

University of California Cooperative Extension
Santa Barbara
Quarterly Report January—March 2016



Tomato bug, shown here on zucchini, can be both a predator of other insects and a plant feeding insect. It has been found in Santa Barbara County damaging tomatoes, zucchini, and other vegetables in home gardens and on commercial farms in the past two years.

For more information visit Dr. Surendra Dara's eNewsletter [Strawberries and Vegetables](#).

Submitted by Mary Bianchi
County Director, Horticulture Advisor
Santa Barbara County
April 29, 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



Mark Gaskell
805-788-2374
mlgaskell@ucanr.edu



Mary Bianchi
805-781-5949
mlbianchi@ucanr.edu



Max Moritz
805-893-2125
mmoritz@ucanr.edu



Surendra Dara
805-788-2321
skdara@ucanr.edu



Katherine Soule
805-781-4093
kesoule@ucanr.edu



Ben Faber
805-645-1462
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.



Dr. Royce Larsen is collecting data from regional weather stations and forage production research plots that help rangeland producers qualify for federal drought relief programs

Addressing the Challenge

County Director Mary Bianchi maintained contact with Agricultural Commissioner and County Administrative Office staff throughout the quarter as needed. Director Bianchi worked with the Agricultural Commissioner's office to draft amendments to the 2015/2016 Contract to expand UC Advisor Dr. Royce Larsen's Watershed and Natural Resources Programs in Santa Barbara County.

Director Bianchi collaborated with the County Planning and Development Departments Energy and Climate Action Plan implementation efforts and provided information on existing or recently completed research projects that address key implementation strategies.

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.

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

Santa Barbara County Agricultural Advisory Committee meetings in January, February, and March were attended by Surendra Dara, Mary Bianchi, and Dr. Max Moritz, respectively. Updates were provided on UCCE activities and upcoming events, as well as future Advisor positions proposed to support agriculture in Santa Barbara County.

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— 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 17 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:

- Hands-on learning activities presented by 4-H staff, volunteers and youth members to over 500 visitors at the THRIVE Santa Maria's Healthy School Pantry (HSP) program, including displays on nutrition, arts & crafts, and science.
- Five teens learned leadership skills at the Teen Involvement Conference in Mountain View Center.
- County 4-H Presentation Day and Sectional 4-H Presentation Day gave more than 50 youth practice their public speaking skills, and to qualify for State 4-H Presentation Day.
- 4-H LEaD (Leadership, Education and Development) Conference planned by county teens and adults and enjoyed by 44 youth and 21 adult leaders.
- A collaboration between 4-H and the Santa Barbara County Health Department engaged 33 youth participants in 8 sessions of hands-on 4-H educational activities while their parents attended Eat Healthy, Be Active Community Workshops.
- The 4-H Agua Pura watershed model was presented to 512 students at the Goleta Union School District 5th Grade Health Fair.
- Four new in school 4-H Clubs were chartered in the Santa Maria Bonita School District, to provide 4-H programming to hundreds of new 4-H youth participants.



Youth learn nutrition, leadership skills, food safety and knife skills at a 4-H School Club training session.

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.



The 4-H Food Preservation project provides experiential learning within the four main methods of preserving. The last class for this project in May 2016 and is led by Mary Thieleke Jackson, UCCE Master Food Preserver.

Addressing the Challenge

Two residents from Santa Barbara County have completed the 2016 Master Food Preserver Program Training. They will be graduating on April 19th as a certified UCCE Master Food Preservers (MFP) for Santa Barbara County, which totals to four MFP's in the county. The UCCE is looking into offering a MFP Training conducted in Santa Barbara County to recruit more local residents and to increase MFP outreach efforts.

The MFP Program has coordinated with the Master Gardener (MG) Program of Santa Barbara to conduct a public class in June at the Seaside Gardens at 10:00am. The Master Gardeners will be doing a demonstration on how to build and maintain a herb garden, and then after the MG presentation, the MFP's will then demonstrate on how to safely dry herbs for spices or teas. This is the first collaborative class between the SB MFP and MG programs.

The implementation of the Junior Master Food Preserver 4-H project is well underway. 4-H Youth from Santa Maria, Lompoc, Goleta, and Santa Ynez have been given the opportunity to acquire preservation skills in:

- Making and canning jam
- Making freezer jam
- Dehydrating fruits
- Making and dehydrating fruit leather
- Pressure canning Chili Con Carne

• 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 to choose locally grown commodities

Master Gardeners- 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 presented two workshops on “Growing Orchids in Santa Barbara” that reached 40 visitors at the Santa Barbara International Orchid Show.. Through staffing help tables at the Orchid Show and the Horticulture Society Plant Tables, Master Gardeners reached a total of 934 home gardeners, answering questions on the Asian Citrus Psyllid, drought tolerant landscapes, pests, mulch, and fruit trees.

