](#) and [Wonderful](#) nurseries.



Top: Dr. Annemiek Schilder introducing Adam Tolmach, Ojai Vineyard owner and winemaker.

Above: Tasting wine of Pierce's disease-resistant grapes.





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Revenue of top 3 crops of Ventura County for 2020

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- Lemons - \$216,000,000
- Avocados - \$179,000,000

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*Award-winning Master Gardener Display
at the 2022 Ventura County Fair.*

Thelma Hansen Symposium: The Future of Water in Agriculture

A free Zoom webinar series entitled “*The Future of Water in Agriculture*” was sponsored by the Thelma Hansen Fund and held on May 23–25, 2023 from 4:00–5:30 p.m. The series aimed to increase attendees’ understanding of the complex issues surrounding the availability, quality and economics of water, particularly as they pertain to coastal agriculture in Southern California. The following presentations were made:

Tuesday, May 23: Water Availability

- *Opening remarks* – Kelly Long, Supervisor Ventura County District 3
- *Long-term forecasting of trends in California water management* – Erik Porse, PhD, Director, UC ANR, California Institute for Water Resources
- *Groundwater level changes and water well drilling along California’s Central Coast and around the globe* – Scott Jasechko, PhD, Bren School of Environmental Science & Management, UC Santa Barbara

Wednesday, May 24: Water Quality

- *Focus on regional water quality* – Norma Camacho, Chair, Los Angeles Regional Water Quality Control Board
- *Nitrate, pesticides, and sustainable groundwater quality management in agricultural landscapes* – Thomas Harter, PhD, Department of Land, Air and Water Resources, UC Davis
- *New regulations affect water quality management in Ventura County* – Jodi Switzer, Ventura County Agricultural Irrigated Lands Group

Thursday, May 25: Water Economics

- *Economics of water in California agriculture* – Richard Howitt, PhD, Emeritus Professor, Center for Watershed Sciences, UC Davis
- *Water Markets: The importance of good design* – Matthew Fienup, PhD, Executive Director, Center for Economic Research & Forecasting, California Lutheran University



Argentina, anti protecting scale, green (photo: UC IPM)

Thelma Hansen Symposium

Thelma Hansen Symposium Speakers



KELLY LONG is Ventura County Supervisor for District 3 and Vice Chair of the Board of Supervisors. She was first elected to the Ventura County Board of Supervisors in 2016 and re-elected in 2020. She has a BS degree in Mechanical Engineering from the University of California, Long Beach. She serves as chair of the board of directors of the Fillmore Piru

Basin Groundwater Sustainability Agency (FPBGSA). In that capacity, she led a group of farmers, environmentalists, and water professionals to complete the final version of their Groundwater Sustainability Plan which will help preserve the Santa Clara River Watershed Basin. She currently also serves on the board of directors of the Fox Canyon Groundwater Management Agency (FCGMA).



SCOTT JASECHKO is an Associate Professor of Water Resources with the Bren School of Environmental Science & Management at UC Santa Barbara. He has an MS from the University of Waterloo, PhD from The University of New Mexico, and was on the faculty at the University of Calgary before joining UCSB in Nov 2017. Scott's research uses large

datasets to understand how we can preserve the quality and quantity of river water and groundwater resources around the globe. Scott's work has been recognized by the Horton Hydrology Research Award from the American Geophysical Union (2013), the Young Scientist Award from the Canadian Geophysical Union (2016), and the Kohout Early Career Award from the Geological Society of America (2018).



ERIK PORSE is the Director of the California Institute for Water Resources. He has a PhD in Civil and Environmental Engineering from UC Davis and a Master of Public Policy degree from George Mason University. Most recently, Erik was a research engineer with the Office of Water Programs at California State University, Sacramento and an assistant

adjunct professor with UCLA's Institute of the Environment and Sustainability. His professional experience includes international work and teaching in Mexico, Europe, Japan and East Africa. In California, he has contributed to state and regional studies for safe drinking water, efficient urban water use, sustainable groundwater management, water reuse, beneficial uses of stormwater, and environmental finance.



