University of California Cooperative Extension Santa Barbara

Quarterly Report October—December 2017

Certified UC Master Gardener volunteers greet visitors during the 31st annual California Avocado Festival held in Carpinteria in October.

Submitted by: Katherine E. Soule, PhD
Director of UC Cooperative Extension
Santa Barbara County
January 24, 2018

University of California Programs- Advisors and Specialists in Santa Barbara County

PLANT SCIENCES AND HORTICULTURE led by Mr. Mark Battany, Dr. Surendra Dara, Dr. Ben Faber, and Dr. Mark Gaskell, specializes in the science and art of growing fruits, vegetables, flowers, and ornamental plants. Advisors conduct local field research to test new crops and varieties that are best adapted to local soil and water conditions and markets, implement improvements in cultural practices and pest control methods, and offer information that optimizes production, conserves natural resources, and protects the environment. Advisors are called upon regularly by growers and the general public to assist in enterprise planning and problem solving.

YOUTH, FAMILIES, AND COMMUNITIES PROGRAMS led by Dr. Katherine Soule. The mission of the UC Youth, Families, and Communities Program, San Luis Obispo & Santa Barbara Counties is to cultivate environments where local youth, families, and community members have access to science-based resources and knowledge in order to be the creators of a healthy, inspired, active, & connected Central Coast. Programs include: the UC CalFresh Nutrition Education, UC Master Food Preservers, 4-H Youth Development, and UC Master Gardener programs.

NATURAL RESOUCES, RANGE MANGEMENT, WATERSHED, AND LIVESTOCK led by Dr. Royce Larsen and Mr. Matthew Shapero, provides range and pasture livestock ranchers and producers with research-based information on ecosystem services, irrigated pastures, resource economies, livestock health, production and management, improvements, and watershed management and water quality issues on rangelands.

FIRE ECOLOGY AND MANAGEMENT led by Dr. Max Moritz, focuses broadly on scientific questions in fire ecology and management. Research includes analysis of where various fuel management techniques are likely to succeed and be sustainable, mapping of fire weather patterns, and quantifying linkages between fire and climate change. Outreach efforts emphasize fire-related policy decisions and education of the general public to live more safely on fire-prone landscapes.

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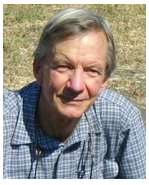

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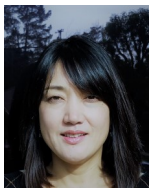

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Administrative Accomplishments—Director, Dr. Katherine E. Soule

The Challenge

Communities beyond the reach of the land grant campuses of the University of California present special challenges for outreach and extension. Cooperative Extension is the public education arm of the University of California's Division of Agriculture and Natural Resources. Cooperative Extension provides a direct link between all citizens of Santa Barbara County and the research, teaching and public service activities of the University.

Our mission is to extend research knowledge and information to empower people to improve and enhance their lives. We represent a unique partnership between the University of California, the County of Santa Barbara, and the United States Department of Agriculture.

Dr. Christopher A. Greer has begun working in a limited capacity as an area IPM Advisor in San Luis Obispo, Santa Barbara, and Ventura Counties. He will begin working full-time once he transitions out of an administrative role for UC Agriculture and Natural Resources, currently estimated around April 2018.

Addressing the Challenge

As Director of Cooperative Extension in Santa Barbara County, Dr. Katherine E. Soule maintained contact with Agricultural Commissioner throughout the quarter. Dr. Soule served as an ex-officio member of an ongoing UCCE recruitment for an area 4-H Youth Development Advisor for San Luis Obispo and Santa Barbara Counties.

UC Advisors and Specialists collaborated with the Santa Barbara County Public Health Department, the Santa Barbara Botanic Garden, Santa Barbara County Fire Safe Council, Los Padres National Forest, Dignity Health, THRIVE Santa Maria, Santa Maria Bonita School District, Santa Barbara County Public Works, California Avocado Commission, Farm Service Agency, the Natural Resource Conservation Service, Cachuma Resources Conservation District, US Forest Service, Vandenberg Airforce Base, UC Santa Barbara, UC Davis, and the USDA to support educational programs and research.

Rangeland and Watershed Advisor Dr. Royce Larsen serves on the Santa Barbara Agricultural Preserve Committee, and he attended one meeting during the quarter. Advisor Shapero, who will be serving on the committee during Dr. Larsen's 2018 sabbatical leave, also attended one meeting during the quarter.