A help table at the Annual Seed Swap reached 171 community members with evidenced based information on sustainable home gardening practices.

Bilingual Master Gardeners provided instructions on growing food for home gardens for the Santa Barbara Food Bank—“Grow Your Own Way” project at three events reaching 107 largely Spanish-speaking community members.

Master Gardener volunteers working at Alice Keck Park Memorial Gardens and La Huerta Garden reached another 185 community members and helped raise awareness of beneficial insects, sustainable methods of planting, seed identification and collection and soil management.

A new 18-week training class for 22 new Master Gardeners was begun in February, with graduation of these new volunteers scheduled for June. Successful recruitment in northern Santa Barbara County has included five volunteers from the Santa Ynez, Buellton, and Lompoc areas. This will substantially increase the presence of Master Gardeners in the North County

Master Gardeners volunteered 1,116 hours to community education representing \$30,790 in effort to extend educational information.



UC Master Gardener volunteers reached 821 visitors to the Santa Barbara International Orchid Show

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

During January-March 2016 UC CalFresh partnered with the Santa Barbara County Nutrition Education Obesity Prevention program to develop a three-year integrated work plan. The work plan addresses the specific nutrition and physical activity needs of low-income residents in Santa Barbara County. Areas of focus for the work plan that will begin October 1st include: support for district-level school wellness policy revision, tracking, and promotion; nutrition and physical activity education training in school and afterschool programs; and positive youth development collaborative activities that engage youth in identifying and promoting policy or environmental changes that support health.

In addition, UC CalFresh partnered with three schools in the Santa Maria-Bonita School District and the UC 4-H Youth Development Program to work with student leaders on a youth nutrition and physical activity weekend training. Thirty youth participated in the all-day training where they learned about youth leadership, food safety, how to conduct a cooking demonstration and how to become a recess activator. When asked what they would like to do now that they had participated in the training, youth commented:

- “[I am going to] *eat more healthy.*”
- “*I am going to try some of these recipes that I have learned.*”
- “[I will] *help others be more active during recess.*”
- “[I will] *become healthy and make other kids be healthy too!*”

UC CalFresh continued to provide comprehensive nutrition education programming at three school sites reaching approximately 2560 students and 84 teachers.



Youth leaders harvesting from the Rice Elementary school orchard during the one-day training. Youth later distributed produce to families to promote healthy eating.

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.

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.

Addressing the Challenge

Second year vines are often very prone to frost damage in the spring because they emerge from buds very close to the ground. Because the coldest air temperatures on a typical radiation frost night occur very near the ground, these vines if unprotected will often suffer damage from frost while taller vines escape undamaged.

Growers commonly use grow tubes during the first year of vine growth to shelter the vine from mechanical damage, desiccating winds and herbicide drift, but some growers remove the tubes before the second season begins, assuming that no further protection is required. Mixed information exists on whether or not grow tubes will provide some level of frost protection to grape tissues within the tube. In theory any physical barrier between the tissues and open sky should reduce the cooling effect of radiation heat loss at night, but practical research information on this topic is scarce and inconsistent.

To help fill this information gap and determine what benefits grow-tubes might have early in the second season to help protect young vines from spring frost damage, Farm Advisor Mark Battany is conducting a trial to compare how two different heights of grow tubes affect the temperatures of grape tissues within the tubes as compared to tissues without a grow tube.

The results of this study will help growers make an informed decision as to whether or not it is advantageous to leave the grow tube in place during the second season spring growth period.



Frost damage to second year vines in the early spring.

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.



Field sampling program uses: a) overhead photography b) infrared camera images, and c) physical plant canopy sampling and lab analyses to determine seasonal canopy development and nutrient uptake.

Addressing the Challenge

Improving irrigation and nutrient-use efficiency with berry crops is an important local focus for UC Cooperative Extension. The effects of drought conditions over the past five years continue to affect Central and Southern California fruit and vegetable production areas. Production of mixed fresh berry crops – raspberries, blackberries and blueberries - has expanded dramatically in Santa Barbara County over the past several years. A project was initiated in 2014 to investigate ways to improve the efficiency of water and nutrient application in coastal growing areas in collaboration with other Farm Advisors in Monterey and Ventura counties. The project sampled regularly throughout 2015 from field plots established on three collaborating farms in the Santa Maria Valley and Nipomo. Analysis of that data is continuing in early 2016.

