

Introduction

The University of California Cooperative Extension (UCCE) is part of the University of California's division of Agriculture and Natural Resources (UC ANR), a statewide network of researchers and educators who work on issues critical to agriculture, natural resources and human development. 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 practices and technology and home economics. UCCE started in Ventura County in 1914 and is funded in part by the County of Ventura.

UC ANR has offices in 58 counties and operates nine research and extension centers across the State, one of which is the Hansen Agricultural Research and Extension Center (HAREC) in Santa Paula. UC ANR statewide programs well-known to the public include California 4-H and Master Gardener, California Naturalist and Master Food Preserver. Ventura County UCCE-based advisors 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 and UC Merced. Additionally, collaborations with other state and federal agencies broaden our research capacity and strengthen our extension efforts.

Advisors and staff operate out of a county office building located at 669 County Square Drive in Ventura. Some of our research is conducted on local farms in collaboration with growers and ranchers as well as in natural areas around the county. We also conduct research and extension at the Hansen Agricultural Research and Extension Center (HAREC) in Santa Paula, as well as outreach to communities, government agencies and private sector groups. UCCE and HAREC are fully integrated in terms of leadership, programs and budgets. In 2023, our footprint and capacity will expand as HAREC relocates to a 114-acre farm in Camarillo.

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 provide outreach 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. For example, they help growers reduce costs by increasing production efficiencies and yields through improved soil health, sound nutrient management, and best practices in irrigation. Our advisors also provide advice for 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 extremes in temperature.

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. 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.

Current Academic Staff

Advisor	Discipline	Programmatic Coverage
Annemiek Schilder, Ph.D. Director and Advisor	Plant Pathology	Disease management in berry crops, grapes, vegetables; sustainable agriculture
Andre Biscaro, M.S. (on leave until Sept. 2023)	Agronomy and Soil Science	Irrigation and nutrient management in vegetable and berry crops
Hamutahl Cohen, Ph.D. (starting June 1, 2023)	Entomology	Pests and beneficial insects in Ventura County Ag. landscapes and ecosystems
Oleg Daugovish, Ph.D.	Plant Science	Production of vegetable and berry crops
James Downer, Ph.D. (retiring June 30, 2023)	Plant Pathology and Environmental Horticulture	Landscape plants, trees, plant pathology, current Advisor to the VC Master Gardener program
Ben Faber, Ph.D.	Soil Science	Production of avocado, citrus, subtropical fruits, water quality, Climate Smart Agriculture Program
Matthew Shapero, M.S.	Range Science	Livestock and rangeland, wildfire, climate change, drought
Production Horticulture Advisor (TBD)	Recruitment in progress	Contained environment and ornamental plant production, nursery and tree production, future Advisor to the VC Master Gardener program

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
Liliana Vega, M.S. Ed. (San Luis Obispo County)	4-H Youth Development Advisor	Youth development, community outreach, 4-H Program, Spanish

What program and support staff do

Our program and support staff assist the advisors 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. Our program staff are highly trained Community Education Specialists (CESs) with BS or MS degrees, who work directly with the clientele we serve. Program staff also provide support in fiscal matters (including grant management), as well as in recruitment, training and coordination of volunteers. Some of our staff provide specialized laboratory and field support for research projects conducted by our advisors.

Our work helps communities by encouraging positive youth development through a range of programs that incorporate STEM (science, technology, engineering and mathematics), agricultural literacy and healthy lifestyle education. Through our natural resource and Master Gardener programs, we work with homeowners, communities and water districts to slow the movement of exotic pests, support integrated pest management, improve water use efficiency, and promote sustainable gardening practices. We leverage the skills and expertise of about 250 Master Gardener and 4-H volunteers to help us deliver educational programs and extend practical, science-based information throughout Ventura County.

