

Introduction

The Cooperative Extension Service was created by the Smith-Lever Act in 1914 as a county-based outreach program of land grant universities to educate rural Americans about advances in agricultural technology and home economics. The University of California Cooperative Extension (UCCE) is part of the division of Agriculture and Natural Resources (UC ANR), a statewide network of researchers and educators who work on issues pertinent to agriculture, natural resources and human development. UCCE has been active in Ventura County for 110 years and is supported in part by the County of Ventura. Statewide programs well-known to the public include 4-H, Master Gardener, Environmental Stewards, and Master Food Preserver.

UC ANR has offices in 58 counties and operates nine research and extension centers across the California, one of which is the Hansen Agricultural Research and Extension Center (HAREC) in Camarillo. UCCE-based advisors (academics) and Community Education Specialists work in teams to extend practical, trusted, and science-based information. We also leverage the expertise of campus-based faculty and researchers at UC Berkeley, UC Davis, UC Riverside, UC Santa Barbara, UC Irvine, UC Merced and UCLA. Additionally, collaborations with other state and federal agencies broaden our research capacity and strengthen our outreach efforts.

Academics and staff operate out of a county office building located at 669 County Square Drive in Ventura. Agricultural research is conducted at HAREC as well as on local farms in collaboration with growers and ranchers. Natural resources research and outreach takes place in natural areas around the county in collaboration with communities, government agencies and private sector groups.

What our advisors do

Advisors are academics with MS or PhD degrees who conduct applied research relevant to local needs. They extend science-based knowledge and support to farmers, nurseries, allied agricultural and horticultural industries and communities in Ventura County. The work of our advisors contributes to the economic viability of Ventura County's agricultural industry, which is valued at over \$2 billion annually, and helps protect open space and natural resources. For example, they help growers reduce costs by increasing production efficiencies and yields through improving soil health and best practices in nutrient management and irrigation. Our advisors also provide advice on management of invasive and endemic pests and plant diseases, and work with farmers and industry groups to anticipate market changes and explore the viability of new crops. Increasingly, our advisors are helping producers adapt to a changing climate, including drought, fire and temperature extremes.

Agriculture and allied industries provide significant income and value to Ventura County by providing numerous jobs, fresh and nutritious locally grown foods to the population, open/green space in the landscape, and protection from wildfires as irrigated fields and orchards constitute natural firebreaks. Agriculture is a highly competitive business with narrow profit margins that requires cutting-edge and targeted research and outreach in order to solve production problems to remain profitable. Ventura County producers face many threats, including Huanglongbing (citrus greening), a deadly bacterial disease of citrus transmitted by the Asian citrus psyllid; invasive shothole borers attacking landscape and crop trees; and diamondback moth, a destructive insect pest of cole crops. Without continuing research and education, Ventura County agribusiness would become less competitive in local, national and global markets.

Current Academic Staff

On April 1, 2024, Shannon Klisch, MPH started as **Area County Director** for San Luis Obispo (SLO), Santa Barbara (SB) and Ventura (VC) Counties. Former County and HAREC Director Annemiek Schilder will continue as HAREC Director.

Advisor	Discipline	Programmatic Coverage
Andre Biscaro, M.S.	Agronomy and Soil Science	Irrigation and nutrient management in vegetable and berry crops
Hamutahl Cohen, Ph.D.	Entomology	Pests and beneficial insects in Ventura County Ag. landscapes and ecosystems
Oleg Daugovish, Ph.D.	Plant Science	Production of vegetable and berry crops
Ben Faber, Ph.D.	Soil Science	Production of avocado, citrus, subtropical fruits, water quality, Climate Smart Agriculture Program
Annemiek Schilder, Ph.D. (HAREC Director)	Plant Pathology	Disease management in berry crops, grapes, vegetables; sustainable crop production
Emma Volk, M.S.	Production Horticulture	Contained environment, nursery, floriculture and ornamental plant production. Advisor to VC and SB Master Gardener Programs

