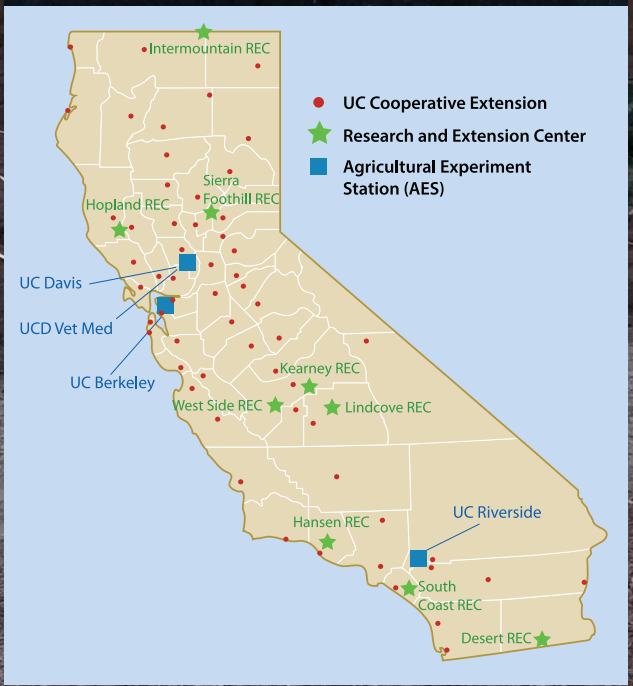
COOPERATIVE EXTENSION/HANSEN AGRICULTURAL RESEARCH AND EXTENSION CENTER

VENTURA COUNTY **ANNUAL REPORT** 2020-2021

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 connect the power of UC research in agriculture, natural resources, nutrition and youth development with local communities to improve the lives of all Californians.



September 1, 2021

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

I am very 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 2020-2021 fiscal year. This annual report highlights research and outreach conducted by advisors, staff and volunteers to fulfill our mission of providing science-based solutions to pressing problems in agriculture and natural resources in Ventura County.

We have survived another year of the COVID-19 pandemic. Who could fathom a year ago that we would still be in the throes of this worldwide debacle? However, we have adapted and developed a hybrid model of mostly virtual educational offerings with some in-person activities with appropriate safety precautions. While most of us continue to work from home, at least part of the time, field research and clientele visits continue. Statewide programs such as 4-H, Master Gardener and California Naturalist continue to provide valuable social and learning opportunities and life skills for youth and adults alike.

An important event that took place in 2021 was the sale, via closed bid, of the historic Faulkner Farm in Santa Paula, the site of the Hansen Agricultural Research and Extension Center for the past 25 years. The main motivations for the sale were the increasing costs of maintaining the historic buildings and the limiting acreage and microclimate. We are developing plans for a new Center with input from stakeholders. However, for the time being, we will continue our research and education activities on the current site.

We extend a hearty thanks to Ventura County, the UC Division of Agriculture and Natural Resources, the Thelma Hansen Fund and other funding agencies and donors for their financial and logistical support of our programs. We also thank our collaborators listed in the back of this annual report, growers, other stakeholders, and volunteers who generously dedicated their time and resources to furthering our mission. We look forward to another successful year of serving Ventura County in 2021-2022!

Sincerely,

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

University of California Cooperative Extension—Ventura County and UC Hansen Agricultural Research & Extension Center-based advisors and community education specialists work as teams to bring practical, trusted, and science-based solutions. We are problem solvers, catalysts, collaborators, educators, and stewards of the land, living in the communities we serve.

647
volunteers donated
31,811
hours public service – estimated value of
$1,002,372

14,178
total educational interactions with the public

27
peer-reviewed and audience-requested publications

83
activities bringing research to policy

84
academic-led workshops, field days, and classes with
3,213
participants

23
news media programs/ mentions

4,192
youth in UC 4-H Youth Development Program

UC Master Gardener volunteers reached
4,042
residents

Building Climate-Resilient Communities and Ecosystems

A three-day virtual series entitled "Climate change, what does it mean for Southern California?", held in spring 2021, informed participants about climate change and the science behind it. In an effort to raise awareness of current and predicted impacts on Southern California, the webinar focused on the environment, agriculture, and disasters such as drought and fire. The virtual nature of the series meant the outreach could extend well beyond Ventura County borders. Over 700 people from all corners of California and as far away as Hawaii and Arizona tuned in to listen to the pertinent information presented by the impressive lineup of UC speakers.

Dr. Daniel Swain, UCLA provided scientific evidence linking climate change to the increasing severity of California's droughts and wildfire seasons. He discussed the prospect of "precipitation whiplash", which increases the risk of both severe drought and extreme rain events and flooding. Sara-Mae Nelson, UC Climate Stewards Academic Coordinator, discussed how the UC Climate Stewards program fosters climate change resilience in California communities and ecosystems.

