University of California Cooperative Extension
Santa Barbara
Quarterly Report April — June 2017

Images of Dr. Royce Larsen's Forage Production Plot in Santa Barbara County. Images show the forage growth rate from October 2016 through April 2017 from a time lapse camera set to take daily photos.

Submitted by: Katherine E. Soule, PhD
Director of UC Cooperative Extension
Santa Barbara County
July 21, 2017

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

PLANT SCIENCES/HORTICULTURE led by Mark Battany, Mary Bianchi, 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.

UC CALFRESH NUTRITION EDUCATION PROGRAM and UC MASTER FOOD PRESERVERS led by Dr. Katherine Soule. In collaboration with local partners, UC CalFresh provides evidenced-based nutrition education to low-income individuals and families. The program provides high-quality nutrition education curriculum and training to educators at qualifying schools. UC Master Food Preservers respond to interest and concerns regarding home food preservation.

UC MASTER GARDENERS led by Mary Bianchi, provide the primary outreach and extension method for improving horticulture and science literacy for homeowners and back yard gardeners. They provide research based information for home horticulture, pest identification, landscape management, and other environmental and natural resource information. Master Gardeners interact directly with homeowners and back yard gardeners to provide information on sustainable and edible landscapes, water conservation, and environmentally sound solutions for pest problems.

4-H YOUTH DEVELOPMENT PROGRAM led by Dr. Katherine Soule

4-H is a positive youth development organization that empowers young people to reach their full potential. A vast community of more than 6 million youth and adults working together for positive change, 4-H enables America's youth to emerge as leaders through hands-on learning, research-based 4-H youth programs and adult mentorship, in order to give back to their local communities. The 4-H Youth Development Program is brought to the counties by the University of California, Agriculture & Natural Resources.

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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Administrative Accomplishments- County Director, Mary Bianchi

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.

Director Mary Bianchi retired on June 30, 2017 after 32 years of service to the University of California, including 26 years with UC Cooperative Extension in Santa Barbara and San Luis Obispo Counties.

Addressing the Challenge

County Director Mary Bianchi maintained contact with Agricultural Commissioner and County Administrative Office staff throughout the quarter as needed. Communications with local agricultural organization notified clientele of Director Bianchi's retirement at the end of June.

Director Bianchi continued to facilitate a working group from the Santa Barbara County Agricultural Commissioner's Office, California Department of Food and Agriculture, UCSB's Riparian Invasion Research Lab, agricultural pest control advisors, industry arborist, and Cal Fire to address a new invasive pest/disease complex, Kuroshio Shot Hole Borer.

As is noted throughout this report, UC Advisors and Specialists collaborated with the Santa Barbara County Nutrition Education Program and the Obesity Prevention Program, with Santa Barbara County Health Department, the Santa Barbara County Fire Safe Council, and Santa Barbara City Fire. Partnerships with the City of Santa Maria Recreation & Parks, Santa Barbara County Food Bank, Community Action Commission, and Dignity Health supported nutrition programs. We have continuing relationships with the Santa Barbara County Public Works, Central Coast Regional Water Quality Control Board and the Coastal San Luis and Cachuma Resources Conservation Districts that support agriculture programs and research.

Rangeland and Watershed Advisor Dr. Royce Larsen serves on the Santa Barbara Agricultural Preserve Committee and he attended two meetings during the quarter.

Santa Barbara County Agricultural Advisory Committee meetings in April, May, and June were attended by Dr. Max Moritz, Mary Bianchi, and Dr. Ben Faber, respectively. 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

Watershed, Natural Resources, and Rangeland Management, 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.

Forage Production – Compost Trial. Photos from the time lapse camera showing the plot with compost added (November 30, 2016) and then again near peak growth (March 24, 2017).

Addressing the Challenge

Rangeland and Watershed Advisor Dr. Royce Larsen is continuing to work with the USDA Natural Resources Conservation Service and Cachuma Resource Conservation District on forage production in Santa Barbara County. In addition, he is working with the US Forest Service and the new livestock and range advisor (starting date of September 5, 2017) to set up additional forage production plots this fall.

Royce's forage production plot in Santa Barbara County measured forage production during the 2016-2017 season. In addition, a time lapse camera was set up to take a photo each day to record forage growth rate.

Dr. Larsen has a workshop planned for Southern San Luis Obispo and Santa Barbara County for August 17th. The topics will be Marketing, Economic Ranch Tools, nutrition, drought, and invasive weeds on rangelands.