Area advisors based in other counties with responsibilities in Ventura County

Chris Greer, Ph.D. (San Luis Obispo County)	Plant Pathology, Integrated Pest Management	Integrated pest management of agricultural crops, viticulture
Etaferahu Takele M.S./M.A. (Riverside County)	Farm Management/ Agricultural Economics	Agricultural economics of subtropical fruit crops (citrus, avocado), vegetable crops, field crops

What program and support staff do

Our program and support staff assist the advisors and statewide programs by developing and delivering educational and outreach programs for farmers, industry groups, youth, families, homeowners, land and resource managers, and a range of community-based organizations. Highly trained Community Educators (Community Education Specialists [CES]) with BS or MS degrees work directly with the clientele we serve, and may recruit, train and coordinate local volunteers. Laboratory and field assistants and staff research associates (SRAs) provide research and outreach support to the advisors. Administrative staff provide support in fiscal and other administrative matters to the whole team.

We leverage the skills and expertise of about 250 Master Gardener and 4-H volunteers to help us deliver educational programs throughout Ventura County to promote sustainable gardening practices, improve water use efficiency, slow the movement of exotic pests, support integrated pest management, and promote positive youth development and leadership skills.

Current Program and Support Staff

UCCE Staff	Position	Program or Support Area
Nicole Anderson	Comm. Educ. Specialist 3	Climate Smart Agriculture Project
Julie Clark	Comm. Educ. Specialist 3	Natural Resources and Emerging Tree Pests (85%)
Veronica Gonzalez*	Comm. Educ. Specialist 2	4-H Program
Jill Sarick Santos	Comm. Educ. Specialist 2	Environmental Stewards Program
Jill Tyler*	Comm. Educ. Specialist 3	Master Gardener Program
Maripaula Valdes-Berriz	Staff Research Associate	Research and Extension Programs
Siomara Zendejas	Staff Research Associate	Research and Extension Programs
Gina Ferrari	Field Assistant (40%)	Research and Extension Programs
Abigail Brondos	Laboratory Assistant (40%)	Research and Extension Programs
Lindsey Torres*	Program/Admin. Assistant	UCCE Office

HAREC Staff (Administrative staff also support UCCE Ventura)

Kathy Speer	Administrative Officer	Administrative Management
Brandy McCarthy	Administrative Assistant	Business Services
Stephanie Gomez Gallimore	Administrative Assistant	Facility Coordinator/Purchasing
Adam Novicki	Farm Supervisor	HAREC Superintendent
Jose Hernandez Alvarez	Senior Ag Technician	HAREC Field support
Santos Rodriguez Ramirez	Senior Ag Technician	HAREC Field support

**Staff supported fully or in part by the County.*

Impacts

The advisors and staff comprise an innovative and effective team that serves rural and urban communities in Ventura County. Our large volunteer base is also critical to our program delivery. We make over 100,000 contacts with clientele every year, including during farm visits, grower and commodity meetings, workshops, symposia, field and demonstration days, phone calls, the Master Gardener Help Line, public events, 4-H projects and events, the Ventura County Fair, etc. While the advisors (academics) and some of the program and support staff are funded by the University of California, the remainder of the salaries and activities are funded by private gifts and endowments, competitive grants and the County of Ventura. The advisors and staff secure over \$1 million annually in competitive grant funding from federal and state sources to address priority needs of Ventura County.

GOALS FOR 2024-2025

Below is a description of the individual research and outreach agendas of the academic staff and Community Education Specialists for the upcoming fiscal year (July 1, 2024 – June 30, 2025).

Shannon Klisch, MPH is the Area County Director for San Luis Obispo, Santa Barbara and Ventura Counties. Shannon's expertise spans school and community health, nutrition security, food safety, enhanced access to local food and agriculture, and youth engagement. In her new director role, Shannon is committed to ensuring that UCCE on the Central Coast is well-run, well-resourced, widely recognized, and responsive to the communities we serve. She looks forward to engaging with UCCE Ventura stakeholders to further the UC ANR mission and connect the power of UC research with the knowledge of local communities to improve the lives of all Californians.