The impacts of climate change on agriculture were addressed by Dr. Tapan Pathak, UC Merced, and Dr. Ben Faber, UCCE Ventura County Advisor. Pathak tackled current and future climate trends, including increasing temperatures and extreme heat events, decreasing precipitation and snowpack, and frost risk, and how these trends could impact agriculture in California and, locally, in Ventura County. Dr. Faber focused on the now regular occurrences of Santa Ana winds and devastating heat waves, which affect cropping patterns and cause significant crop loss, particularly in avocados.

An overview of the Climate-Smart Agriculture Program by UCCE Ventura County Education Specialist Nicki Anderson covered resources available to farmers and ranchers to apply sustainable agriculture practices, such as cover crops and compost applications which help retain moisture and carbon in the soil.

Dr. Max Moritz, UC Santa Barbara, reviewed land use and urban planning in relation to future projections of wildfire and mitigation of losses. Rounding out the series, UCCE Ventura County Advisors Matthew Shapero and Dr. Sabrina Drill presented information on the history of wildfire in Ventura County, the impacts on livestock agriculture, and the importance of creating safer landscapes in fire-prone areas. Resources for homeowners to increase the likelihood of their home surviving a devastating fire event were provided.

Recordings of each talk are available at harec.ucanr.edu/

Top: Speakers Nicki Anderson, Matthew Shapero, Tapan Pathak, Ben Faber.

Bottom: Heat-scorched avocado trees in Ojai, CA.

Ventura Ag Pass Program Becomes Statewide Model

After the Wheeler Fire in 1985, which seriously affected citrus and avocado orchards in the Ojai Valley, members of the Ventura County agricultural community started discussing the establishment of a protocol that would allow for greater protection of agricultural assets during wildfires. It wasn't until the mid-2000s, however, that the Ventura County Agricultural Worker ID Program was designed and implemented. The concept was simple: to distribute an identification card that would allow agricultural workers to pass through road closures to reach their farms or ranches when the area was no longer in imminent danger.

Over the years, many farmers and ranchers in Ventura County have participated in the "Ag Pass" program as it is more commonly known. The 2017 Thomas Fire brought renewed attention to the program, in part because participating producers experienced mixed success using the Ag Pass card and gaining entry through road closures.

Wildfires of the size and scope of the Thomas Fire have become the rule rather than the exception in recent years, and agricultural communities around the state are seeking ways to mitigate some of the impacts on their operations. While agriculturalists recognize that fire suppression agencies need unhindered access and flexibility to fight wildfire, they are also seeking ways to prevent avoidable losses after the immediate threat of the fire has passed. This may include transporting livestock, providing stock water or irrigating orchards, among others.

UCCE Advisor Matthew Shapero co-authored a publication that provides a roadmap for other communities in California that wish to implement a similar program. A record-setting wildfire season in 2020 has motivated counties across the state to consider implementing the Ag Pass. Butte, Santa Barbara, Los Angeles, Nevada, and Placer Counties, among others, are all in the early stages of program formation. Additionally, the California Cattlemen's Association has sponsored a statewide legislative bill to support county-based program expansion.

These programs require close coordination between local county agencies, CalFire, and the agricultural industry. Furthermore, Ventura County's program still needs to be refined to expand agency participation and improve lines of communication during a disaster. Advisor Shapero has been working regularly with the Agricultural Commissioner's Office, Sheriff's Office, County Fire, and others to update the program. The Ag Pass is just one example of the critical role of UC Cooperative Extension in working with stakeholders to support local efforts and amplify best practices throughout the state.

Fire near Santa Paula.

4-H Goes Virtual

UC ANR's 4-H youth development program equips the next generation for college and successful careers and to be active participants in their communities.

Youth "learn by doing" in 4-H, so when California residents were ordered to stay home in March 2020, 4-H youth and volunteers wondered how they would be able to continue learning in their 4-H projects. Ventura County 4-H club leaders met over Zoom and came up with a solution: they would consolidate resources and create Virtual Countywide Projects.

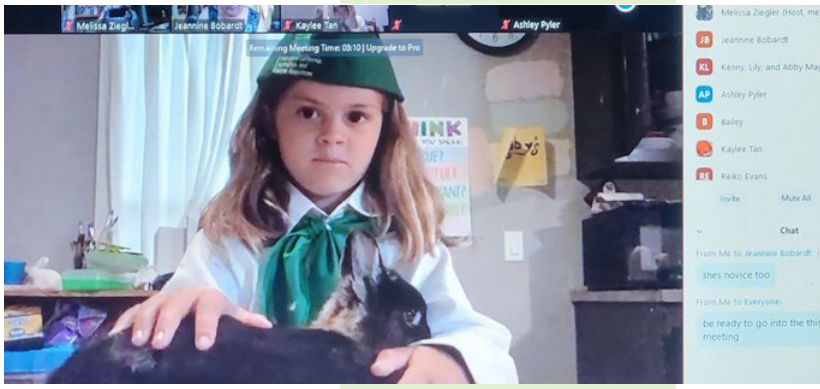
As a result of their efforts, 20 virtual STEAM (science, technology, engineering, art, math) projects were created, including Artful Desserts, Cross Stitch, Photography and Rabbits/Hopping. Fifty-six youth from all over the county participated in project groups that met on Zoom weekly or monthly from November 2020 to May 2021.