Current Program and Support Staff

UCCE Staff	Program or Support Area
Nicole Anderson (CES 2)	Climate Smart Agriculture Project
Julie Clark (CES 3)	Natural Resources - Emerging Tree Pests (85%)
Julie Salomonson* (CES 2)	4-H Program Coordinator
Jill Tyler* (CES 3)	Master Gardener Program Coordinator
Gina Ferrari	Field Assistant (40%)
Maripaula Valdes-Berriz	Staff Research Associate
Siomara Zendejas	Staff Research Associate
Kathy Speer	Administrative Officer
Brandy McCarthy	Business Services
Patricia Rodriguez*	Production Assistant - Social Media
HAREC Staff	
Adam Novicki	Farm Superintendent
Stephanie Gomez Gallimore	Facility Coordinator
Jose Hernandez Alvarez	Senior Ag Tech
Santos Rodriguez Ramirez	Senior Ag Tech
Ron Entrekin	Custodian (20%)

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

Impacts

This group of advisors and staff comprise an innovative, efficient and effective team that serves agricultural, environmental, rural and urban communities in Ventura County. The team relies on all members for research and program delivery. 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 2023-2024

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, 2023 – June 30, 2024).

Dr. Annemiek Schilder is the Director for Cooperative Extension in Ventura County and the Hansen Agricultural Research and Extension Center (HAREC). She provides leadership as well as administrative and programmatic oversight of both units. Additionally, Dr. Schilder will continue to work with stakeholder groups, the UCCE Advisory Board, UCCE Ventura personnel and UC ANR Leadership to develop a vision for the new Hansen Agricultural Research and Extension Center (HAREC 2.0). In 2023, HAREC operations will relocate from the Faulkner Farm to the new location at 5352 Beardsley Road in Camarillo. She will also work to further research and education partnerships with California State University Channel Islands, Ventura College, and local high schools. In spring 2023, she will coordinate the Thelma Hansen Symposium on “Biodiversity and Biological Pest Management”. Dr. Schilder’s research and extension goals for the coming year are to: 1) Participate in an industrial hemp pest and disease monitoring project, 2) Evaluate the efficacy of biological products and compost tea for disease control in pumpkins and roses, and 3) Provide disease management information via webinars/seminars and newsletter articles. She will continue to support clientele with disease diagnoses and management recommendations.

Andre Biscaro MS, the Irrigation and Nutrient Management Advisor, supports the vegetable and berry industries with research and extension on irrigation and nutrient management. He is currently on a 1-year leave of absence until September, 2023.

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 need-based precision fumigation for control of soilborne diseases in strawberries. In 2023-2024, Dr. Daugovish will expand these projects to include additional growers and areas. To make anaerobic soil disinfestation more affordable for Ventura County growers, carbon sources that are by-products of other industries will be evaluated in field trials. Both approaches sequester carbon while improving soil health. Additionally, Dr. Daugovish is engaged in weed management projects in strawberry and avocado focusing on finding effective and economical alternatives to glyphosate. In the absence of an entomology advisor in this county Dr. Daugovish has undertaken research to manage Diamondback moth, a devastating pest of cole crops. The extension of results of these on-going projects

will enhance adoption and improve sustainability of production of high-value crops grown in Ventura County. Dr. Daugovish will also continue to evaluate germplasm of celery, the county's top vegetable crop, for resistance to a deadly new race 4 of the *Fusarium* wilt pathogen. This collaboration with USDA geneticists, UC pathologists and other UCCE Advisors in coastal California identifies resistant material for celery breeding programs.

Dr. James Downer is an Environmental Horticulture Advisor, and plant pathologist by training. Dr. Downer studies plants in urban landscapes, particularly trees, and oversees the Master Gardener Program in Ventura County. Dr. Downer is planning to retire in June 2023. His last activity will be to recruit and train the new Production Horticulture Advisor to take over the supervision of the Ventura County Master Gardener Program.