Dr. Annemiek Schilder continues as Director of the Hansen Agricultural Research and Extension Center (HAREC) in Camarillo. She provides leadership as well as administrative and programmatic oversight for HAREC. She will continue to work with stakeholder groups, the UCCE Advisory Board, UCCE Ventura personnel and UC ANR Leadership to further develop and realize the vision for the new Hansen Agricultural Research and Extension Center (HAREC 2.0). She will also work to further research and education partnerships with California State University Channel Islands, Ventura College, and local high schools. In spring 2025, she will organize the Thelma Hansen Symposium on the topic of biodiversity and biological control of pests. Dr. Schilder's research and extension goals for the coming year are to evaluate cover crops and soil amendments for their effects on soil health, weed suppression and crop growth and yield; evaluate the efficacy of biological control products for disease control in vegetable and fruit crops; support clientele with plant disease diagnoses and management recommendations; and provide disease management information via meetings, webinars, and newsletter articles.

Andre Biscaro, MS is the Irrigation and Nutrient Management Advisor. The focus of his research and extension program is to create information and tools that help vegetable and berry crop growers, farm managers and crop consultants optimize water and fertilizer use efficiency for improved yields, environmental sustainability and regulatory compliance. This year, Mr. Biscaro will complete on-going nitrogen removal and nitrogen uptake projects in the main vegetable crops in Ventura County. This research will enable conventional and organic farmers to determine the optimal rate and time of nitrogen fertilization to optimize profitability while minimizing environmental impacts, such as nitrate leaching and runoff. It will also support growers in addressing the new Ag Order requirement of reporting crop nitrogen removal. Mr. Biscaro will also continue to collaborate with the Farm Bureau of Ventura County and the California Department of Food and Agriculture (CDFA) to develop educational materials for Nitrogen Management Plan Self-Certification Workshops, to assist growers in complying with new Ag Order 4.0. Mr. Biscaro will also complete an ongoing research project to assess the feasibility of using drip tape as the main irrigation method for establishing strawberries. Preliminary results are very promising and indicate significant potential for water savings compared to overhead sprinklers, where most of the water is wasted. He will complete the first version of a user-friendly, free online irrigation calculator designed to assist irrigators on decisions of how long to irrigate. Finally, Mr. Biscaro will continue training growers and farm managers in best irrigation practices, using soil moisture sensors, improving salinity management, and assessing the impact of climate change on Ventura County agriculture.

Dr. Hamutahl Cohen is the Entomology Advisor. She supports the vegetable, orchard, and berry industries in Ventura County and Los Angeles County with applied research and extension activities that promote sustainable pest management. She will develop collaborations with faculty and staff at the

University of California, California State Universities, Ventura County Farm Bureau, California Department of Food and Agriculture, and other organizations to develop a suite of control methods for pests in the region while also accounting for environmental protections and human health. For example, Dr. Cohen will be working on increasing education around invasive species and their impact in Ventura County, on addressing pesticide resistance and control of Diamondback moth in cole crops, on mite control in strawberries, on conserving endangered pollinators through sustainable agriculture, and on other entomological issues. She will extend the latest research to the agricultural community and to members of the public through presentations at meetings, social media, factsheets, newsletters, blogs, and non-technical reports. She will also assist the Master Gardener Helpline with insect identification where needed.

Dr. Oleg Daugovish is the Row Crops Advisor. He supports the vegetable and berry industries (two of Ventura County's largest crop areas) with applied research and extension activities to solve a wide range of production problems. He works with multidisciplinary teams from the University of California on the development of disease-resistant strawberry cultivars, as well as on anaerobic (biological) soil disinfestation and precision fumigation for control of soilborne diseases in strawberries. In 2024-2025, Dr. Daugovish will continue evaluating celery breeding lines for resistance to *Fusarium oxysporum* *apii* race 4 and 2 in trials in growers' fields. He will continue anaerobic soil disinfestation (ASD) demonstration trials with different carbon sources as well as planting-hole applied steam for control of charcoal rot and yellow nutsedge in strawberries. He will also evaluate the role of water- and salt stress in predisposing summer-planted strawberry to charcoal rot in new UC Davis cultivars. Furthermore, he will assess field performance of greenhouse-produced versus field-produced strawberry nursery stock. Dr. Daugovish will continue to assess the efficacy of variable-rate (precision) fumigation for soilborne disease management in strawberries. For mite control, he will evaluate reduced-risk miticides for safety to beneficial species and efficacy on spider mites. He will work on completing and disseminating diamondback moth management information for cole crops and will document the risks and benefits of vegetation in irrigated ditches near fields with respect to hosting diamondback moth as well as beneficial organisms. He will also work on revising the Organic Strawberry Production Manual.