Santa Barbara County Agricultural Advisory Committee meetings in October, November, and December were attended by Dr. Greer, Advisor Shapero, Dr. Moritz, and Dr. Larsen. Updates were provided on UCCE activities and upcoming events.

Public Value

The University of California Cooperative Extension programs in Santa Barbara County:

- Ensure that science-based information developed by the University of California is available to all the people of Santa Barbara County through outreach and education provided by UCCE programs.
- Narrow the gaps in information needed by county agencies and constituents to inform policy and decision-making through local research into questions and issues unique to Santa Barbara County.
- Bring together the resources and expertise of the University of California and local partners to develop solutions to local problems.
- Provide research and information to local partners on practices or programs that reduce costs or increase benefits for the people and environment of Santa Barbara County.

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Watershed, Natural Resources, and Rangeland Management—Advisor Dr. Royce Larsen

The Challenge

There are close to one million acres of native pasture and forestlands in Santa Barbara County, which are collectively referred to as rangelands. Comprising approximately half of the acreage of the County, these lands provide opportunity for multiple purposes. Rangelands serve as watersheds to capture, store, and release water for downstream uses; they provide forage for grazing by livestock; and their diverse plant communities provide habitat for many species of wildlife and recreational uses. The UC Cooperative Extension Watershed and Natural Resource Program provide educational programs to inform people who own and/or manage the land and the animals grazing these lands. This work also includes applied research to develop new knowledge to effectively and efficiently manage rangelands and livestock in today's competitive and regulatory environment.

One of Advisor Larsen's forage production plots in Santa Barbara County. At this site rainfall, and forage production will be measured. In addition, a time lapse camera was set up to take a photo each day to record forage growth.

Addressing the Challenge

During this review Dr. Royce Larsen has continued working with the carbon monitoring group consisting of the Natural Resource Conservation Service, the Cachuma Resource Conservation District and others. He set up a forage production plot for this site and installed a time lapse camera to document forage production within the plot where compost was added (for carbon sequestration), and also the control. This will be a long term monitoring site where a grazing treatment and addition of compost will be monitored to determine if extra carbon is being sequestered into the soil. The forage production plot will be monitored to determine forage growth, and in the event of forage losses, the data will be used by the USDA, FSA, and Agricultural Commissioner for drought declarations and help with USDA drought relief programs when needed. He is also working with the US Forest Service on the forage production project. They have purchased materials for installation of another forage production plot that will be set on a USFS grazing allotment near Cayuma.

Additionally, Dr. Larsen continues to build relationships with the Santa Barbara County Cattlemen's Association, attending one meeting during this reporting period. He also attended a meeting with the Agricultural Advisory Committee and worked with these groups to plan two workshops that will be held in March of 2018. The first workshop will cover the Rancher Sustainability Self-Assessment and will be held on March 9th. This workshop covers a tool to help ranchers do a self-assessment of their management to demonstrate stewardship of the land they manage. The second workshop will be on March 27th, is in conjunction with the Agricultural Commissioner, and will cover Integrated Pest Management best practices for all pests including damaging insects, vertebrate pests and weeds.

Public Value

The University of California Watershed/Natural Resource program in Santa Barbara County focuses on developing and extending research based information to help ranchers, managers and owners of rangeland manage their land in a sustainable and productive manner. The livestock industry is an important economic part of agriculture in the County. Research and education helps sustain the livestock industry in Santa Barbara County through:

- Improving rancher sustainability by improving their practices which sustain their production, lands, and families.
- Promoting best management practices for helping ranchers survive through the drought.
- Providing research data demonstrating severity of the drought on forage losses, helping ranchers obtain financial help through USDA programs designed for drought relief.

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Livestock & Range—Advisor Matthew Shapero

The Challenge

Rangelands in Santa Barbara County support a host of ecosystem services (water storage and filtration, wildlife habitat, carbon storage, scenic viewsheds), as well as provide the primary forage base for the county's thirty-million-dollar livestock industry. For generations, ranchers have worked to sustainably manage these rangeland ecosystems while providing a quality, safe agricultural product. Increasingly, however, the county's livestock industry faces new sets of ecological, economic, and regulatory challenges that complicate this work.