When the program year ended, project leaders reported that it was a great experience. Going virtual challenged volunteers to be creative and enabled them to extend their talents and expertise beyond their own clubs. Youth were able to come together over Zoom, meet members from across the County, and participate in projects that weren't normally offered at their clubs.

Likewise, the 4-H School Enrichment program at the UC Hansen Agricultural Research & Extension Center wrestled with providing outreach to youth during the shutdown. Taking the Sustainable You! Summer Camp curriculum to a new level, a Virtual Afterschool Club was offered Countywide and ran for 10 consecutive weeks. In partnership with the City of Ventura Sustainability Division, educators delved deeper into areas of sustainability: land, air, water, energy, and food. Over twenty youth tuned in weekly to participate in hands-on activities that began on Zoom and often had fun extensions to do on their own or with their family.

"4-H helped to drive my path towards wanting to be a large animal veterinarian."
– Katie Cook, 4-H Ventura County

4-H participants are
4X
more likely to complete a 4-year degree
Lerner et al., 2013



4-H youth exposed to hands-on science projects early are
5X
more likely to build a career in math and science
Lerner et al., 2013

4-H youth shares rabbit on Zoom during a virtual project meeting.

California True Colors Garden & Learning Center Flourishes

In 2011, California was coming out of a four-year severe drought. Homeowners were becoming increasingly conscious of their water use and looking for opportunities to improve water use efficiency. The UC Master Gardener Program of Ventura County responded to this demand by establishing the California True Colors Garden & Learning Center at the Goebel Adult Community Center in Thousand Oaks. The vision was to create a working demonstration garden to showcase plants that require little maintenance and water.

With support from the Calleguas Municipal Water District, the City of Thousand Oaks, and Conejo Recreation & Park District, UC Master Gardeners designed and installed the Anchor Garden using 40 plants from the UC Davis Arboretum All-Star database – a list of plants recommended for California gardens that will enhance the beauty and sustainability of your landscape.

UC Master Gardener participants improved

4 million

square feet of pollinator habitat statewide

UC Master Gardener volunteers then installed satellite gardens that represent Mediterranean climate zones around the world. In 2012, the California Garden was installed using 218 native waterwise plants and trees. The following year, the Mediterranean Garden was established, emphasizing flowering plants from the Mediterranean basin that attract pollinators. In 2014, the Australian Garden was added, followed by the Chilean Garden. In 2016, the site was completed with the installation of the South African Garden, utilizing over 600 drought-tolerant plants native to the region. Recent additions have included an updated irrigation system that improves water use efficiency and plant identification tags that include a QR code visitors can scan with their cell phones.

Tens of thousands of visitors have attended talks, tours, and workshops offered by the Master Gardeners at this site. A decade after its inception, the California True Colors Garden & Learning Center has become a true showpiece for waterwise landscaping in Southern California.

"I am one of those people that had the privilege to be here in 2011 when we started working on the garden and what a transformation it has been. We've got plants from several different regions...The intent was to put plants here from those dry climates where you get less than 12 inches of rain per year, so this would allow you to see what types of plants would grow and require a low amount of water."

– Ruth Lee, UC Master Gardener

Top: True Colors Anchor Garden 2020 (Photo: Bob Carey).

Bottom: Peg O'Connor-Tressel and Alison Watase at the California True Colors Garden.

Local Farms Benefit from Healthy Soils Program

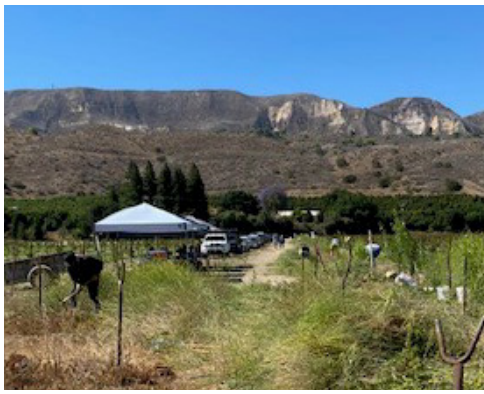
Supporting farms and farmers takes whole-system thinking and robust partnerships across many sectors, both private and public. One way to ensure resiliency is through increased adoption of "Climate Smart" agricultural practices.

The Healthy Soils Program (HSP) stems from the California Healthy Soils Initiative, a collaboration of state agencies and departments to promote healthy soils on California's farmlands and ranchlands. The HSP provides financial assistance to growers to implement and demonstrate soil management practices that sequester carbon, reduce atmospheric greenhouse gases, and build agricultural resilience. These grants direct resources and technical expertise to farmers looking to mitigate risk and build buffers for their farms.

UC ANR and the California Department of Food and Agriculture (CDFA) have partnered together to provide long-term technical assistance to farms applying for these grants. UCCE Education Specialist Nicki Anderson provides assistance in Ventura County.