Dr. James Downer is Advisor Emeritus in Environmental Horticulture and Plant Pathology, focusing on plants in urban landscapes, particularly trees and tree health. He retired in 2023 but is still involved in some research projects and serves as a resource on environmental horticulture issues. He will evaluate the effects of sheet mulching (applying a layer of cardboard and wood chips on the soil surface) versus wood chip mulch alone on weed pressure and oak tree growth.

Dr. Ben Faber is our Soils, Water, and Subtropical Crops Advisor working with the citrus and avocado industries and smaller farms growing subtropical fruits in Ventura and Santa Barbara Counties. Dr. Faber's work involves "scouting" new crops for Ventura County farmers. In the next year, Dr. Faber will continue his research on coffee and tea cultivars; water quality and application on farms; several projects on mandarins; assessing lemon and avocado rootstock performance for disease resistance and productivity; avocado water requirements; avocado pollination and the effects of introduced pollinator gardens on beneficial insects; improved avocado adaptation to climate change; efficacy and potential phytotoxicity of herbicides on avocado and citrus; and the study of key pests in his commodity areas, including Asian citrus psyllid which vectors Huanglongbing disease, and Argentine Ant which increases the prevalence of such pests as citrus scale and mealybug. He is also studying the effects of fire on soil characteristics and is involved in the California Farm Demonstration Network project studying the effects of cover crops on soil health and weed suppression. He will continue his successful avocado grower meetings and provide other educational outputs throughout the year, including his popular newsletters and blogs.

Matthew Shapero, MS, who was the Livestock and Range Advisor for Ventura and Santa Barbara Counties departed last fall to pursue other career opportunities. We have requested to refill his position and are awaiting approval.

Emma Volk, MS is the Production Horticulture advisor for Ventura and Santa Barbara Counties. She supports the ornamental nursery, vegetable nursery, floriculture, and controlled-environment industries. Emma will develop relationships and collaborate with local growers and stakeholders, staff at the University of California, Ventura County Farm Bureau, and other organizations to support sustainable pest, disease, and water management. She will work on research and education regarding fertilizer management, greenhouse water quality control, and biological pest control. For example, she will conduct research on optimal NPK fertilizer rates for top CA transplants, developing recommendations for growers in her counties and statewide. She will communicate new research and educational resources through the UCCE website, factsheets, newsletters, and presentations. Additionally, Emma will serve in an advisory role to the Ventura and Santa Barbara Master Gardener programs. She will support education on sustainable gardening, ensure the programs engage in statewide programmatic initiatives, and supervise the coordinators for both county programs.

Dr. Chris Greer is an Area Advisor in Integrated Pest Management of agricultural/horticultural crops. He is based in San Luis Obispo County and also has responsibilities in Santa Barbara and Ventura Counties. His plan for 2024-25 is to continue to conduct drone flights to capture multispectral imagery for an areawide USDA project on “Site-specific soil pest management in strawberry and vegetable cropping systems using crop rotation and a needs-based variable rate fumigation strategy” at Ventura County locations. Images are processed to create vegetation indices that can be used to monitor crop health under different treatments, in different areas of the field throughout the season and from one season to the next. In addition, Dr. Greer will collaborate on a project, “Celery breeding for resistance to *Fusarium oxysporum* f. sp. *apii* race 2 and race 4”. He will oversee field evaluations of celery varieties and lines in field trials in Santa Maria, and may assist with a similar trial in Ventura/Oxnard as needed. Dr. Greer is available to conduct drone flights and multispectral imagery at other researcher’s trials in Ventura County, if needed.