The ultimate goal of the UC Cooperative Extension Livestock & Range program is to assist producers and rangeland managers alike to successfully navigate these challenges. The Livestock & Range program will provide relevant, science-based information and will develop an applicable and progressive research program to respond to the questions and needs of local clientele.

Matthew Shapero and Dr. Royce Larsen working to install a digital rain gauge at a forage plot on the Gaviota Coast. Precipitation totals are monitored at each plot and are coupled with forage production data to understand how the timing and amount of rain changes the amount and composition of forage on rangelands.

Addressing the Challenge

During the fall quarter, Advisor Shapero continued to make connections with the livestock industry and natural resource community in Santa Barbara County.

He participated in meetings of the SB Farm Bureau, SB County Agricultural Advisory Commission, and Agricultural Preserve Advisory Commission; attended monthly SB County Cattlemen's Board of Directors and Land-Use Subcommittee meetings; visited with ranchers and producers throughout the county; and met with environmental advocacy and land conservation organizations.

In collaboration with Dr. Royce Larsen, Advisor Shapero installed two new forage plots on ranches in the county to expand UCCE's ability to annually track forage production. The data collected from these plots will serve the local Farm Service Agency as they track drought conditions on the Central Coast and provide crop insurance payments to ranchers.

This quarter was punctuated by the devastation of the Thomas Fire in December. Advisor Shapero provided Ventura and southern Santa Barbara County ranchers and rangeland owners with assistance post-fire regarding livestock considerations and best management strategies to support rangeland recovery. These efforts were recognized by cattleman, who valued his vital support during the first critical days following fire recovery.

Public Value

The University of California Livestock & Range program in Santa Barbara County will provide science-based information to help ranchers, managers, and owners of rangeland manage their land in a sustainable and productive manner. Future research and education will benefit livestock operators and rangeland managers through:

- Addressing animal health issues that will increase the welfare and productivity of livestock.
- Promoting rangeland management practices that benefit both the land and the ranching operation.
- Facilitating conversation between community stakeholders in order to achieve lasting, responsible management.
- Improving animal genetics and performance, ranch profitability, and ecological sustainability.

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4-H Youth Development—Advisor Dr. Katherine E. Soule with Janelle Hansen

The Challenge

Communities of scientifically literate, well-informed, and actively engaged citizens are essential to create positive changes needed to solve important issues facing our nation and help us to prosper in a global economy.

The University of California 4-H Youth Development Program provides training and resources to local volunteers who partner with youth to bring about positive change in our communities. The 4-H program equips youth with hands-on science activities, healthy living knowledge, leadership experiences, and service-learning opportunities. Participation in 4-H prepares youth to understand and acquire the skills that will allow them to become problem-solvers and astute leaders.

At the Leadership Training a Lucky Clover 4-H member, working on her Emerald Star project, shows fellow 4-H youth from Bruce School 4-H Club how to make a blanket to donate to Project Linus.

Addressing the Challenge

4-H staff supported adult volunteers and youth members in delivering positive youth development programming to members and their families in 23 clubs throughout the county. Participants engaged in hands-on experiential learning projects in the focus areas of Science, Leadership, Healthy Living, and Citizenship. Countywide 4-H activities, training meetings, and educational outreach events were delivered to 4-H youth, families, as well as the community at large, including:

- Hands-on learning activities presented by 4-H staff, volunteers and youth members to over 400 visitors at the THRIVE Santa Maria's Healthy School Pantry (HSP) program, including displays on nutrition, arts & crafts, and science.
- Twenty Community Club Leaders participated in annual training, focusing on youth engagement, policy and program management.
- A Santa Barbara County's 4-H All Star accepted the National 4-H Week Proclamation at the County Board of Supervisors meeting.
- Twenty-eight students from Rice, Bruce, Adam and Liberty School's 4-H Clubs, in the Santa Maria Bonita School District, participated in a Leadership Training focusing on STEM, Public Speaking, Community Service, Nutrition and Physical Activities. Families were invited to dinner made by the youth and learned about what 4-H provides their youth.
- The newest 4-H Club, Oak Valley 4-H Club, in the Lompoc community received its official 4-H charter.
- Local 4-H staff facilitated training a new State 4-H Leadership training for 27 new and returning volunteers.

