



## Santa Barbara County Cooperative Extension Quarterly Report January-March 2015



UC Master Gardeners of Santa Barbara County developed and delivered a day-long “Gardening in a Drought—A Symposium”. Designed to be a drop-in event, more than 50% of the audience participated in the entire program.

Submitted by Mary Bianchi  
County Director, Horticulture Advisor  
Santa Barbara County  
April 30, 2015

## 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**, led by **Dr. Katherine Soule**, 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.

**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)

## 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.

### Addressing the Challenge

Continuing our commitment to programs in Santa Barbara County, the University of California completed a long term lease for our new office location at 7127 Hollister Ave, Ste 7 in Goleta. We formally opened our office for business on February 27th.

Director Mary Bianchi began working on a smoother 2015/2016 contract process in January with County Administration and the Agricultural Commissioner. She presented information on UCCE programs and funding to the Santa Barbara County Cattlemen's Association on January 14th. Director Bianchi met with the Santa Barbara County Partners in Stormwater Management in a joint meeting with San Luis Obispo County water purveyors on February 24th, and with the California Association of Public Cemeteries on March 28th, including facilities in Santa Barbara County, delivering information on drought strategies for municipalities. Working with UC integrated Pest Management Advisors, planning for a workshop for School Turf IPM and water management began on March 6th. Director Bianchi presented a summary of the October—December 2014 efforts of UCCE in Santa Barbara County to the Board of Supervisors on March 3rd.

Rangeland and Watershed Advisor Dr. Royce Larsen served at one meeting of the Agricultural Preserve Committee during the quarter, supporting informed land use planning decisions by the committee. Dr. Katherine Soule met with County Public Health to develop coordinated work plans for UC CalFresh activities. The Agricultural Advisory Committee meetings in January, February, and March were attended by Surendra Dara, Mark Gaskell, and Katherine Soule sharing information on UCCE current local research and upcoming education programs.



**On February 27th, UCCE Advisors and staff hosted an Open House for clientele, volunteers, and friends at our new office location.**

### 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

## 4-H Youth Development— Advisor, 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

4-H staff supported adult volunteers and youth members in delivering positive youth development programming to members and their families in 19 local community clubs throughout the county. Within each club, participants engaged in hands-on experiential learning projects in the focus areas of Science, Leadership, Healthy Living, and Citizenship. Several countywide 4-H activities, training meetings, and educational outreach events were delivered to 4-H clubs, families, as well as the community at large, including:

- Six local teens and one adult volunteer attended the California 4-H South Section Teen Involvement Conference to enhance their leadership capacities.
- County Presentation Days involved 33 youth members in a variety of public speaking opportunities. Fourteen members competed at Regional Presentation Day. Seven of those members are eligible to participate at State Presentation Day.
- More than 500 5<sup>th</sup> grade students from Goleta Valley Union School District participated in 4-H healthy living and watershed education, which was led by 4-H staff using the hands-on Agua Pura model.
- Six youth completed their 4-H Emerald Star Project, organizing and hosting the Leadership, Opportunities, Confidence (LOC) Field Day. More than 25 individuals participated in the member-led event, which addressed the statewide issue of retaining new members.
- Seventeen members embarked on a 5-month training to become Camp Wahoo! Youth Staff and Counselors, which includes planning and implementing a weeklong 4-H residence camp during summer 2015.
- At THRIVE Santa Maria's monthly Healthy School Pantry, 4-H staff, adult volunteers, and members provided hands-on educational activities to the 300 – 500 residents each month.



Andrea Borunda, 4-H Program Representative, presents the Agua Pura watershed model at the 2015 Goleta Valley Union School District's Health Fair."

### Public Value

The UCANR 4-H Youth Development Program in Santa Barbara County engages youth in reaching their fullest potential while advancing the field of youth development. 4-H youth members experience:

- Reduced participation in risky behaviors (e.g. underage drinking, pregnancy, gang activity), which decreases public costs to society.
- Increased workforce competence and preparedness in collaboration, critical thinking, problem solving, pursuing and reaching goals and ethics, which increases the economic sustainability, growth, and prosperity of California's global economy.
- Increased civic engagement through service learning projects, where they identify community needs and develop creative solutions to real issues in partnership with adults, which strengthens communities.
- Increased environmental stewardship and agricultural knowledge through research-based curricula which improves public health and safety and ensures a safe, sustainable, and secure food supply.