King & King Ranch in Fillmore, CA, is a local recipient of a grant offered through the HSP. The owners have begun implementation of a multiyear transition of a 32-acre field, previously managed conventionally, into an organic avocado orchard. Cover cropping and reduced tillage will help with soil nutrient restoration. Additionally, the farm will establish windbreaks to protect the future orchard and, in turn, provide increased habitat for pollinators and birds as well as increased carbon sequestration in woody plantings.

Over the last several months, volunteers have manually removed weeds and dug holes for planting willow trees. This well-established and respected local farm is reclaiming and restoring land to a productive purpose, all while educating the public and allowing everyone to get some sunshine and exercise.



Top: Healthy Soils Program Education Specialists visiting a cover crop trial.

Bottom: A future hedgerow being tended and managed by volunteers.

Assessing Nitrogen Uptake and Removal for Optimal Fertilization and Regulatory Compliance

Nitrogen is a plant nutrient that leaches easily into groundwater. The use of nitrogen fertilizers by California growers has been under severe scrutiny by the State Water Resources Control Board (SWRCB), which requires growers to submit a nitrogen management plan before planting. At the core of the nitrogen use reporting required by the state is the concept of how much nitrogen is applied versus how much is removed by the crop. Nitrogen applied in the field can be in various forms such as mineral or organic fertilizers, manure, compost, or nitrate in the irrigation water. Nitrogen removed is defined as any nitrogen that leaves the field with the harvested portion of the crop. The goal of the SWRCB is to minimize the difference between applied and removed nitrogen. This can help decrease nitrate contamination of surface and groundwater.

UC Cooperative Extension Advisor Andre Biscaro works closely with local berry and vegetable growers to determine nitrogen uptake by crops and removal from the field. Multiple research projects involve extensive data collection from various crops and fields across the County and incurs significant costs in laboratory analysis of plant samples for nitrogen content. Understanding how nitrogen uptake varies by growth stage of a crop is essential for designing nitrogen fertilization programs that maximize yields and minimize nitrate leaching. Based on the patterns observed, nitrogen fertilization rates can be adjusted according to the growth stage of the crop. Most berry and vegetable crops, for example, have very low nitrogen uptake early in the crop cycle where residual soil nitrogen is usually sufficient to establish the crop. The results of these projects help growers and consultants not only comply with state regulations, but also improve the efficiency of their nitrogen fertilization practices, increase yields and protect the environment.

Sample collection for a nitrogen uptake study in a commercial cilantro field in Camarillo.

Emerging Tree Pests Project Expands

Initially funded over five years ago with a sole focus on invasive shot hole borers (ISHB), the Emerging Tree Pests (ETP) project has recently expanded to include other emerging tree pests, such as the goldspotted oak borer, attacking landscape trees in Ventura and Los Angeles Counties. These pests can spread with firewood and green waste. The primary species of concern remains ISHB because of widespread infestations, advancing science, and legislation that funds statewide ISHB trapping. To achieve a more synchronized and effective collaboration with other agencies in Ventura County, Community Education Specialist Julie Clark De Blasio cooperated with the Ventura County Agricultural Commissioner to expand the Ventura County ETP/Green Waste Working Group and organized an online ISHB update by statewide experts. De Blasio worked closely with the Invasive Pests Outreach group of the Ventura County Master Gardeners to address local invasive tree pest issues and prepare educational materials for post-pandemic reopening.

In collaboration with the Resource Conservation District of the Santa Monica Mountains, she delivered two four-part trainings to 32 volunteers in the iNaturalist "Bad Beetle Project". This project in Ventura and Los Angeles Counties is intended to teach citizen scientists to observe, document, and post online possible ISHB and goldspotted oak borer infestations. This information will help inform UC Cooperative Extension and the Ventura Agricultural Commissioner's office which is the lead monitoring agency of new possible infestations.

Top: Citizen scientist trainees learn how to report beetle damage to iNaturalist in the Ventura/LA Counties Bad Beetle Project.

Bottom: Godspotted oak borer (Photo: Stacy Hishinuma, UC Davis).

Citizen Scientists Help Protect California's Native Species and Ecosystems

The Invasive Species Lunchtime Talks are a multi-year collaboration between our Natural Resources Advisor, Dr. Sabrina Drill, and the California Invasive Plant Council. In 2018, we started with three sessions meant to provide a weekday educational experience as part of California Invasive Species Action Week. The program has expanded to 5 days and been offered every year since then. Our 2021 series highlighted the theme of community science and stewardship related to topics such as management of the estuarine invasive European green crab, mapping invasive plants post-fire, looking for exotic species in Lake Tahoe, monitoring the spread of invasive shot hole borers, and restoring native tidal marshes.