NORMA CAMACHO is the Chair of the Los Angeles Regional Water Quality Control Board. She is also a member of the Stillwater Sciences Board of Directors. Stillwater Sciences uses scientifically based and cost-effective approaches to solve complex natural resources challenges and restore ecosystems. She is the former Chief Executive Officer of Valley

Water, which provides safe, clean water for Silicon Valley. Prior to that she held several positions at the Ventura County Public Works Agency. She holds a BS degree in Civil Engineering from Stanford University. Her passion is developing creative and collaborative solutions within watersheds to benefit the environment and communities.



Thelma Hansen Symposium



THOMAS HARTER is the Nora S. Gustavsson Endowed Professor of Water Resources in the Dept. of Land, Air, and Water Resources at UC Davis. He has a BS and MS in Hydrology from the Universities of Freiburg and Stuttgart, Germany, and a PhD in Hydrology from the University of Arizona. His research and extension program focuses on groundwater and agriculture,

such as nonpoint-source pollution of groundwater, sustainable groundwater management, groundwater resources evaluation under uncertainty, groundwater-surface water interaction, and contaminant transport. His research helps decision- and policy makers effectively address sustainable groundwater management and water quality issues in agricultural regions.



RICHARD HOWITT is professor emeritus of Agricultural and Resource Economics at the University of California, Davis. He has a PhD in Economics from the University of California, Davis. He has published widely on agricultural and environmental resource allocation issues, with special emphasis on agricultural land use, water markets and the application of optimization

models to resource allocation questions. He is a member of the Western Agricultural Economics Association, Watershed Center's Delta Solutions Group, and is currently engaged in an analysis of land use patterns in the Delta. His research interests include building computer models of how land and water are used, and their calibration to G.I.S.-based data sets.



JODI SWITZER is the Water Program Director for the Farm Bureau of Ventura County. Her primary role is as manager of the Ventura County Agricultural Irrigated Lands Group (VCAILG), where she leads a 3rd party coalition aimed at helping agricultural landowners and growers comply with water quality regulations. With over 13 years of experience in water

resource regulatory compliance, she previously served as the Environmental Compliance Manager at her alma mater, the University of California, Santa Barbara. There, she managed all air and water environmental regulatory programs for the campus. Prior to that she worked at an environmental consultancy firm assisting a variety of clients with environmental regulatory compliance needs.



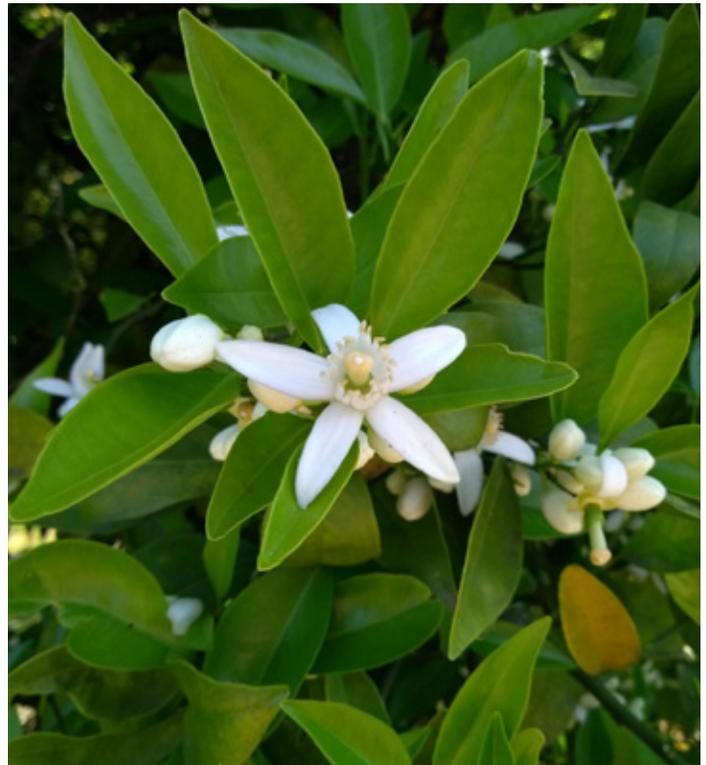
MATTHEW FIENUP is Executive Director of the Center for Economic Research & Forecasting at California Lutheran University and Associate Professor of Economics. He earned his PhD from the Bren School of Environmental Science & Management at UC Santa Barbara. Matthew is an applied economist who specializes in