## UC CalFresh Nutrition Education— Advisor, Dr. Katherine Soule

### The Challenge

Poor diet and physical inactivity are second only to tobacco use as the leading cause of chronic disease and death nationwide. Research indicates 16% of adults report no leisure-time physical activity in the past month and only 35.3% report regular walking in the past week. Adult nutrition data shows 61.5% consumed fast food once or more in the past week and only 31% report consuming three or more fruits and vegetables the day before study data were collected. Many studies show that there is a crucial link between quality nutrition, physical activity and academic performance, which has a tremendous impact on lifelong achievement. In 2014 data show that only 23.4% of 5th graders, 32.6% of 7th graders, and 39.6% of 9th graders meet health standards. Nutritionally, only 42% of 2-11 year old children ate 5 or more servings of fruits and vegetables daily and 56% consumed fast food one or more times weekly. A 2013 UCLA report indicated that approximately 34% of local youth ages 2-17 drank one or more sugar-sweetened beverages daily.

### Addressing the Challenge

Staff provided comprehensive nutrition education services in partnering schools (Bruce, Rice, Adam, Bonita and Taylor Elementary) reaching over 80 classrooms in the Santa Maria-Bonita School District (SMBSD). UC CalFresh partnered with K-6 teachers to provide research-tested No-Prep Nutrition Education kits, in class food demonstrations, and garden enhanced nutrition education to approximately 2,700 students. In addition, staff conducted two 4-class series nutrition education classes with 24 English and Spanish speaking parents.

In March, staff partnered with SMBSD Food Service to train 10 cafeteria managers on Smarter Lunchrooms Movement concepts. Smarter Lunchrooms are evidence-based, low-cost interventions which encourage students to select and eat healthier food in the school cafeteria. At the training, cafeteria managers identified 1-2 changes they were going to make in their lunchroom by the end of the school year. Changes included: removing clutter and excess garbage cans from the eating area, increasing signage on the salad bar, and training staff to create a more welcoming atmosphere.

UC CalFresh staff provided technical assistance and support to food service by creating a Student Nutrition Advisory Council composed of 14 sixth graders. These student leaders helped to create posters advertising healthy foods and assisted in implementing a school wide tasting of a Brussels sprouts salad recipe. Five schools with over 3000 students tasted the recipe, a majority of students voted in favor of having it on the salad bar, and food service is responding by incorporating Brussels sprouts into their recipes.



**UC CalFresh Educator, Melissa LaFreniere samples Brussels sprouts salad with students at Taylor Elementary. Recipe: Shred Brussels sprouts, add lemon juice, oil, salt and pepper to taste!**

### Public Value

UC CalFresh focuses on extending research based nutrition and physical activity curricula to participants, especially parents and their children, by educating and training them to consume healthy foods and beverages, reduce consumption of less healthy foods and beverages, increase physical activity, and improve food resource management skills. These efforts benefit Santa Barbara County through:

- Reducing obesity and onset of nutrition related chronic disease and their burden on the healthcare system.
- Stimulating the local economy by increasing the purchasing power of low-income residents through food benefit programs (CalFresh and WIC), and the purchase of local produce.
- Increasing school and civic engagement among residents educated about identifying community and environmental risk factors for chronic disease.
- Decreasing food borne illness through safe food handling techniques.
- Decreasing food waste in school cafeterias through promoting lunchroom techniques that encourage students to consume nutritious meals.
- Increasing student academic achievement and work productivity through lifelong healthy eating and physical activity behaviors.

## 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.

### Addressing the Challenge

Viticulture/Soils Farm Advisor Mark Battany has been writing articles in the Grape Notes newsletter since 2001, being one of the first Advisors to transition to a fully electronic newsletter soon afterward. However growers are increasingly accessing information via small hand-held phones and pads, and the standard printed-page PDF format is not convenient to view on such devices.