Three hundred and thirty-five people joined us for the webinar series. Participants who responded to our evaluation survey reported knowledge gains, such as an increase in understanding of the role of community monitoring in fire recovery, how suppression and eradication are linked, and the impact of an invasive wetland plant on the bird community. Between 40% and 50% of respondents said that, as a result of the workshops, they planned to volunteer with a community science program; report sightings of invasive species; share what they learned with family, friends, and colleagues; and do more research on their own. This increase in awareness, understanding, and intent to take action can help protect California's native species and ecosystems. ucanr.edu/sites/invasivelunch/

Read more about UC ANR's work to monitor invasive species and other projects with citizen scientists: calag.ucanr.edu/archive/?issue=75_1

European green crab (Photo: Gosholz Laboratory, UC Davis).

Trees Make a Better World: Online Education Offerings

In honor of Earth Day and state and national Arbor Days, UC Cooperative Extension Advisor James Downer developed and presented a five-part webinar for tree owners on growing and caring for shade trees. Topics included: the benefits of trees, how to select and plant trees, how to prune trees and how to manage pests and diseases. Over a thousand participants registered for the series, ranging from Master Gardeners to members of the public from California and around the United States.

These webinars are available for viewing on YouTube: www.youtube.com/watch?v=HJ8Qig94hZc&list=PLci-8oNMLTYwXA56go9LxL79avhjPC3SF

In lieu of the in-person Landscape Disease Symposium, Dr. Downer also presented a virtual five-week short course on tree diseases for horticulture and arboriculture professionals. Over 200 professionals attended the series which covered the following topics: plant disease basics, biotic diseases of shade trees, abiotic diseases and control of shade tree diseases. Attendees received continuing education credits to maintain their Department of Pesticide Regulation licenses as well as Arborist Continuing Education Units.

Top: Palo Verde tree, California (Photo: Jim Downer).

Tree Selection in a Changing Climate

Six years ago, a variety of shade trees, selected for their ability to tolerate heat and drought stress, were planted at HAREC in Santa Paula. These "climate-ready" trees will be studied at this and other locations in California over a 20-year period. The trees are expected to withstand increasing temperatures with economical usage of water and relatively little maintenance. Dr. Downer's research focuses on pruning requirements and biomass produced from pruning, as this may incur considerable expense for tree owners.

Trees are genetically predetermined to grow in particular patterns, some of which require more structural pruning than others. Some trees such as Rosewood *(Dalbergia sissoo)* and Chinese Pistache *(Pistacia x* 'Red Push'*)* produce significant amounts of biomass from early pruning, while others such as Tecate Cypress *(Cupressus forbesii)* or Shoe String Acacia *(Acacia stenophylla)* require little pruning and produce very little waste. During this study, Dr. Downer and others involved in the project developed a new pruning strategy utilizing only three cuts per year that maintains form of several of the species. While this minimal pruning is not enough for some species, others thrive and develop into well-structured trees.

New Publication: Organic Amendments for Landscape Soils

After many years of research, UC Advisors Downer and Faber have published an electronic factsheet entitled *Organic Amendments for Landscape Soils* aimed at landscape professionals and homeowners. Organic amendments are materials such as compost, manure, or coffee grounds, which can be incorporated into soil to improve plant growth. Amendments typically benefit sandy and sandy loam soils, which have comparatively low organic matter contents, by increasing water and nutrient-holding capacity. Clay soils may also benefit from amendments because added organic matter can disperse clay particles, reduce the amount of shrinkage on drying, and increase infiltration rates. However, with a range of materials available it may be difficult to know which is the best option for a particular situation. This publication clarifies the characteristics, benefits and potential detriments of various organic amendments for different soil types. It also discusses effects on weed growth and includes application instructions.

Top: 'Red Push' Pistache, climate-ready tree trial, HAREC, Santa Paula.

Bottom: Agromin facility compost pile.

Long-Term Studies in Lemons Yield Valuable Information

Ventura County is the largest producer of lemons for both domestic consumption and export in the United States, and lemons are the second most important crop in the County with a production value of $216 million. 'Eureka' and 'Lisbon' lemons have been favorites for years, although many selections of these two varieties exist. Numerous other varieties are grown in other countries. Lemon varieties (scions) are typically grafted on rootstocks. There are many different rootstocks that a grower can choose from, based on desired characteristics like eventual tree size, resistance to diseases, and adaptation to high soil pH or salinity.

The behavior of different combinations of scion varieties and rootstocks under Ventura conditions is not well understood. In two large trials at Limoneira in Santa Paula, 13 varieties and 8 different rootstocks are being evaluated for their performance. The trials were planted in 2015. Tree growth and yield have been monitored since then. Because lemons take years to come into full production, these are long-term trials. For now, the results indicate that several of the varieties do not perform to grower expectations here while others are more promising. This trial is part of a larger study that is using the same scion and rootstock selections but grown in the Central Valley and in the desert. The combinations that work well in the three different environments are not the same. From this trial we will learn which scion/rootstock combinations perform best in Ventura County, which will guide grower decisions well into the future.

Top: Eureka lemons, which are commonly grown in Ventura County.

Bottom: Growers learn about lemon scion and rootstock combinations.