Additionally, Dr. Larsen continues to build relationships with the Santa Barbara County Cattlemen's Association meetings, attending two meetings during this quarter.

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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4-H Youth Development– Dr. Katherine Soule

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.

Addressing the Challenge

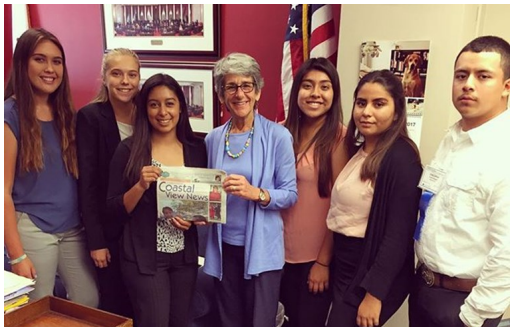
This year 4-H staff supported 228 adult volunteers in delivering positive youth development (PYD) programming to 742 youth members and their families in 22 clubs throughout the county. Additionally, 139 youth participated in the Vandenberg Air Force Base Military Club. A total of 12,198 opportunities for youth to participate in 4-H programs were offered, including 4-H Agua Pura watershed education, and 4-H STEM education at SBCPHD and UC CalFresh classes. 4-H participants engaged in hands-on experiential learning projects in the areas of Science, Leadership, Healthy Living, and Citizenship.

4-H staff supported the delivery of PYD programming to youth and families in the county through various events and activities, including:

- Fifty-three students from Rice, Bruce, Adam and Alvin School's 4-H Clubs in the Santa Maria Bonita School District, trained to be Peer Educators, to engage and empower youth to help establish healthy sustainable habits for their families and communities. This collaboration between UC CalFresh and 4-H touched over 3,800 youth providing healthy living education.

- Over 100 youth members coming together for the annual County 4-H Exhibit Day. This annual 4-H educational event is where youth members come together to show large animal, small animal, and still exhibits showcasing what they'd been working on during the program year.

- 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, and science. 4-H youth also exhibited their photo



Six 4-H youth from Santa Barbara County met with Senator Hannah-Beth Jackson and Assemblymember Monique Limón at Cal Focus in Sacramento.
Cal Focus provides 4-H youth from across California to experience California's government in action by participating in the legislative, political, and judicial processes.

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

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Master Food Preserver Program- Dr. Katherine E. Soule

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, Braeden, Mili and Shelsey trained last year as Junior Master Food Preservers through 4-H and are now helping teach their peers the art of home food preservation. (Photo by Stephen Osman)

Addressing the Challenge

Certified UC Master Food Preservers (MFPs) working in Santa Barbara County continue their efforts working with 4-H clubs in Goleta, Lompoc, and Santa Maria expanding participation in home food preservation programming.

The Jr. Master Food Preserver Program in Santa Barbara County was featured in the May/June 2017 edition of California Bountiful magazine. California Bountiful magazine is produced by the California Farm Bureau Federation. One of the Jr. Master Food Preservers, Braeden, was also highlighted on the front cover of the magazine. The Jr. Master Food Preserver Program is offered through a collaboration between 4-H and the UC Master Food Preserver Program of Santa Barbara and San Luis Obispo counties. The link to the full article is http://californiabountiful.com/features/article.aspx?arID=1942.

Master Food Preservers have had three very successful community food preservation classes with several attendees coming from Santa Barbara County. Their Open House for volunteer recruitment occurred this quarter drawing from Santa Barbara County residents. The goal is to build on that interest by increasing the MFP certifications to add to extension efforts in Santa Barbara County.

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- Mary Bianchi

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 Master Gardener volunteers, trained by the University of California, provide information and problem solving opportunities.

Addressing the Challenge

UC Master Gardeners staffed an Information Booth/Help Table during the Santa Barbara Earth Day festival in Alameda Park on April 22 and 23. Volunteers connected with more than 400 county residents during the weekend, providing research-based horticultural information designed to encourage the adoption of safe and sustainable home gardening practices. For the first time, Master Gardeners also sponsored an exhibit during the Earth Day celebration at the Santa Ynez Valley Botanic Garden on May 21.

In partnership with Santa Barbara Public Library, Master Gardeners debuted a new series of gardening workshops to be held quarterly in the Faulkner Gallery of the downtown branch. Master Gardeners Valerie Rice and Joan Calder presented Spring Gardening with Butterflies and Bees for 56 local residents.