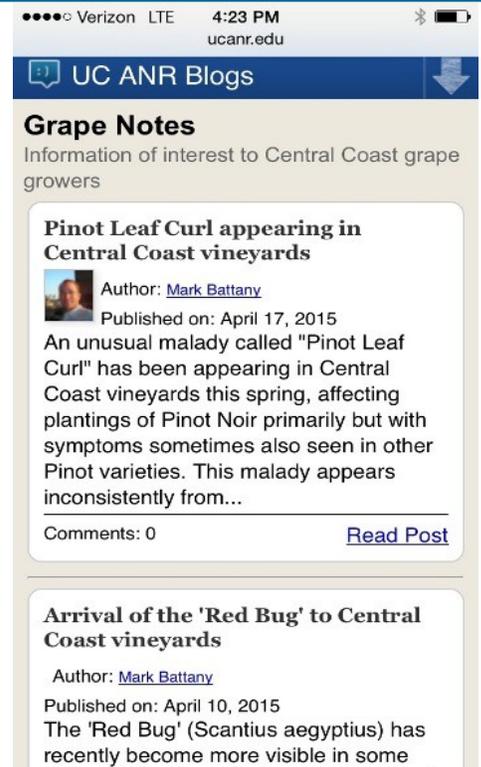
To better provide information to growers, Mark is transitioning to a blog format, which offers additional advantages besides being more viewable on the small screens. Blog articles are easier to produce and lend themselves to short, frequent articles with links to additional information on the internet. Another advantage is the ability to easily update the information in any article in the future. The first two articles on the Grape Notes Blog describe the “Red Bug” which is increasingly being observed in the region, and on the “Pinot Leaf Curl” malady which has been strongly symptomatic this spring. Growers can quickly learn that the “Red Bug” is not harmful to grapevines and does not require treatment and be directed to the most current information on Pinot Leaf Curl.

The blog can be viewed at:

[http://ucanr.edu/blogs/  
GrapeNotesBlog/](http://ucanr.edu/blogs/GrapeNotesBlog/)



Image source: Kalyn Navone



### 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—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.



Field studies are monitoring raspberry crop development in the Santa Maria Valley to improve water and nutrient use.

### Addressing the Challenge

Accumulating effects of the drought have continued to challenge coastal specialty crop growers. Farm visits and responses to grower inquiries – among other things - have focused on more efficient water management and anticipating potential water-related problems that might arise. An existing research project to develop more precise irrigation management for blackberries is now being expanded to include raspberry crops. Three long-term field trials were established during the past few weeks on cooperating raspberry farms in the Santa Maria Valley and Nipomo in collaboration with Driscoll Berry Associates. Similar projects are also underway in Santa Cruz and Ventura counties. These farms will be sampled and photographed regularly with special infra-red cameras during the entire raspberry plant growth cycle to measure the development of the crop to predict water requirements more precisely. In addition to water requirements, plant uptake of nitrogen, phosphorus, and potassium will also be monitored and the data will be incorporated into the UC-developed CropManage software to refine irrigation and nutrient management.

Additional field trials with organic strawberries, blueberries, and coffee assist growers to produce these crops more efficiently. Field trials included:

- Blackberry mowing, tunnel use, and other cultural practices for the most profitable production season.
- Evaluation of commercial blueberry that produce during the most profitable part of the market season.
- Cultural practices for successful coffee production and evaluation of cropping systems to interplant coffee in avocado orchards.

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

## Master Gardeners-Advisor, Mary Bianchi & Program Director, Fiona Brennan

### 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

Master Gardeners held their first all day workshop “Gardening in a Drought: A Symposium” on January 24, 2015. We reached a 100 community members with 50% of the attendees remaining for the entire day. Many community leaders participated with the Master Gardeners.

In February, the Master Gardeners presented “Year Round Edibles in your Garden” and a tour of the Mesa Harmony Garden. The workshop reached 102 interested gardeners and covered the planting calendar and succession planning.

In March, we held a North County workshop “The Life in Your Garden: Native Bees and Other Beautiful Beneficials” with 52 attendees and author Sharon Lovejoy. At the Orchid Show a Master Gardener presented “Growing Orchids Outside” three workshops with 25 people attending each session.

