

# University of California Cooperative Extension Santa Barbara

Quarterly Report October—December 2016



***Master Gardener Booth at the California Avocado Festival in Carpinteria October 7-9, 2016.***

*For more information on the UC Master Gardener Program*

*[http://cesantabarbara.ucanr.edu/Master\\_Gardener/](http://cesantabarbara.ucanr.edu/Master_Gardener/)*

Submitted by Mary Bianchi  
County Director, Horticulture Advisor  
Santa Barbara County  
January 31, 2016

## 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** are led by **Dr. Katherine Soule**. UC CALFRESH is funded by the USDA and delivered by the UCCE to Santa Barbara County. 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.

**UCCE 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. 4-H is the youth development program of our nation's Cooperative Extension System. 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.



**Mark Battany**  
805-781-5948  
[mcbattany@ucanr.edu](mailto:mcbattany@ucanr.edu)



**Mark Gaskell**  
805-788-2374  
[mlgaskell@ucanr.edu](mailto:mlgaskell@ucanr.edu)



**Mary Bianchi**  
805-781-5949  
[mlbianchi@ucanr.edu](mailto:mlbianchi@ucanr.edu)



**Max Moritz**  
805-893-2125  
[mmoritz@ucanr.edu](mailto:mmoritz@ucanr.edu)



**Surendra Dara**  
805-788-2321  
[skdara@ucanr.edu](mailto:skdara@ucanr.edu)



**Katherine Soule**  
805-781-4093  
[kesoule@ucanr.edu](mailto:kesoule@ucanr.edu)



**Ben Faber**  
805-645-1462  
[bafaber@ucanr.edu](mailto:bafaber@ucanr.edu)



**Royce Larsen**  
805-434-4106  
[relarsen@ucanr.edu](mailto:relarsen@ucanr.edu)

## 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.



Dr. Akif Eskalen, Extension Plant Pathologist UC Riverside, hangs a trap for the Kuroshio Shot Hole Borer in Montecito. Traps like these will be used to determine the spread of this new insect in the coming spring and summer.

### Addressing the Challenge

County Director Mary Bianchi maintained contact with Agricultural Commissioner and County Administrative Office staff throughout the quarter as needed.

In November in Montecito, an alert arborist identified a new invasive pest/disease complex, Kuroshio Shot Hole Borer. Director Bianchi brought together 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 mobilize a three-pronged effort to increase awareness of this serious pest/disease complex, extend information to the urban and agricultural communities, and create a three-pronged strategy to monitor during the upcoming spring and summer months.

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. Rangeland and Watershed Advisor Dr. Royce Larsen serves on the Santa Barbara Agricultural Preserve Committee and he attended one meeting during the quarter. Additionally, Dr. Larsen continues to build relationships with the Santa Barbara County Cattlemen's Association meetings, attending one meetings during this reporting period. Santa Barbara County Agricultural Advisory Committee meetings in October, November and December were attended by Royce Larsen and Mark Gaskell, 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

## 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.

### Addressing the Challenge

During this quarter 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 has established a forage production plot and installed a time lapse camera to document forage production within the plot where compost was added (for carbon sequestration) compared to a 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 Farm Services Agency and Agricultural Commissioner for drought declarations and help with USDA Drought relief programs when needed.

Royce 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 Cuyama.

Royce has been actively working with stakeholders to plan two workshops for March 2017. The first workshop will cover the Rancher Sustainability Self-Assessment and will be held on March 9<sup>th</sup>. This workshop covers a tool to help ranchers complete a self-assessment of their management demonstrating stewardship of the land they manage. The second Workshop will be held March 27<sup>th</sup>, in conjunction with the Agricultural Commissioner and will cover Integrated Pest Management practices for pests including insects, vertebrate pests and weeds.



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

### 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.

## 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.



Youth and Volunteers flying their foam drones and recording data at National 4-H Youth Science Day's Drone Discovery in Isla Vista.

### Addressing the Challenge

4-H staff supported adult volunteers and youth members in delivering positive youth development programming to members and their families in 22 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.