Recently Developed Strawberry Varieties Show Excellent Resistance to Fusarium Wilt

Soilborne diseases represent a major challenge in strawberry production, and are usually managed through chemical fumigation of the soil. Disease resistance represents an environmentally friendly alternative to fumigation. Over the last two seasons, UC Advisor Oleg Daugovish evaluated new cultivars from the UC Davis strawberry breeding program for their resistance to one of the most troublesome soilborne pathogens, a fungus named *Fusarium oxysporum* f. sp. *fragariae*. This fungus kills strawberry plants by clogging vascular tissues, thereby preventing water and nutrient uptake and resulting in plant collapse.

During regular fall-planted strawberry seasons, he compared the growth and yield of cultivars Victor and Warrior with older cultivars Albion and Petaluma in soil that was artificially inoculated with *Fusarium*. The fungus was mixed with soil at different concentrations, ranging from none (clean, pathogen-free soil) to an extremely high pathogen density. Regardless of pathogen concentration, Warrior and Victor kept producing as if they were in clean, pathogen-free soil and none of the plants died. Albion and Petaluma were susceptible, especially when pathogen levels in root zones increased, and affected plants collapsed when soil temperatures increased in spring.

The ability of plants to produce economical yields in *Fusarium*-infested soil, including in cases where reduced fumigant rates may allow pathogen survival, is critical to sustaining strawberry production in Ventura County and beyond. These new resistant cultivars are currently being multiplied in nurseries so that sufficient transplants will be available to strawberry producers in the coming seasons.

Above: Strawberry cultivar Victor growing well in Fusarium-infested soil.

Below: Fusarium wilt symptoms on susceptible strawberry cultivar Petaluma.

Investigating the Performance of Industrial Hemp in Ventura County

In response to the burgeoning interest in industrial hemp as a high-value and water-efficient crop, we conducted a variety trial in collaboration with a breeding company, a local grower, and researchers from UC Davis and the UC Westside Agricultural Research and Extension Center. Industrial hemp, a strain of *Cannabis sativa*, produces seed, fiber and compounds such as cannabidiol (CBD) and cannabigerol (CBG) that relieve pain and inflammation. In California, the crop is mainly produced for CBD, which is extracted from the flowers and leaves. Industrial hemp, by law, is not allowed to contain more than 0.3% tetrahydrocannabinol (THC), a psychoactive compound, and production is closely regulated.

Twin trials were established in Ventura County and the Central Valley in 2020 to evaluate growth and productivity of different varieties as well as susceptibility to pests and diseases. Insect pressure was higher in the Central Valley while humid conditions on the Coast may favor Botrytis mold, especially on insect-damaged flowers. Beet curly top virus, transmitted by leafhoppers, was also detected. Due to the recent hemp ordinance restricting industrial hemp production in Ventura County and a drop in prices, interest has waned and the crop's future potential remains to be seen.

Top: Industrial hemp in Ventura County trial.

Middle: Botrytis mold spores visible in industrial hemp flower.

Bottom: Inspecting flowers, industrial hemp variety trial summer 2020.

Thelma Hansen

A native of Ventura County, Thelma studied mathematics at UC Berkeley in the early 1900's. 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

TO DONATE
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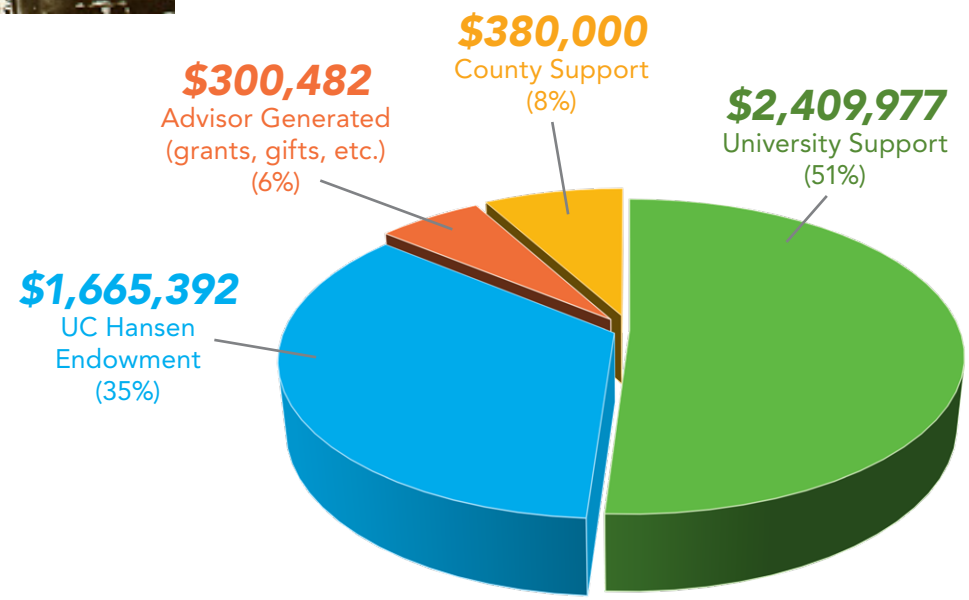