A new outreach effort continues with the San Roque Garden Exchange, an informal monthly gathering of neighbors to swap plants and gardening ideas. A Master Gardener is now on hand during these events to offer helpful tips and to increase public awareness of the program.

Several continuing education opportunities were offered during this quarter for Master Gardeners seeking to improve their knowledge of invasive pests, including a local conference on shot-hole borers on April 12 and a meeting for Santa Barbara County citrus growers focused on updates about the Asian Citrus Psyllid on May 24.

Help Tables were staffed for two weekends at the Santa Barbara County Botanic Garden on April 1-2 and April 29-30, in addition to the regular Help Tables present bi-monthly at the Santa Barbara County Farmer's Market. Other on-going projects at public sites include La Huerta Historic Garden at the Old Mission, Alice Keck Park Memorial Garden, Mesa Harmony Community Garden, and Santa Ynez Valley Botanic Garden.

Master Gardeners collectively donated 1,076.7 hours of volunteer service to educational outreach during this quarter, representing a contributed value of $28,705.53 to the County of Santa Barbara.

Master Gardeners greet visitors to the Santa Barbara Earth Day Festival on April 22 and 23, 2017.

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

UC CalFresh Nutrition Education– Dr. Katherine Soule

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 Student Nutrition Advisory Council (4-H SNAC) leaders learning how to chop vegetables and crack eggs for a healthy omelet recipe. April 2017

Addressing the Challenge

Between April and June 2017, UC CalFresh completed nutrition and cooking lessons for the school year, reaching 120 classrooms and approximately 3550 students at five schools in the Santa Maria-Bonita School District. Lessons focused on the importance of drinking water instead of sugar sweetened beverages and making healthy snacks. In addition to nutrition lessons, staff hosted two Culinary Academies in partnership with the UC 4-H Youth Development Program, Adam and Alvin Elementary schools, and the Santa Maria-Bonita School District Food Services staff. The Culinary Academies focused on teaching youth leaders cooking skills including knife safety, recipe reading, accurate measuring, and nutrition.

In June, UC CalFresh staff trained 16 City of Santa Maria Recreation & Parks staff in evidence-based CATCH physical activity games and concepts. Recreation and Parks staff will be using what they learned to work with youth at 12 Summer Food Program sites in Santa Maria throughout the summer.

In addition, staff partnered with the California Department of Public Health and Santa Barbara County Public Health to plan and host a regional training in Monterey: *Creating Structures for Parent Engagement in School Wellness Policies.*

Lastly, UC CalFresh continued outreach to parents through the Spanish language Facebook page, El Éxito Es Salud (a partnership with Santa Barbara County Public Health and Dignity Health) and the monthly Healthy School Pantry (including Santa Barbara County Food Bank and Santa Maria THRIVE) reaching over 150 families with nutrition and physical activity information.

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– 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.

The Glassy-Winged Sharpshooter is not yet a factor in the spread of Pierce's Disease in the wine grape areas of Santa Barbara County, but there is a constant concern about it being introduced here, as it is a much more aggressive disease vector than our native sharpshooter insects.
Photo: Source: Beth Grafton-Cardwell.

Addressing the Challenge

In some of the grape regions of Santa Barbara County, particularly the corridor between Lompoc and Buellton, growers are seeing increasing damage due to Pierce's Disease (PD). Similar observations have been made elsewhere in the state, suggesting a common cause. One potential cause is the weather; the bacteria responsible for the disease is more likely to become permanent in the vine if the winter temperatures remain warm. Recent years of drought were accompanied by warm sunny winter days which may be a major cause of the increased incidence of PD. Another factor is the insect vectors that transmit the bacteria into the vines in the first place. These sharpshooter insects typically reside in the native vegetation along riparian areas and in lush landscaped areas; under drought conditions more of these insects may have moved into the vineyards as the other vegetation dried up, potentially increasing the vector activity.

Regardless of the main factor, the result is that many vines are dying from this disease. Solutions to this problem will require major changes in vineyard management. Frequent insecticide applications, particularly of systemic products that reside within the vine tissue, can offer some protection but this is generally not a solution for organic growers. New varieties of grapes have been developed which incorporate natural resistance to PD; these have been bred from varieties like Pinot Noir and Chardonnay, but cannot be named as such which may lead to marketing challenges.

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 – 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.

Newly established field trials aim to intensify coffee production and improve yield and profitability for coffee producers. Goleta, CA, May, 2017.