Data from these field trials will be used to more precisely define the canopy development; specifically, the percentage of area covered by the crop and the growth of the crop canopy and these values will be used to adjust the irrigation application schedule using evapotranspiration from area CIMIS stations. In addition to improving water management efficiency, sampling from the field trials will also be used to characterize the crop uptake and partitioning of key nutrients - nitrogen, phosphorous and potassium – to enable the more precise application of nutrients to more closely match plant nutrient demand and avoid unnecessary nutrient application and the potential for surface and groundwater contamination. An initial summary of results from that study will be presented as part of the Annual Caneberry Grower Meeting scheduled for April 13, 2016.

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.



Biocontrols 2016 conference in Monterey: attended by several growers and PCAs from Santa Barbara. S. Dara talks about vegetable pest management using biopesticides.

Addressing the Challenge

The Strawberry and Vegetable research and extension program accomplished the following activities during this review period: Initiated a strawberry study to optimize water and nutrient inputs and measure the impact on pests and diseases

- Authored or co-authored six extension articles in newsletters and trade journals on IPM strategies and end of the season management for lygus and other pests, and use of micro-sprinklers in strawberries, downy mildew in ice plants, and Erythrina stem borer.
- Published Central Coast Agriculture Highlights quarterly newsletter.
- Made arrangements for the annual strawberry field day to be held May 10
- Articles on two eNewsletters were viewed about 15,585 (11,748+3837) times and the IPMinfo app was downloaded 29 times during this quarter
- Provided input to Growing Produce about biopesticides and their role in IPM
- Reached out to 121 people through direct contact
- UCCE continues to provide timely information on production practices, pest, disease, and weed management to clientele

Public Value

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

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

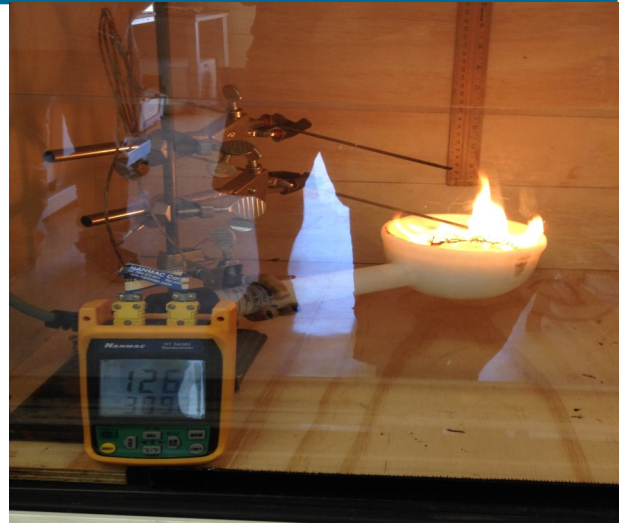


Fire Ecology & Management- Dr. Max Moritz

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.



Experiment showing test burn of local chamise (*Adenostoma fasciculatum*) sample at relatively high moisture content. Parameters measured include time-to-ignition, flame height, maximum temperature, and glowing combustion duration, all of which help explain different aspects of flammability.

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. This information feeds into regular updates and distribution through the Santa Barbara Botanic Garden website.

Experimental burn methods were developed for local fuel types (e.g., see image and caption), to determine how variation in LFM relates to plant flammability. He continued to work with Santa Barbara City Fire on a Memorandum of Understanding for access to sampling sites; final insurance details are still being resolved.

Max attended the March 2nd Agricultural Advisory Committee meeting and provided an update on fire-related activities in the county. As a board member of the Santa Barbara County Fire Safe Council, Moritz continued to work with local constituents on fire-related issues.

A collaborative proposal submitted with UCSB colleagues on restoration of big cone Douglas fir in the Zaca Fire area of Santa Barbara County has received positive preliminary reviews, although final decisions have not been made. Max also began working with members of the Land Trust for Santa Barbara County, to investigate mitigation of fire-related safety issues in conservation easements.

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/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

In the last quarter, Ben had face-to-face contacts with growers during 24 farm visits. One of the ongoing problems for growers after years of no rain has been the occurrence of a fungal blight that it is affecting most major perennial crops. It affects citrus, avocado, blueberries, raspberries, as well as many landscape and native trees. There are various other effects from the drought, as well, including fruit quality issues.

The January avocado seminar was attended by 54 growers. The topics were avocado pollination by native bees, as well as honeybees. The annual Cherimoya Association Meeting in Carpinteria was attended by 46 growers. The quarterly Topics in Subtropics newsletter was released.

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 <http://ucanr.edu/blogs/Topics/> 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.

Ben is continuing with an avocado pollination study in four orchards and research is continuing with trials on avocado and citrus rootstocks, raspberry tunnel evaluation for sediment management. A new trial will be evaluating fruit load effect on water requirement for avocado and lemon.



Stem and Leaf Blight in avocado

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