PUBLIC VALUE OF UC ANR'S PROGRAMS

Safeguarding abundant and healthy food for all Californians

Protecting California's natural resources

Building climate-resilient communities and ecosystems

Promoting healthy people and communities

Developing an inclusive and equitable society

Developing a qualified workforce in California

Promoting economic prosperity in California

Dedicated to Serving Ventura County

UC COOPERATIVE EXTENSION STAFF

Advisors

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2. Oleg Daugovish
3. James Downer
4. Sabrina Drill
5. Ben Faber
6. Matthew Shapero

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7. Gina Ferrari
8. Anthony Luna
9. Vegas Riffle
10. DeAnna Vega

Community Education Specialists

11. Julie Clark De Blasio
12. Alexa Hendricks
13. Nicki Anderson
14. Gwyn Vanoni
15. Valerie Zeko

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Education & Outreach

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Field & Facility

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20. Santos Ramirez

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22. Stephanie Gallimore
23. Patricia Rodriguez
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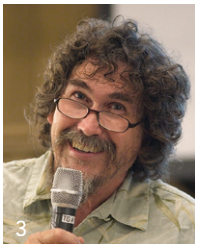

UC ANR builds partnerships based on deep and long-lasting relationships with local, state, and federal governments, community-based organizations, schools, nonprofits, and private industry. We wish to thank our volunteers as well as the many community partners and collaborators for their dedicated service and support that helps enrich the lives of Ventura County residents.

VOLUNTEERS

4-H
Hansen Advisory Board
Master Gardener
Research Advisory Committee

COMMUNITY PARTNERS & COLLABORATORS

Acorn Newspaper
ARC Enrichment Center
Baron Brothers Nursery
CAL FIRE
California Agriculture Commissioners and Sealers Association
California Association of Nurseries and Garden Centers
California Association of Pest Control Advisers
California Avocado Commission
California Avocado Society
California Celery Research and Advisory Board
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California Invasive Plant Council
California Native Plant Society–Channel Islands Chapter
California Native Plant Society–Los Angeles/Santa Monica Mountain Chapter
California Native Plant Society–Riverside/San Bernardino Chapter
California Polytechnic State University, Pomona
California Polytechnic State University, San Luis Obispo
California State Assembly
California State Parks
California State University Channel Islands
California Strawberry Commission
California Urban Forests Council
California Veterans Home–Ventura
California Women for Agriculture
Calleguas Municipal Water District
CAL RECYCLE
Camarillo Library
Camarillo Ranch House
Casitas Water District
Center for Invasive Species Prevention
Central Ventura County Fire Safe Council
Citrus Research Board
City of Agoura Hills
City of Calabasas
City of Camarillo
City of Fillmore
City of Malibu
City of Moorpark
City of Ojai
City of Oxnard
City of San Buena Ventura
City of Santa Paula
City of Simi Valley
City of Thousand Oaks
City of Westlake Village
Conejo Botanical Gardens
Conejo Open Space Conservation Agency
Conejo Recreation & Park District
County of Ventura
County of Santa Barbara Agricultural Commissioner
County of Santa Clara Division of Agriculture
Community Environmental Council
Davey Resource Group
Driscoll's
Duda Farm Fresh Foods
Farm Bureau of Ventura County
Green Thumb of Ventura
Hortau
Inland Empire Resource Conservation District
Keep Sespe Wild
Limoneira, Co
Los Angeles Center for Urban Natural Resources Sustainability
Los Angeles County Agricultural Commissioner/Weights and Measures
Los Angeles County Fire Department–Forestry Division
Los Angeles County Local Enforcement Agency
Los Angeles County Cattlemen's Association
Metropolitan Water District
Moorpark Library
Museum of Ventura County–Agricultural Museum
National Extension Climate Initiative
National Oceanic and Atmospheric Administration
National Park Service–Channel Islands National Park
National Park Service–Santa Monica Mountains National Recreation Area
Ojai Valley Fire Safe Council
Ojai Valley Land Conservancy
Orange County Local Enforcement Agency
Orange County Parks
Oxnard Historical Farm Park
Reiter AC
Resource Conservation District of the Santa Monica Mountains
Rio Farms
Rodale Institute California Organic Center
Santa Clara River Conservancy
Society of Municipal Foresters
South Coast Habitat Restoration
Southwest Wetlands Interpretive Association
Sundance Berry Farms
The Britton Fund, Inc.
The Growers of Ventura County
The Huntington Library, Art Museum, and Botanical
Tohono O'odham College
The Nature Conservancy
Gardens
Thousand Oaks Library
TreePeople
Tri-Tech
UC ANR Opportunity Grants Program
UC ANR–Statewide Integrated Pest Management Program
UC Davis Center for Community and Citizen Science
UC Davis–Eskalen Laboratory
UC Davis–Grosholz Laboratory
UCLA–Institute of the Environment and Sustainability
UC Riverside–Center for Invasive Species Research
UC Riverside–Stouthamer Laboratory
UC Santa Barbara–Moritz Fire Laboratory
UC Santa Barbara–Riparian Invasive Research Laboratory
University of Oklahoma/Oklahoma Biological Survey
U.S. Fish & Wildlife Service
U.S. Forest Service–Forest Health Protection
U.S. Forest Service–Los Padres National Forest
U.S. Forest Service–State and Private Forestry
U.S. Natural Resources Conservation Service
Ventura County Agricultural Commissioner
Ventura County Animal Services
Ventura County Board of Supervisors
Ventura County Cattlemen's Association
Ventura County Coalition of Labor, Agriculture, and Business (CoLAB)
Ventura County Department of Environmental Health
Ventura County Fire Department
Ventura County Museum–Agriculture Museum
Ventura County Parks Department
Ventura County Planning Department
Ventura County Public Works Agency
Ventura County Resource Management Agency
Ventura County Watershed Protection
Ventura Resource Conservation District
Ventura Unified School District
West Coast Arborists
Western Chapter of the International Society of Arboriculture
Wishtoyo Foundation
Yara International