The National Youth Science Day Experiment, Drone Discovery, provided 23 youth a hands-on engineering design challenge. Youth learned about flight dynamics and aircraft types, to safety and regulations, to remote sensing and flight control. This was a collaboration with our community partners Lockheed Martin and the YMCA's St. George Family Youth Center.

The UC 4-H in Santa Barbara County All Star's accepted the National 4-H Week Proclamation at the County Board of Supervisors meeting.

A collaboration between 4-H and the Santa Barbara County Public Health Department had 42 youth participating in 5 sessions of hands-on 4-H educational activities while their parents attended Eat Healthy, Be Active Community Workshops.

December saw Bonita 4-H Club conduct their annual toy drive. La Graciosa 4-H Club sang at Marian Extended Care and delivered cookies to the Santa Maria Police Department.

### 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

## 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.



4-H Youth participating listening to a presentation at the Ventura County Farm Day event in November 2016

### Addressing the Challenge

Building on the success of the implementation of the Junior Master Food Preserver Program in local 4-H clubs, participation has begun for another session of training opportunities. The 3 Junior MFPs who were certified last quarter are working with the project leadership of clubs in Goleta, Lompoc, and Santa Maria to assist in teaching the *PUT IT UP! Food Preservation for Youth* curriculum. Currently, there are 13 youth enrolled in these trainings. These youth will complete 12 lessons from the *PUT IT UP! Food Preservation for Youth* curriculum. A club in Santa Maria will be starting the curriculum in February.

In November, one of our volunteers and 4 other adults took the 3 Junior Master Food Preservers from Santa Barbara County 4H programs to the Ventura County Farm Day where they participated in tours, presentations, and learning activities. This spring, adult volunteers, will be offering the Jr. MFPs opportunities to attend community classes taught by adult MFPs.

There have been almost 10 hours of volunteer time accumulated this quarter exclusively working with the youth of Santa Barbara County. Currently, there are three certified Master Food Preservers (MFP) working in Santa Barbara County. The UCCE is considering a MFP Training to recruit more local residents and to increase MFP outreach efforts in the fall of 2017.

### • 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
- Increasing the economic vitality of resident food producers by empowering consumers

## Master Gardeners- Mary Bianchi & Program Director, Linda S. Baity

### 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

The California Avocado Festival held in Carpinteria on October 7-9 was the site of a Master Gardener educational booth entitled "Grow Your Own Salsa," a popular activity that taught more than 1,300 visitors how to grow tomatoes, peppers, onions and cilantro and spread the word about the UC Master Gardener program.

Master Gardeners presented "Life Beneath Your Feet," a public education workshop on Saturday, November 2, at Seaside Gardens in Carpinteria. A "Winter Deciduous Pruning Clinic" was held on Saturday, December 3, at La Huerta Historic Orchard at the Mission, providing the public with information on the care and pruning of deciduous fruit trees, reaching 46 community members.

Master Gardeners again participated in the 6<sup>th</sup> 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 and reaching 105 members of the public. Help Tables at Santa Barbara Farmers' Market, Santa Barbara Botanical Garden, and Mesa Harmony Garden, provided evidence-based information on sustainable home gardening practices to a total of 197 residents.

A new Master Gardener project at the Santa Ynez Botanical Garden in Buellton, features a team of North County volunteers who are meeting bi-weekly to conduct informal public education events. Master Gardeners at Alice Keck Park Memorial Gardens and La Huerta Garden at the Mission reached another 864 residents.

In total, Master Gardeners donated 649 hours of volunteer service during this quarter, representing \$17,905.91 worth of horticultural education and outreach.



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

## 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.



### Addressing the Challenge

Throughout the quarter, UC CalFresh partnered with 119 educator extenders at four schools in the Santa Maria-Bonita School District to participate in comprehensive nutrition education programming. Through this partnership, approximately 3,550 K-6<sup>th</sup> students received evidence-based nutrition and physical activity education and hands-on food demonstrations in their classrooms and school gardens. UC Educators demonstrated recipes like “plant part tacos” and green smoothies made with spinach.