Bilingual Master Gardener volunteers provided instructions on growing food for home gardens for the Santa Barbara Food Bank – “Grow Your Own Way” project at four events reaching 220 largely Spanish-speaking community members.

The information table at Santa Barbara Farmers’ Market reached 527 home gardeners by answering questions on drought tolerant landscapes, pests, mulching, and Asian Citrus Psyllid (ACP).

Our volunteer work at Alice Keck Park Memorial Gardens and Huerta Garden at the Mission, Master Gardeners reached 1,131 community members and helped raise awareness of beneficials, sustainable methods of planting and soil management in collaboration with other community organizations.

Master Gardeners volunteered 1070 hours to community education representing \$23,696 in educational activity on water conservation and integrated pest management.



Master Gardeners meet for *Year Round Edibles in Your Garden* workshop.

### 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

## 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.

### Addressing the Challenge

Research and outreach efforts address major concerns of the strawberry and vegetable growers and also promote sustainable management practices for a safe environment. This quarter Dr. Dara:

- Completed a study to manage root aphids (a new species and an old species) in organic celery in response to a grower's need and provided control options.
- Authored five extension articles about novel modes of action of entomopathogenic fungi, potential of beneficial microbes, new smartphone application, IPM studies, and improving the compatibility between fungicides and a beneficial fungus. These articles help improve crop production and protection practices.
- Provided input for an interview about the efficacy of a new chemical pesticide.
- Invited by Santa Barbara County Nursery and Flower Growers Association to speak about research topics that help their industry.
- Continued studies on irrigation and nutrition management, role of micro-sprinklers, and efficacy of beneficial microbes and other materials in strawberry production.
- Reached out to 139 people through direct contact and 611 through extension meetings.

UCCE continues to provide timely information on production practices, pest, disease, and weed management to the clients.



Planting in micro-sprinkler study plots at Manzanita Berry Farms, Santa Maria

### 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.

### Addressing the Challenge

During this quarter Specialist Max Moritz continued to help coordinate the local Live Fuel Moisture (LFM) team, which supplies regular updates of local fire danger through the Santa Barbara Botanic Garden website; upgrades were also made to equipment (e.g., drying oven thermostat).

Working with the members of the Santa Barbara County Fire Safe Council, Moritz and collaborators successfully reached the next step in a CAL FIRE grant proposal to assess potential for “native type conversion” fuel break project (i.e., from flammable shrublands to safer oak woodland buffer, instead of to invasive grasses). The project footprint has been scaled back due to considerations over jurisdiction of lands to be assessed, but all indications are that the proposal is very competitive for final approval and funding.



### 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.

#### Photo caption top right:

**Mission Canyon fuel break modification project footprint, which will assess establishment of oak woodlands as a fire hazard reduction treatment that employs a dominant cover of native instead of non-native species. Different seedling establishment techniques will be monitored, and carbon sequestration protocols will be followed, both of which should highlight a new way to meet multiple (and often conflicting) priorities.**

## Soils, Water, Avocados, Tropicals, 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/Subtropicals 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

Ben Faber continues his extension work with Santa Barbara County subtropical fruit growers, providing evidence based information via phone and email regarding production issues, with more than 40 contacts during this quarter.

An avocado grower meetings in February covered bee management and canker diseases. Approximately 60 growers attended the meeting.

Ben also coordinated and/or authored 22 articles for the Topics in Subtropics blog (<http://ucanr.edu/blogs/Topics/>) with current information for growers of subtropical crops. This readily accessed information on crop production had 40,557 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.

Applied research that will benefit subtropical producers in Santa Barbara County includes projects examining the following:

- Performance of 'Hass' avocado on 6 different rootstocks
- Water requirements of raspberries grown in tunnels
- Lemon rootstock effect on lemon production,
- Strawberry establishment with reduced water applications
- Pitahaya variety evaluation and cultural practices



**Rat damage to citrus bark and cambium identified during a farm call with local growers. Farm Advisors are regularly called out by local producers to help identify production challenges and pest damage. UC IPM provides information on control measures through the [UC IPM website](#).**

### 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