Etaferahu Takele, MS/MA serves as an Area Farm Management Extension Economist. She is based in Riverside County but covers all of Southern California including Ventura County. Her extension and research programs cover production economics, financial and investment analysis for tree and vegetable crop production in southern California. Research programs include analyzing economics of new crops using cost-of-production and marketing analyses, and comparing profitability of alternative production practices. Extension programs have focused on profitable enterprise selection, financial and risk management, and assisting small farms and minority clientele in identifying high-return new and specialty crops. This coming year, Takele will collaborate with the farm advisors in Ventura County to conduct educational programs for clientele on profitable and sustainable production and business practices via the quarterly avocado seminar series and the Topics in Subtropics Newsletter. She will continue collaborating with Oleg Daugovish to look at costs of production and profitability of cilantro and parsley in Ventura County.

Nicole Anderson (CES 3), our Climate Smart Agriculture Specialist, will continue her work on the California Department of Food and Agriculture (CDFA) Healthy Soils Program (HSP) and State Water Efficiency and Enhancement Program (SWEEP). The HSP offers farmers incentives to apply practices that sequester carbon and improve climate resilience on their farms, whereas SWEEP provides funding to farmers for enhancing water use efficiency and reducing greenhouse gases on their farms. As the

program shifts to a block-style grant program, the Climate smart agriculture specialist will provide technical assistance to farmers applying for grants and grant recipients in the county. Workshops and trainings will be conducted to promote the program, and offer insight into how to best perform the practices outlined in the grants. She will also participate in the new California Farm Demonstration Network project funded by a UC Climate Action grant which aims to demonstrate cover crops, reduced tillage and other practices to spur adoption to improve soil health and climate resilience in the Central Coast region.

Julie Clark, MUP (CES 3) is the Natural Resources Outreach Specialist. She will continue to coordinate outreach efforts on invasive urban and wildland forest pests, including workshops, public events, field trainings and webinars on invasive shothole borers (ISHB), goldspotted oak borer (GSOB), and other emerging tree pests in Ventura and Los Angeles Counties. Julie will update informational materials, collaborate with invasive pest committees and workgroups on education and outreach activities throughout the Southern California region, from San Luis Obispo to San Diego Counties. The current foci in Ventura County are coordination with the Ventura County Agricultural Commissioner on the ISHB trapping program and Emerging Tree Pests/Green Waste Working Group; educating and training local governance, agency personnel, the public, and participatory scientists about ISHB, GSOB, firewood, and proper wood mulching; coordinating with and supporting the public outreach efforts of the Ventura County Master Gardeners Invasive Pests Outreach Group; and working with the Ventura County Resource Conservation District to develop tree health and planting projects. Julie's projects will closely align with the Ventura County General Plan Conservation and Open Space Element and Agriculture Element. She will also support a Sustainable Agricultural Lands Conservation (SALC) grant awarded to the Ventura County Agriculture Commissioner/Weights and Measures.

Veronica Gonzalez (CES 2) leads the 4-H Youth Families & Communities Program, under the supervision of Araceli Hernandez 4-H Regional Program Coordinator, Region 11. This program provides hands-on STEM (science, technology, engineering, and math) learning experiences and life skills to over 300 community club members. 4-H projects and events are supported by over 100 adult volunteers. Projects include food preservation, animal science, public speaking, backpacking and more. Since 4-H membership declined due to the Covid-19 pandemic, increasing enrollment in 4-H Club programs has been and will continue to be a priority in the coming year. Volunteers will run key events for youth, including Science Night, Presentation Day, Small and Large Animal Field Day, Fashion Revue, Food Faire, and a new event, Ranch Day with Livestock and Range advisor Mathew Shapero? Some virtual and distance learning options will continue, such as Youth Leadership Summit, county, regional and state presentation and field days. Veronica will depart UC ANR on May 1, 2024 and we will start the recruitment of a new 4-H coordinator for Ventura County.