UC CalFresh staff also partnered with 4-H Youth Development to facilitate Student Nutrition Advisory Councils (SNAC) at four school sites. SNAC teams develop nutrition expertise and leadership skills to promote and advocate for healthy eating and active living changes at their school. One SNAC team helped their Principal apply for and install a hydration station in their cafeteria.

In addition, UC CalFresh partnered with the Santa Maria THRIVE! Healthy School Pantry and Santa Barbara County Food Bank to provide healthy tips and recipe demonstrations to approximately 1000 parents and youth each month. In November, staff focused on how to safely thaw and cook a turkey. Parents got to take home healthy recipes for leftover turkey and a meat thermometer to ensure safe cooking. Many commented that they had never cooked a whole turkey or used a meat thermometer before and were grateful for the information. In December, staff demonstrated a healthy ponche recipe. Ponche is a fruit punch that is typically served warm with a lot of sugar. Staff demonstrated a delicious, low sugar, 100% fruit juice alternative and provide education on sugary beverages.

Nutrition Education staff and our dedicated volunteer deliver information to families about how to safely thaw and cook a healthy turkey recipe at the THRIVE Healthy School Pantry.

### 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

## 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.



Vines which have tested positive for Pierce's Disease in the Sta. Rita Hills area of Santa Barbara County.

### Addressing the Challenge

Pierce's Disease is a bacterial disease that is fatal to grapevines. It is spread from a variety of host plants, which themselves may not be susceptible to damage, to grapevines via sharpshooter insects that feed on both. Damage to vineyards is often most severe in areas where native vegetation and vector insects exist near vineyards, such as along riparian corridors.

Pierce's Disease has been observed in California for generations but at times can cause greater than normal levels of damage; this has been the case for the past several years where the numbers of vines showing Pierce's Disease symptoms has increased in many susceptible sites in different parts of California. The reasons for this increase are not well understood, but may be related to warm winter temperatures.

Identifying Pierce's Disease as the source of vine decline is not always easy in our cool coastal conditions; symptoms are more dramatic and definitive in warmer regions. To help determine whether or not Pierce's Disease has been becoming more prevalent in our cool coastal regions and to determine whether or not different strains of the disease may exist within California, Viticulture Farm Advisor Mark Battany has sampled dozens of vineyard blocks in Santa Barbara County for analysis by UC Berkeley scientists. This testing has revealed that some vines infected with Pierce's Disease are occurring far away from riparian areas where we typically expect them to occur. Also, vines which show symptoms of Pierce's Disease do not always test positive, which complicates visual assessments of the disease.

### 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

## 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.

### Addressing the Challenge

**Sampling program for redberry mite occurrence.** Mark Gaskell leads a project sampling redberry mite infestation in blackberries continued at farm sites in Santa Barbara and San Luis Obispo counties. This survey is comparing redberry mite occurrence between primocane and floricane fruiting blackberries. Monthly sampling is now complete for 2016 and that data is being summarized.

**Best Management Practices for water and nutrient management from field high tunnels.** Dr. Gaskell is also collaborating with UCCE Advisors Oleg Daugovish and Ben Faber with a new project to investigate Best Management Practices for managing run-off water from field tunnels.

**Blackberry production with a bioreactor – Oso Flaco.** Dr. Gaskell has continued collaboration with Coastal San Luis RCD and the Central Coast Regional Water Quality Control Board to establish and monitor a demonstration “Bioreactor” at a collaborating farm at the lower end of the Santa Maria Valley. This project is evaluating blackberry production over a bioreactor established to cleanse irrigation water of nitrate. The blackberries are now established and developing normally over the bioreactor beds.

**Evaluation of public raspberry and blackberry cultivars at two central coast sites.** Dr. Gaskell is co-PI with Farm Advisor Oleg Daugovish in a new 3-year project funded by the Hansen Trust (Ventura Co.) evaluating publicly available raspberry and blackberry cultivars managed under different trellising regimes. Additional cultivars for the trial will be available in March 2017 and initial harvest data collection will begin in late 2017.



Newly established trails evaluating public raspberry and blackberry cultivars and alternative pruning and trellising regimes.