econometrics, economic policy analysis, land use, and environmental markets. He was integral to the design and implementation of the Fox Canyon Water Market, the first groundwater market to be implemented in California under SGMA. Matthew has served as Exchange Administrator for the Fox Canyon market for five years and is now involved in the design of groundwater markets for three GSAs in the Central Valley.



Thelma Hansen Fund Awards Research and Education Grants

[The Thelma Hansen Competitive Grant program](#) awards research, education and extension grants to benefit and sustain agriculture and natural resources in Ventura County. After a 2-year hiatus, a call for proposals was released in November 2022 with a due date of January 20, 2023. Education projects were limited to \$10,000 for 1 year, and research proposals were limited to \$25,000 total for up to 2 years. Sixteen applications were received and were reviewed by the HAREC Research Advisory Committee for scientific merit and by the UCCE Advisory Board for fit to Ventura County priorities as stipulated in the call for proposals. Nine proposals (3 education and 6 research) were selected for funding, for a total of \$156,494. We anticipate releasing another call for proposals in November 2023 and look forward to sharing the results of the funded projects with you as they are completed.



Project Title	Lead Author, Affiliation	Summary	Funded Amount (US \$)
EDUCATION GRANTS			
Ventura County water education and bus tour	Kelle Pistone, Association of Water Agencies of Ventura County	The project will offer a tour to increase public understanding of the issues surrounding the reliability, safety and quality of water, a critical resource for the county's agricultural industry.	6,000
STEM Career Pathways in Agriculture Program	Mary Maranville, SEEAG	The Ventura County STEM Career Pathways in Agriculture Program is a classroom presentation offered free of charge to local middle and high school students to inform them about advanced business, technological and science-based careers in agriculture.	9,186
Impact of wildfires and floods on Ventura County natural habitats	Christopher Smith, Villanova Preparatory School	Guided by teachers and scientists, >150 high school students (over 3 years) will be trained to conduct flora, fauna and entomological surveys, and geochemical analysis of natural areas that have sustained wildfire and/or severe flooding in the past 5 years.	6,770

Thelma Hansen Fund

Project Title	Lead Author, Affiliation	Summary	Funded Amount (US \$)
RESEARCH GRANTS			
Ventura County farmworker housing study and action plan	Gabrielle Vignone, House Farm Workers!	A countywide Farmworker Housing survey will identify agricultural trends, labor patterns, housing needs, and land use barriers. Interviews of employers and farmworkers will be conducted by the Ventura County Farmworker Resource Program.	25,000
Saving botany: a discipline in decline	Joseph Algiers, National Park Service	At the Santa Monica Mountains National Recreation Area and Channel Islands, students will gain valuable botanical and ecological skills while implementing an Early Detection and Rapid Response program for damaging invasive plant species in the region.	24,662
Determining economic viability and sustainability of cilantro and parsley production...in Ventura County	Etaferahu Takele, UCCE San Bernardino	Production cost and profitability analyses will be conducted for parsley and cilantro to assist growers in making sound production decisions to ensure economic sustainability of these crops in Ventura County.	24,181
Role of year-round vegetation in ditches as refugia for key insect pests and insect natural enemies affecting Ventura County crops	Oleg Daugovich, UCCE Ventura	The role of natural vegetation in agricultural drainage ditches in Ventura County will be studied to determine if they serve as refugia for arthropod pests and their predators and parasitoids.	24,427
Developing the rosette weevil for biological control of star-thistles	Tom Dudley, UC Santa Barbara – Marine Science Institute	This project will investigate the ability of the rosette weevil to control yellow star-thistle, an invasive and fire prone weed in grasslands in Ventura County.	25,000
Sheet mulching	James Downer, UCCE Ventura	Sheet mulching (applying wood chips on a layer of cardboard) will be compared to applying wood chips alone for weed control, effects on oak tree growth, root density, soil properties and labor costs.	11,268
TOTAL			156,494