Public Value

In Santa Barbara County, the University of California 4-H Youth Development Program is focused on providing youth with opportunities to develop strong, positive youth-adult partnerships while engaging in meaningful activities, which lead to:

- Reduced participation in risky behaviors (e.g. underage drinking, pregnancy, gang activity), which can decrease related public costs.
- Increased academic success and/or science literacy, which contributes to a highly qualified and productive workforce.
- Increased civic engagement, which can strengthen communities through youth training in leadership skills, innovation, critical thinking, and healthy living.
- Increased youth literacy in science, engineering, and technology through special programming, projects, and access to University curricula.
- Increased environmental stewardship and agricultural knowledge, which ensures a safe, sustainable, and secure food supply.

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Master Food Preserver Program—Advisor Dr. Katherine E. Soule with Dayna Ravalin

The Challenge

A resurging interest in food preservation in Santa Barbara County in recent years highlighted the lack of local information and resources on up-to-date and safe food preservation practices, critical in reducing serious illness.

Responding to the community's interest and concerns regarding home food preservation, the UCCE in San Barbara County launched the Master Food Preserver program.

From left to right: Sarah Arana, Diane Galvan, Debbie George, Cindy Sanford, Lynn Hamilton, Katherine Soule, Dayna Ravalin, JoJo Brungs, Kelly Metcalf. Not pictured: Dawn Peters

Photo credit: Mike Ravalin

Addressing the Challenge

During this quarter, 8 new certified UC Master Food Preservers graduated from the rigorous 12-week training program in Santa Barbara and San Luis Obispo Counties. The intensive course requires participants complete 4 hours per week of classroom instruction and hands on practice, as well as completing weekly reading and knowledge assessment assignments. Currently, 5 certified UC Master Food Preservers reside and work in Santa Barbara County.

With an increase in volunteers in Santa Barbara County, we will be able to increase our community education presence in the Santa Barbara County area. During the quarter, we have begun exploring the possibility of offering monthly community classes and/or demonstrations from a training facility in Santa Barbara County, as well as offering face-to-face contact through a farmer's market booth.

Increasing our program's visibility in the Santa Barbara County area is a high priority for our volunteers. We are looking to develop multiple strategies for program outreach in the upcoming year. Our efforts will continue to advertise our program and events through various media outlets. Another goal is to connect our volunteers with local food systems to increase awareness of their importance to the local economy.

Public Value

The UC ANR Master Food Preserver program is a public service for residents who want to learn safe methods of preserving produce sources from farmers' markets, local grocery stores, or gardens. These efforts benefit Santa Barbara County through:

- Decreasing health care costs by reducing instances of food borne illness through safe home food preservation practices.
- Increasing community wellness by creating co-capacity building with volunteers who are trained to provide services at lower costs to community residents.
- Increasing environmental sustainability through decreased food waste by teaching residents how to preserve food that might otherwise spoil before consumption.
- Increasing economic stability by growing the purchasing power of residents who can use home food preservation techniques to maximize their food resources.

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Master Gardeners—Linda Baity with Director Dr. Katherine E. Soule

The Challenge

Communities beyond the reach of the land grant campuses of the University of California present special challenges for outreach and extension of research in new horticulture practices to home gardeners. Research based information about home horticulture, pest management; sustainable landscape practices and other environmental and natural resource issues support informed decisions by home gardeners promoting healthy, safe and prosperous communities in Santa Barbara County. Local certified Master Gardener volunteers, trained by the University of California provide information and problem solving opportunities.

Butterfly Garden at Santa Ynez Valley Botanic Garden, site of a new UC Master Gardener project in north Santa Barbara County.

Addressing the Challenge

The California Avocado Festival held in Carpinteria on October 6-8 was the site of a Master Gardener educational booth entitled "Grow Your Own Salsa," a crowd favorite that taught more than 1,000 visitors how to grow tomatoes, peppers, onions and cilantro and spread the word about the UC Master Gardener program in Santa Barbara County.

Master Gardeners presented a "Winter Deciduous Pruning Clinic" on Saturday, December 2, at La Huerta Historic Orchard at Old Mission Santa Barbara, providing information on the care and pruning of deciduous fruit trees for local residents.

Master Gardeners again participated in the 7th annual Food Day co-sponsored by the Community Action Committee and the Santa Barbara County Public Health Department on Monday, October 24, presenting free seeds and growing information to the public. Help tables at Santa Barbara Farmers' Market, Mesa Harmony Garden, Santa Ynez Botanical Garden in Buellton, San Roque Garden Exchange, and Santa Barbara Botanic Garden provided science-based information on sustainable home gardening practices to visitors.