### 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
- Provided the research and educational base for establishment of coffee and tea as new crops in Santa Barbara County

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



Study evaluating beneficial microbes for plant protection at Manzanita Berry Farms

### Addressing the Challenge

\*\*Please note that Dr. Surendra Dara was on sabbatical leave during the October to December quarter. Reports on his work will be included in future publications.\*\*

### Public Value

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

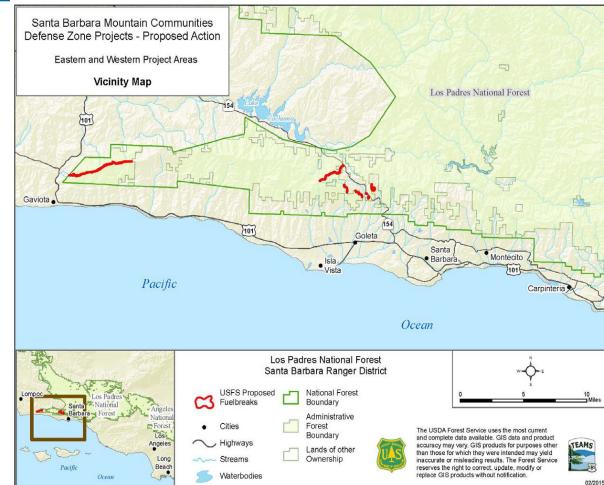
- Improved production practices by optimizing input costs and increasing yields
- Innovative research on alternatives to chemical fumigants, insecticides, miticides, fungicides, and improved Integrated Pest Management practices
- Efficient use of fertilizers and irrigation water which contribute to reduced 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

## 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.



Map showing the location of the treatment areas (in red). Left to right are the Gaviota/Refugio Canyon, Rosario Park, Haney Tract West, Haney Tract East, San Marcos Trout Club, and Painted Cave treatment areas (from USFS proposed action document, September 2015).

### 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 through the Santa Barbara Botanic Garden website; sampling at a supplemental site off Tunnel Road was put on hold, due to steepness of terrain and safety concerns.

As a board member of the Santa Barbara County Fire Safe Council, Moritz continued to work with local constituents on fire-related issues. Key local topics included the upcoming community wildfire protection plan (CWPP) for San Marcos Pass area and the USFS proposed "Santa Barbara Mountain Communities Defense Zone Projects" (see image below); both of these activities are contentious and have involved actual or potential lawsuits. The project on restoration of big cone Douglas fir in the Zaca Fire area of Santa Barbara County continues, although field work is difficult/intermittent due to recent rains.

### 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.

## 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.

### Addressing the Challenge

In the last quarter, Ben had face-to-face contacts with growers during 20 farm visits. One of the ongoing problems for growers after years of no rain has been the occurrence of a fungal blight that is affecting most major perennial crops. It affects citrus, avocado, blueberries, raspberries, as well as many landscape and native trees. There are other affects from the drought, as well, including fruit quality issues and fruit drop. Recent rains have provided leaching and hopefully reduced salinity issues. Avocado yields have lower in the last two years and are highly variable for the upcoming year.

The Topics in Subtropics Blog (<http://ucanr.edu/blogs/Topics/>) is now listed as a "Top Blog" in UC ANR. Ben also coordinated and/or authored 32 articles for the Topics in Subtropics blog with current information for growers of subtropical crops. This readily accessed information on crop production had 41,183 direct hits during this report period. Typical viewership is more than 400 hits per day. Although this information 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.

He attended a Laurel Wilt Disease meeting in Florida. This is a disease similar to Fusarium Dieback Disease that is affecting not only avocados, but many other native trees like sycamore, willow and coast live oak. He also presented two papers and the International Citrus Conference held in Brazil.

Ben is continuing with an avocado pollination study in four orchards and research is continuing with trials on avocado and citrus rootstocks, and raspberry tunnel evaluation for sediment management. A new trial is evaluating fruit load effect on water requirement for avocado and lemon. A trial evaluating soil salinity was recently completed and is being written up now.



Different models of Asian Citrus Thrips traps that are used for monitoring their populations.

### 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