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 fiscal 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 biocontrol effects of introduced pollinator gardens; efficacy and potential phytotoxicity of herbicides on avocado; and the study of key pests in his commodity areas, including Asian citrus psyllid, which vectors Huanglongbing disease. He is also studying the effects of fire on soil characteristics. 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 is the Livestock and Range Advisor for Ventura and Santa Barbara Counties. His extension and applied research program is focused primarily on the interaction of livestock production systems with rangeland ecology, forage production, water quality, and soil conservation. In 2023-24, Mr. Shapero will continue to collaborate with the Ventura County Agricultural Commissioner on a long-term forage production monitoring system at 6 sites throughout the county. These monitoring sites are critical to documenting drought and capturing shifts in production and species composition over time, and essential to effectively serving the local livestock industry. This work has also segued into a larger, statewide research project in which he is using Ventura County forage production data to train a remote-sensing algorithm that will be able to measure biomass production on rangelands from satellites. Shapero is working closely with Ventura County Resource Conservation District and private citizens throughout the County to establish the Ventura County Prescribed Burn Association. That team has applied for a significant CalFire grant that will support continued work through 2028 and will support the association's first broadcast burn in Spring 2023. Shapero will continue offering regular meetings and presentations for the local livestock industry and other natural resource managers. Additionally, he will remain engaged with local policy issues that affect rangelands, for example, his work on water quality of the Ventura River, the Wildlife Corridor Ordinance, and the US Drought Monitor.

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 2023-24 is to conduct drone flights to capture multispectral imagery for an area-wide 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. Imagery is 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 proposes to collaborate with Oleg Daugovish to look at costs of production and profitability of selected crops, cilantro and parsley, in Ventura County.

Nicole Anderson (CES 2), Climate Smart Agriculture Specialist, will continue her work on the CDFR healthy soils program. This program offers farmers incentives to apply practices that sequester carbon and improve resilience on their farms. The sweep program provides funding to farmers for enhancing water use efficiency and reducing greenhouse gasses on their farms. As the program shifts to a block style grant, the Climate smart agriculture specialist will provide technical assistance to grant recipients and farmers applying 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 grant.

Julie Clark (CES 3), the Natural Resources Outreach Specialist, 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 newly established 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 Salomonson (CES 2) leads the 4-H Youth Families & Communities Program, under the supervision of **Liliana Vega**, 4-H Youth Program Advisor and Stephanie L. Barrett, Interim 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 will 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. In an effort to increase outreach in the community, we are developing weekly after-school programs for youth in the Ventura County Housing Authority (Encanto Del Mar and Rancho Verde) with the goal of expanding to additional locations. Julie Salomonson will continue to provide monthly after-school educational programs at the Thousand Oaks library and is actively expanding this program to additional libraries and museums in Ventura County. Julie is planning to attract interns to assist with youth educational programming.

Jill Tyler (CES 3) is the coordinator of the Master Gardener (MG) Program in Ventura County under the direction of Dr. James Downer. 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, and Ojai. New partnerships in process 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 Bug Festival, multiple Earth Day events, and Ventura County Farm Day, providing information to over 25,000 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 management of invasive pests, such as the Asian Citrus Psyllid and Invasive Shothole Borers. The MG program will continue to operate the Home Gardening Help Line, a free service for County residents which helps homeowners solve landscape 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.

New Positions

We were assigned two new advisor positions with new State funding. In June 2023, Hamutahl Cohen will start as the new **Entomology Advisor**, covering Ventura and Los Angeles counties, working on invasive and endemic insect and mite pests of crops and landscape plants. We are currently in the process of recruiting a **Production Horticulture (Greenhouse/Nursery) Advisor**, covering Ventura and Santa Barbara Counties and anticipate this position to be filled by summer/fall 2023.

We are also starting the process of hiring a **Science Communication Academic Coordinator**, who will lead science education and social media communication efforts of the Unit, supervise and coordinate Community Education Specialists to streamline our outreach programs. This person will also connect and coordinate agricultural agencies providing agricultural education in the County. This position is to be funded by the Thelma Hansen Fund.

In support of the Ventura County General Plan - Ag Element, we are recruiting a **Climate Change Research Scientist** (3- to 5-year position) who will be co-supervised by Agricultural Climatologist Dr. Tapan Pathak at UC Merced and Dr. Schilder in Ventura to identify and study specific indicators of climate change for agriculture in Ventura County and educate stakeholders on climate change adaptation and mitigation.