In total, Master Gardeners connected with a total of 1,451 residents during the quarter, totaling 548 hours of volunteer service during this quarter, representing $15,596.08 worth of horticultural education and outreach to Santa Barbara County.

Public Value

The University of California Master Gardener Program is focused on promoting extending research based information on sustainable landscape practices. This effort benefits Santa Barbara County through:

- Safe gardening practices that help to protect water and water quality, support healthy ecosystems and enhance wildlife and biodiversity.
- Sustainable local food systems that enhance food security for families, neighborhoods, and communities.
- Sustainable landscape practices that create efficient communities by conserving water and energy, and reducing and reusing green waste.
- Effective prevention, detection and management of invasive and endemic species through public outreach and education that helps to preserve a prosperous agricultural economy.
- Increasing science literacy of Master Gardeners and their clientele through quality education and outreach.

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UC CalFresh Nutrition Education—Advisor Dr. Katherine E. Soule with Shannon Klisch

The Challenge

In 2009, the Santa Barbara County Department of Public Health reported that approximately 1/2 of adults and 1/3 of teens in the county are overweight or obese. Obesity is a contributing factor of disease and death. Rates of obesity are generally higher among low-income populations.

To improve the health of the public, the University of California CalFresh Nutrition Education Program (UC CalFresh NEP) provides high-quality, nutrition and physical activity education programs for youth and adults in Santa Barbara County, focusing on low-income populations.

4-H SNAC Club leaders prepare a nutritious meal for their families at the November Youth Leader training.

Addressing the Challenge

During the quarter, UC CalFresh partnered with 97 educator extenders at four schools in the Santa Maria-Bonita School District, providing comprehensive nutrition education services. Through this partnership, approximately 3,400 K-6th students receive evidence-based nutrition and physical activity education and hands-on food demonstrations in their classrooms and school gardens. UC CalFresh also partnered with 4-H Youth Development to facilitate 4-H Student Nutrition Advisory Councils (SNAC) Clubs at four school sites. 4-H SNAC Club members develop nutrition expertise and leadership skills to promote and advocate for healthy eating and active living changes at their schools.

In November, UC CalFresh partnered with the 4-H Youth Development program to facilitate a 6-hour 4-H SNAC Club Youth Leadership training. The training focused on building skills with 5th and 6th grade 4-H SNAC Club leaders and included sessions on community service, gardening, presentation skills and STEM (science, technology, engineering, and math). The training culminated with the youth cooking a healthy meal for their parents, family members, teachers and school administrators. Over 25 youth from 5 schools participated in the training and an additional 100 family members attended the youth-led dinner. Santa Maria-Bonita School District Superintendent Luke Ontiveros attended the event and was quoted in the Santa Maria Times: “Having this kind of education absolutely builds relevance to what they can do in the future. Today’s activities take things beyond classrooms, textbooks and brings them to life through hands-on learning. There’s no better way to learn and continue progressing in their education.”

Public Value

The UC CalFresh NEP is focused on improving the health of the public, which in turn reduces public costs by providing research-based quality nutrition education. These efforts include:

- Serving as a vital bridge between the learning and knowledge of the UC system and our community
- Promoting healthy living, food safety, food budget maximization, and physical activity to CalFresh recipients and other low-income individuals, families, and youth
- Tailoring the latest science, curriculum and information to the needs, culture and language of low- income communities to provide culturally sensitive programming that meets nutrition education and resource needs in Santa Barbara County
- Enhancing individual efforts to make healthier lifestyle choices by utilizing the Socio-Ecological Model (SEM) to encourage social and environmental (e.g. home, school) changes

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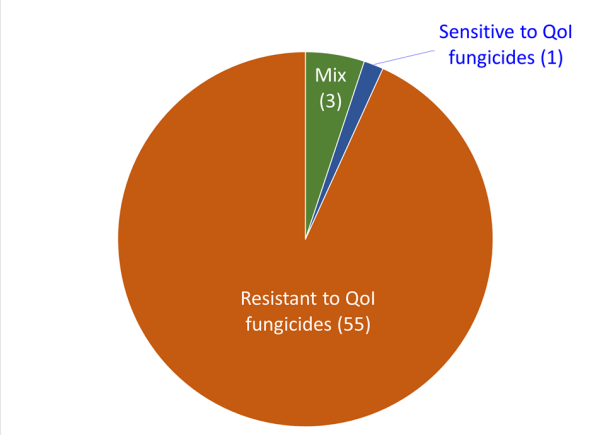
Viticulture—Advisor Mark Battany

The Challenge

Growers of wine grape vineyards throughout California face challenges with increased competition for limited water supplies and potential changing climate conditions.