Addressing the Challenge

Commercial coffee production continues to expand in the county and other parts of southern CA. UC Farm Advisor Gaskell has collaborated in the research and development of coffee as a new crop for small farms. Several new farm plantings have been established during this reporting period include coffee in plastic tunnels in the Santa Maria Valley and other parts of the county. An article entitled "Where is your coffee from – California?" by staff writer Stephanie Strom describing coffee success as a new crop in California appeared in the Business Daily section of the New York Times on May 26, 2017.

Mark is continuing to evaluate public raspberry and blackberry cultivars at two central coast sites. In collaboration with Farm Advisor Oleg Daugovish , they are continuing a 3- year project funded by the Hansen Trust (Ventura County) evaluating public raspberry and blackberry cultivars managed under different trellising regimes. The first group of raspberry and blackberry cultivars were established in late 2016 and additional cultivars were planted in April, 2017. Initial data collection will begin in late 2017 and continue for succeeding seasons.

Additionally, Mark represented UCCE at a meeting on June 22, 2017 at Rancho San Julian that included growers and other public agency representatives. The meeting was organized by the Cachuma Resource Conservation District to discuss Strategies for Improvement of Agricultural Water Use Efficiency in Santa Barbara County.

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 – 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 Field Day at Manzanita Berry Farms

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 this quarter Dr. Surendra Dara:

- Continued the studies to monitor lygus bug with a solar powered light trap, improve fruit yield with foliar nutrients, and made arrangements for nutrient management and crop health studies in tomato and zucchini. Conducted a survey to evaluate the pest status of spider mites on multiple crops.
- Organized the Annual Santa Maria Strawberry Field Day attended by about 160 people. Worked on a workshop for vegetable growers on IPM issues and a conference on microbial control.
- Worked on the IPMinfo app and its new content; authored two articles for the Strawberry and Vegetables eJournal, one for CAPCA Applicator Alerts newsletter, two for the strawberry field day about spotted wing drosophila, microbial control in IPM, and beneficial microbes for disease management and soil health. Also authored one spider mite management guide. Facilitated revisions of onion-garlic pest management guidelines.
- Gave one extension presentation about IPM strategies for pest and disease management in strawberry. Reached out to 77 people through individual consultations. Continued to provide feedback about invasive pests affecting hosts other than strawberry and vegetables.
- Articles on the Pest News eJournal were viewed 3,801 times and those on Strawberries and Vegetables were viewed 16,198 times during this quarter.
- UCCE continues to provide timely information on production practices, pest, disease, and weed management to clients.

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- 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.

Live Fuel Moisture results for Santa Barbara from January 2016 through June 2017

Addressing the Challenge

During this quarter Specialist 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, Moritz continued to work with local constituents on fire-related issues; the community wildfire protection plan (CWPP) for San Marcos Pass area continues and is nearing a complete draft.

The project on restoration of big cone Douglas fir in the Zaca Fire area of Santa Barbara County continues, and field verification of mapping methodologies is under way.

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- 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.

Native Plants being used in gardens to attract Avocado Pollinators

Addressing the Challenge

During this quarter, Dr. Ben Faber held two avocado grower meetings. The first focused on avocado rootstock selection for disease and salinity management. The second meeting was a field workshop on:

- Drone use for orchard management
- Ground squirrel control
- Avocado Rootstock/Scion performance
- Management of Insectary Gardens for pollination

Both meetings were well attended with over 60 growers at each meeting. Forty-five producers attended a meeting on ant management for citrus, where Area-Wide Spray Program for Asian Citrus Psyllid was also discussed.

A survey for Polyphagous Shot Hole Borer was made along the coast with UC Santa Barbara and UC Riverside to evaluate a trapping program in riparian and avocado growing areas.

The Cachuma Resource Conservation District's Ag Water Action Plan Committee designed a grower survey on irrigation practices and the results were presented at a meeting seeking input and discussion from growers. The results will be used to potentially improve irrigation management in the county. Discussion with Santa Barbara County Public Works continues on the management program for a county owned avocado orchard near the Tajiguas Landfill.

During this quarter, Ben made 25 farm visits and helped coordinate one newsletter. Ben also coordinated and/or authored 36 articles for the Topics in Subtropics Blog (http://ucanr.edu/blogs/Topics/). This readily accessible information had 60,195 direct hits during this report period. Typical viewership is more than 400 hits per day. Although the hit count is not specific to Santa Barbara County, it is information that is readily accessible and useful to Santa Barbara producers and is used by local growers.

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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