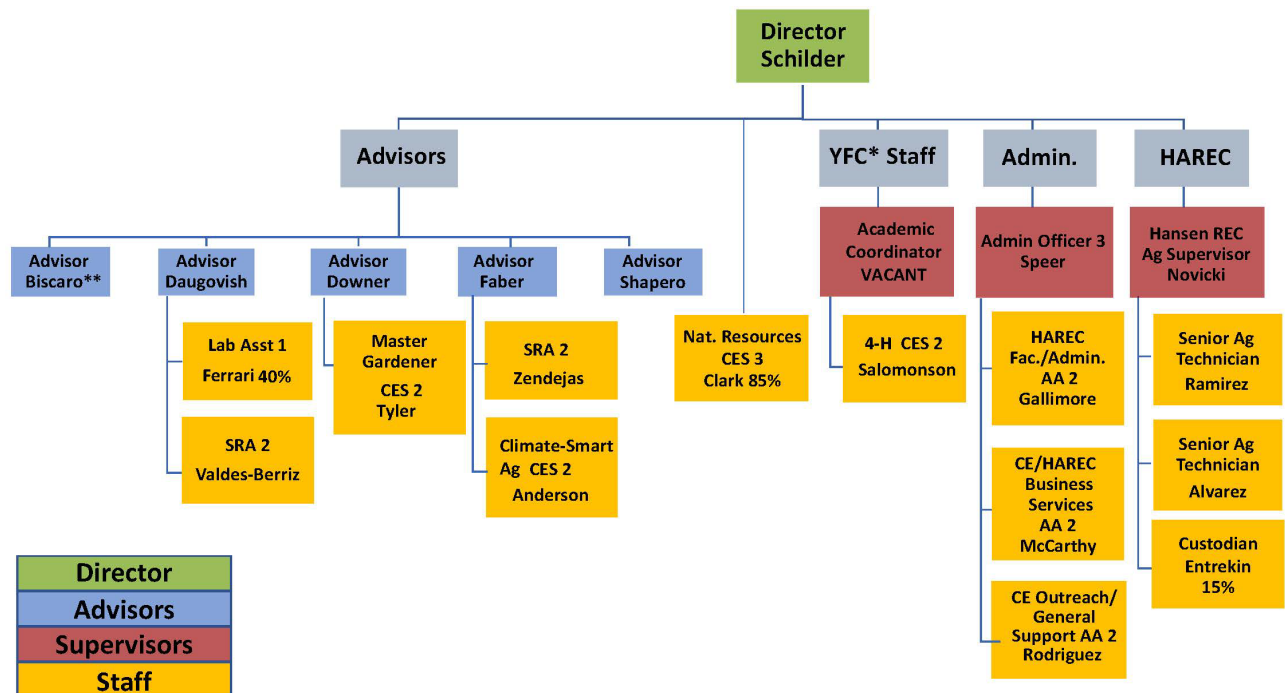
County funding helped us obtain 3 years of 50% matching funds from UC ANR for two CES positions that will support the Ventura County General Plan: a **Climate Resilience Educator** and a bilingual **On-Farm Technology Educator**. Recruitment will start for these positions shortly. In addition, we plan to recruit an **Agroecology Advisor** under the County General Plan. This advisor will conduct

research and outreach on climate-smart agriculture, including organic and regenerative practices and promotion of biodiversity in the agroecosystem.

Future positions identified as needed to support the mission of UCCE Ventura County and Hansen REC are:

- Agricultural Engineering/Precision Agriculture Advisor
- Water and Nutrient Management Advisor
- Landscape Ecology/Natural Resources Advisor
- Youth, Families and Community Advisor
- Master Food Preserver/Nutrition Educator

UC ANR Ventura County Organizational Chart UC Cooperative Extension and Hansen Agricultural Research and Extension Center



*YFC= Youth, Families & Communities

**Advisor Biscaro is on leave until September, 2023