Improved information on climate conditions resulting from local field research can provide growers with the knowledge to make the most informed decisions possible to ensure that their vineyards remain productive and economically viable under these changing conditions.

The efficient management of irrigation water will become increasingly more critical in the future. Limitations of water supplies will force all farmers and other water users to generate the maximum possible returns from their available water.



2017 Central Coast sampling of grape powdery mildew for resistance to QoI (strobilurin) fungicides; 59 blocks tested

Addressing the Challenge

As discussed in the report for the previous quarter, the 2017 growing season had extremely challenging powdery mildew conditions in area vineyards. There has been concern that resistance to fungicides may have played a role in this heavy disease problem. To test this, samples of powdery mildew fungus were taken from disease outbreaks in commercial vineyards throughout the County and other parts of the Central Coast. The strobilurin fungicides have a very narrow mode of action on the target organisms and thus are at higher risk of developing resistance. Every one of the powdery mildew samples from commercial vineyards contained the genetic mutation associated with resistance to the strobilurin fungicides; only one of the 59 samples contained only non-mutant powdery mildew that would be sensitive to the strobilurin fungicides, and this came from a home garden. Exactly what role the widespread presence of this resistance in our local powdery mildew played in the 2017 powdery mildew outbreaks is unknown, but going forward it would be unwise for growers to ignore the potential risk this poses if relying upon the strobulurin fungicides for primary powdery mildew control. These products may still have important roles in overall disease management programs as they offer broad spectrum control of other pathogens such as downy mildew and phomopsis. In 2018 commercial labs will likely be able to offer testing of commercial samples of powdery mildew to determine if it is resistant to the strobilurins; this service will help inform growers of the most prudent control options for their sites. For details on the 2017 test results see the Nov. 2017 Grape Notes Blog article: http://ucanr.edu/blogs/GrapeNotesBlog/

Public Value

The University of California Viticulture/ Soils program in Santa Barbara County is focused on developing and extending critical research- based information to help wine grape growers maintain sustainable production. This effort benefits Santa Barbara County through:

- Achieving sustainable wine grape vineyards that enhance productivity, crop quality and economic returns to growers with benefits to the entire local economy
- Vineyard irrigation and soil management practices that help reduce water use and maintain soil productivity, thus relieving the strain on impacted water resources and ensuring more reliable supplies for all water users
- Improved understanding of frost conditions and protective measures to help achieve effective practices that minimize impact on water resources

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Small Farms and Specialty Crops—Advisor Dr. Mark Gaskell

The Challenge

Small-scale fruit and vegetable growers rely on relatively higher value, lower volume specialty crops to remain economically competitive. UCCE field trials and educational programs are focused on developing new crop alternatives and alternative cultural practices to make small-scale agriculture more viable and competitive in Santa Barbara County.

Field trials are conducted often and the results of these trials, associated greenhouse or laboratory studies, and the experiences of other specialists are then assembled into educational outreach programs to educate and guide growers and industry representatives on the best current science-based information.

Trials in Santa Maria evaluate alternatives for intensive trellising of different varieties to improve yields and harvest efficiency of California-grown coffee.

Addressing the Challenge

Expansion of Coffee Acreage and Markets for California Coffee. Advisor Dr. Mark Gaskell initiated field trials with coffee in Santa Barbara County in 2001 and has worked with farmer Jay Ruskey of Goodland Organics in Goleta in coffee research and development trials since that time. Coffee has become a promising new crop for mild areas of Central and Southern California and planted coffee acreage is expanding. Coffee is now established on approximately 30 farms between San Luis Obispo and San Diego counties and a recent CBS This Morning report on December 2, 2017 summarized the growing California coffee production and the expanding demand for California coffee: https://www.cbsnews.com/videos/18-cup-of-california-grown-coffee-sparks-industry-interest/

San Francisco-based Blue Bottle Coffee Company has now purchased the entire CA coffee crop for 2017 and is actively promoting California grown coffee: https://bluebottlecoffee.com/store/california-good-land-organics.