Jill Sarick, MA (CES 2) is the Climate Resilience Educator in Ventura County. This position supports the advancement of the Ventura County General Plan and spearheads efforts to expand the Environmental Stewards program in the region. The Environmental Stewards program is dedicated to cultivating a diverse community of stewards of natural resources across California. It offers two extended learning courses: "California Naturalist" and "Climate Stewards". Jill plays a crucial role in identifying, recruiting, and expanding partnerships within Ventura, Santa Barbara and San Luis Obispo Counties to conserve California's natural resources and enhance community climate resilience. Program partners collaborate with UC ANR staff to co-design courses that foster environmental literacy, providing opportunities to engage in participatory science and contribute to climate resilience initiatives throughout California. In addition, Jill supports local initiatives by aligning course offerings with relevant parts of the county's general and climate action plans. Jill's responsibilities include conducting workshops, reaching out to underserved communities, delivering place-based educational

presentations, and participating in public events such as the Ventura County Fair, various Earth Day events, and Ventura County Farm Day. As this role develops, future efforts will include a public speaker series offering free online and in-person monthly educational workshops and the creation of a database utilizing ArcGIS Story Maps software to visually represent the wide array of programs and services available in the tri-county region.

Jill Tyler (CES 3) is the coordinator of the Master Gardener (MG) Program in Ventura County under the direction of Advisor Emma Volk. The program is exemplary and a flagship MG program for the State of California. Jill is responsible for recruiting and coordinating approximately 185 volunteers. The Master Gardeners will maintain eight existing gardens/demonstration sites in Santa Paula, Thousand Oaks, Ventura, Oxnard, Newbury Park, and Ojai. New partnerships with the City of Simi Valley, Rancho Simi Recreation and Park District, Santa Monica Mountains Fund (SAMOFUND), Prototypes Women's Center, and the Turning Point Foundation will further extend Master Gardener outreach to help protect California's natural resources and promote healthier communities. Volunteers will conduct workshops and participate in public events, such as the Ventura County Fair, Oxnard Native Plant Festival, Oxnard Insect Festival, multiple Earth Day events, and Ventura County Farm Day, providing information to over 10,000 home gardeners throughout the County. The Program's public speaker series offers free online and in-person monthly education workshops. Programs will focus on drought-tolerant and water-efficient landscapes as well as the management of invasive pests, such as the Asian Citrus Psyllid and Queensland Fruit Fly. As wildfires are an increasing part of the California landscape, volunteers will teach ways to design and maintain home landscaping to reduce vulnerability to wildfire. The MG program will operate an updated Home Gardening Help Line, a free service for County residents which helps home gardeners solve landscape, pest, and plant-related problems. The Master Gardeners will also continue to support Farm Advisor research projects; their volunteer hours are valued at approximately \$255,000/year.

New Positions

Under the Ventura County General Plan - Ag Element, we have recently recruited a **Climate Research Scientist** (3- to 5-year position) who will identify and study specific indicators of climate change relevant to agricultural production and will educate agricultural stakeholders on climate change adaptation and mitigation. The research scientist will be co-supervised by Dr. Tapan Pathak, and Agricultural Climatologist at UC Merced and Dr. Schilder at HAREC. We anticipate the research scientist to start in July or August 2024.

We will recruit an **Academic Coordinator in Science Communication**, who will lead science education and communication efforts of the unit, and supervise new Community Education Specialists to support and streamline outreach programs. This person will also play a coordinating role under a new Sustainable Agricultural Lands Conservation (SALC) grant, creating a network of educational institutions and non-profits to streamline agricultural education and agricultural literacy/awareness efforts in the county.

We obtained 50% matching funds for three years from UC ANR for a bilingual **Agricultural Best Practices Educator (CES2)**. Recruitment so far has been unsuccessful, so we will reclassify the position to attract more suitable candidates.

The following positions have been identified as important to support the mission of UCCE Ventura County and HAREC:

1. Natural Resources/Range Management Advisor (Ventura & Santa Barbara Counties) – Replace Matthew Shapero*
2. Youth, Families and Community Advisor (SLO, Santa Barbara & Ventura Counties) – Replace Liliana Vega*
3. Organic/Regenerative Agriculture Project Scientist (HAREC) – New (under VC General Plan 2020-2040)
4. Agricultural Engineering/Precision Agriculture Advisor (HAREC) – New (under VC General Plan 2020-2040)
5. Nutrition Advisor (Ventura County) – New (funding source to be identified)
6. Master Food Preserver Education Specialist (Ventura County) – New (funding source to be identified).

*These positions have been requested in the most recent UC ANR position call. We anticipate hearing in May 2024 whether the positions have been approved upon which the recruitment process will be initiated.