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Agriculture and Natural Resources
UC Cooperative Extension

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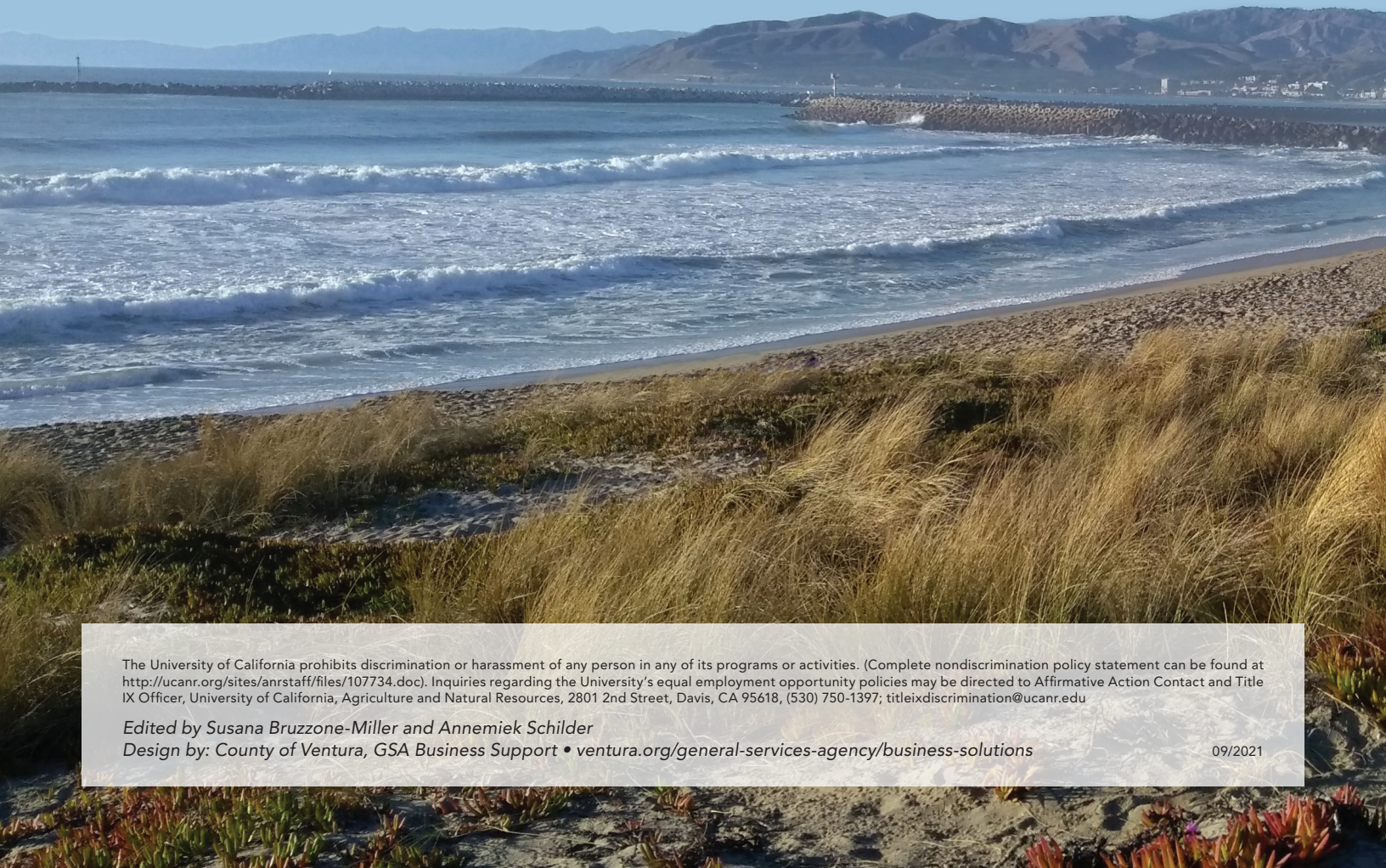

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