Early Observations from Blueberry Variety Evaluations
Advisor Gaskell planned and worked with CalPoly-SLO Horticulture staff and students to establish a field trial of new blueberry varieties at the CalPoly Experiment Farm in September of 2016. Those trials are showing early results and several Santa Barbara County growers have visited the site with Gaskell to observe the attributes of these varieties compared to varieties now being grown. Some of the newer varieties offer important improvements over currently grown commercial varieties.

Public Value

Small-scale agricultural producers need reliable and current information on the most promising crop alternatives and the most efficient cultural practices if they are to remain economically viable. Recent research and educational outreach programs have included:

- Development of alternative small fruit – berry crop varieties and cultural practices
- Contributed to establishment of blueberries, blackberries, and raspberries as profitable new crops in Santa Barbara County
- Development of new information and practices to guide organic strawberry and other long season organic fruit growers for efficient management of nitrogen and water
- Development of the research and educational base for establishment of coffee and tea as new crops in Santa Barbara County

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Strawberries and Vegetables—Advisor Dr. Surendra Dara

The Challenge

Public health and environmental resources are protected through efficient use of agricultural inputs and safe agricultural practices. Strawberry and vegetable growers and pest control advisors are continually in need of information on improved production technologies and strategies for managing endemic and invasive pests, diseases, and weeds. Optimizing inputs and maximizing returns with food safety in mind are key strategies for healthy, safe, and prosperous agricultural operations.

Annual Santa Maria Strawberry and Vegetable Meeting

The Strawberry and Vegetable program identifies growers' needs, develops solutions based on sound scientific research, and extends information in a timely and proactive manner.

Addressing the Challenge

During the quarter, Advisor Dr. Surendra Dara:

- Completed two studies in tomatoes to evaluate treatments to improve yield, health, and nutrient management.
- Initiated a new study in Fall-planted strawberries to evaluate beneficial microbial treatments to improve strawberry health and yield.
- Organized the Annual Santa Maria Strawberry and Vegetable Meeting that was attended by 117 people and co-organized a meeting for botrytis fruit rot management in strawberries that was attended by 25 people.
- Authored/co-authored two eJournal articles on biopesticides in IPM and biopesticide resistance in insects, and one trade journal article on spotted-wing drosophila management. Submitted a book chapter on integrated pest and disease management in greenhouse strawberries and other berries.
- Reached out to 106 people through individual consultations about strawberry and vegetable issues as well as urban and landscape issues.
- The 30 articles on Pest News eJournal were viewed 4007 times and the 91 on Strawberries and Vegetables eJournal were viewed 13,976 times during this quarter.

Through these efforts, UCCE continues to provide timely information on production practices, pest, disease, and weed management to clientele.

Public Value

The UCCE strawberry and vegetable program promotes a prosperous local economy, as well as a safe and healthy food system through:

- Improved production practices by optimizing input costs and increasing yields
- Innovative research on alternatives to chemical fumigants, insecticides, miticides, fungicides, and improved Integrated Pest Management practices
- Efficient use of fertilizers and irrigation water which contribute to reduced leaching of nitrates, reduced ground water contamination, and water conservation
- Education on invasive pests and diseases that impact both the farming community and home gardeners better equips them to take appropriate preventive and/or control measures

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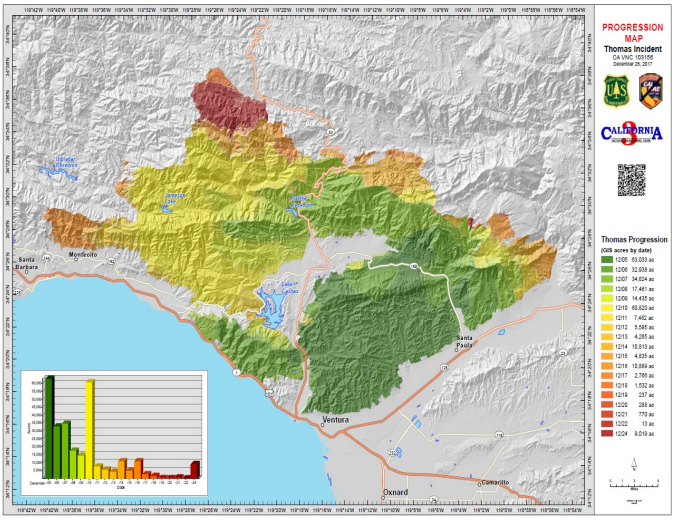
Fire Ecology & Management—Specialist Dr. Max Moritz

The Challenge

Understanding the nature of fire in California can help to save lives, minimize property damage, and protect the environment. Focusing broadly on fire ecology and management, this program brings UC research expertise to Santa Barbara County on the following topics:

- Quantifying the natural ranges of variation in fire regimes including frequency, size, seasonality and intensity within fire-adapted vegetation.
- Understanding where and when various fuel management techniques are likely to succeed and be sustainable.
- Mapping fire weather patterns, which historically have been associated with the greatest losses.
- Modeling linkages between fire activity and climate change.