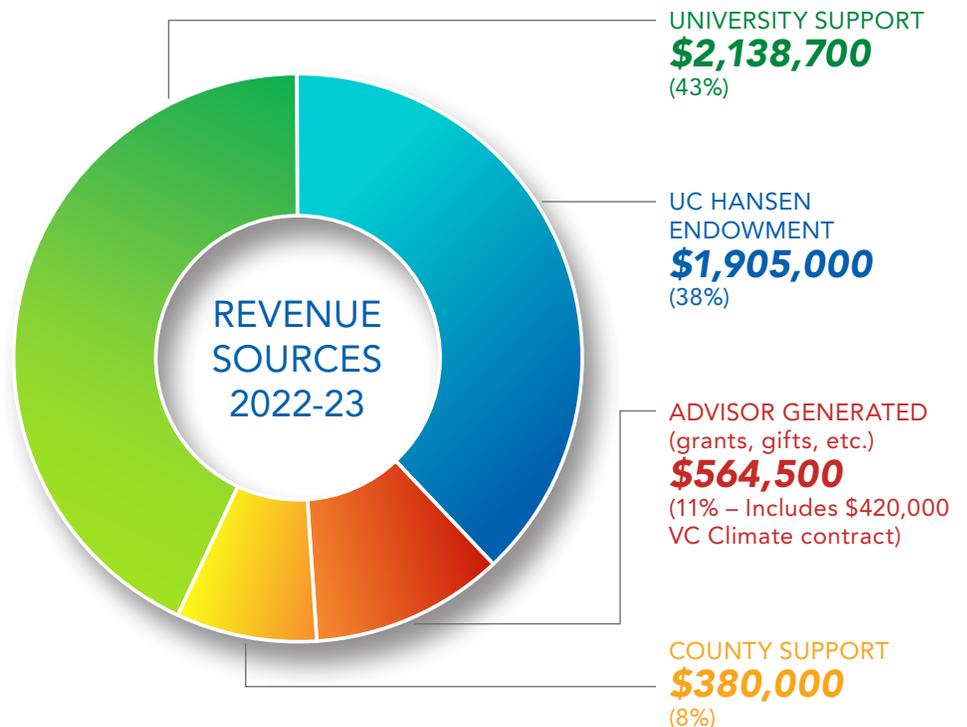
Thelma Hansen

A native of Ventura County, Thelma studied mathematics at UC Berkeley in the early 1900s. Upon graduation, she returned to the family farm in Saticoy. Her generous bequest in 1993 created the Thelma Hansen Fund, a UC endowment that supports and maintains University research and extension activities for the sustainability and benefit of agriculture and natural resources in Ventura County.

It is estimated that for every **\$1** in agricultural research and extension,



there is a return of **\$20** to the community.
Alston et al., 2010



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Lake Casitas on a misty morning.

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From left to right, top: Oleg Daugovish, Ben Faber, Rob Straser, Hamutahl Cohen, Brandy McCarthy, Stephanie Gallimore, Kathy Speer, Gina Ferrari, Adam Novicki, Jill Tyler, Julie Clark, Matthew Shapero.

Bottom: Annemiek Schilder, Maripaula Valdes-Berriz, Jojo, Nicki Anderson, Siomara Zendejas.

Not pictured: Ron Entrekin, Santos Ramirez, Jose Hernandez, Andre Biscaro, James Downer, Julie Salomonson, Patricia Rodriguez, Gwyn Vanoni, Heather Johnson, Chris Greer, Etaferahu Takele.

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Patricia Rodriguez in UCCE booth at the annual meeting of the Farm Bureau of Ventura County.

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Edited by **Annemiek Schilder**
Design by **County of Ventura, GSA Business Support**
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