Official fire perimeter map of Thomas Fire in late December 2017. Driven by both Santa Anas in Ventura and sundowner winds closer to Santa Barbara, it ended up being California's largest fire in roughly a century.

Addressing the Challenge

During this quarter Specialist Dr. Max Moritz continued working with local citizen science volunteers to maintain local Live Fuel Moisture (LFM) data sampling and processing, which feed into regular updates and distribution though the Santa Barbara Botanic Garden website; discussions continued with Los Padres National Forest personnel to assemble and display local LFM data.

As a board member of the Santa Barbara County Fire Safe Council, Dr. Moritz continued to work with local constituents on fire-related issues; however, much of the Council's activities were reduced due to holidays in this quarter. The UCSB project on restoration of Big Cone Douglas Fir in the Zaca Fire area of Santa Barbara County continues; and a new project with other UCSB collaborators has begun (see http://www.news.ucsb.edu/2017/018147/where-there-s-smoke for more information). Late in the quarter, the Thomas Fire, biggest in California's recorded history, burned in our own backyard. It will be the subject of many future research and extension activities.

Public Value

Fire is an important and natural process in almost every terrestrial ecosystem of California, yet it is one of the most persistent threats facing communities that live on fire-prone landscapes.

Communicating and implementing the latest scientific information about fire research is crucial for making communities safer, reducing property damage, saving lives, and protecting the environment.

UC Cooperative Extension helps Santa Barbara County create safer, healthier and more prosperous communities through efforts that emphasize the following:

- Education of homeowners about fire danger and preparedness steps
- Communication with fire managers, policy makers, and planners about long-term fire-related decision making

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Soils, Water, Subtropicals—Advisor Dr. Ben Faber

The Challenge

Santa Barbara County's agricultural competitiveness depends on adopting new scientific and technological innovations derived from new knowledge in agriculture. Research and educational efforts must enhance the opportunities for markets and new products. Creating a sustainable local agricultural economy also depends upon improving water quality, quantity, and security; managing pests and diseases; and improving cultural management practices for subtropical producers.

The Soils/Water/Subtropical Program has a 60 year history of local research and extension that optimizes crop production, maximizes net farm income, conserves natural resources and protects the environment.

Avocado damage from Thomas Fire, suckers emerging

Addressing the Challenge

With the Thomas Fire in December 2017, Advisor Dr. Ben Faber watched the damage along with everyone else. The hillside tree growers with avocado, cherimoya, guava, along with cut flowers like protea and calla lily where badly affected in the Carpinteria, Summerland and Montecito areas. Dr. Faber disseminated instructions on how to manage fire damage in trees, including the following resources:

- http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=25885
- http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=25884
- http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=25899
- http://ucanr.edu/blogs/topics/index.cfm?start=6

Additionally, he visited orchards to help assess damage. Along with the California Avocado Commission, the USDA's Risk Management, Farm Service Agency and Natural Resource Conservation Service, a three-day Disaster Workshop was organized so that agricultural producers, including growers from Ventura and Santa Barbara Counties could have a one-stop site to fill out paper work to obtain recovery assistance. These workshops were attended by flower growers, tree growers, beekeepers and cattle ranchers. A total of 85 made appointments in advance and there were 24 walk-ins. The funding will help producers with less than $900,000 gross annual income rebuild their operations.

Public Value

Healthy people and communities, healthy food systems, and healthy environments are strengthened by a close partnership between the University of California and its research and extension programs and the people of Santa Barbara County.
The Soils/Water/Subtropical Program provides innovation in applied research and education that supports:

- Sustainable, safe, nutritious food production through the delivery of information on soil and water management
- Economic success in a global economy through production of high quality fruit
- A sustainable, healthy, productive environment through improved water and nutrient management
- Science literacy within the agricultural community promoted by rapid access to evidence based information

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