



## Santa Barbara County Cooperative Extension

Quarterly Report April-June 2015



The redberry mite (*Acalitus essigi* Hassan) is a serious pest of blackberries that are being produced on ever-expanding acreage on California's coast from San Diego to Watsonville. Recent research by UCCE farm advisors has found that traditionally grown floricanne-fruited blackberry varieties can suffer heavy losses to redberry mite in established older plantings. Newer, primocane fruiting varieties appear to offer dramatically improved resistance to the redberry mite because they are managed to totally eliminate their vegetation during the winter off-season.

Submitted by Mary Bianchi  
County Director, Horticulture Advisor  
Santa Barbara County  
July 24, 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.



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## Administrative Accomplishments- County Director, Mary Bianchi

### The Challenge

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

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



**Dr. Cheryl Wilen, Interim Director UC IPM, presents weed identification and control methods to turf managers from Central Coast schools at a workshop in Santa Maria.**

### Addressing the Challenge

Director Mary Bianchi participated in both the preliminary and final budget workshops in April and June, with an outside agency request to fully fund the 2015/2016 UCCE contract at \$162,000. To this end, she presented information on UCCE programs and funding Agricultural Advisory Committee in May and June and met with the Grower Shipper Association of Santa Barbara's Executive Director in May. Director Bianchi met with the Agricultural Commissioner on April 21 to discuss UCCE's greater resources and skills for addressing Energy and Climate Action Plan (ECAP) strategies assigned to the Ag Commissioner in drafts of the ECAP. She participated in a April 27 conference call with Planning and Building to discuss changes to the final ECAP draft, and attended the May 19<sup>th</sup> Board approval of the ECAP. Director Bianchi presented a summary of the January—March 2015 efforts of UCCE in Santa Barbara County to the Board of Supervisors on May 19th.

Working with UC IPM Advisors and Department of Pesticide Regulation staff, Director Bianchi held a workshop on School Turf IPM and water management on April 2nd. Additionally, she joined the Santa Barbara Food Action Plan's Agricultural Viability Working Group. Mary Bianchi served at the June meeting of the Agricultural Preserve Review Committee, 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, with the Parks and Recreation Department for UC CalFresh Healthalicious Training, and with Public Works regarding the UC Aqua Pura program. The Agricultural Advisory Committee meetings in April, May, and June were attended by Mark Gaskell and Mary Bianchi, sharing information on UCCE current local research and upcoming education programs.

### 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

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:

- Five local teens and one adult volunteer attended the California Focus Conference in Sacramento, a citizenship educational experience.
- More than 170 4-H youth members participated in County Exhibit Day, a learning event for novice and experienced exhibitors, showcasing the wide variety of projects available with other members and the community.
- At the Lompoc Unified School District Science, Technology, Engineering, Art, and Math (STEAM) Festival, 4-H YDP had an outreach booth, showcasing projects, curriculum, and the hands-on Agua Pura model to 365 youth.
- At THRIVE Santa Maria's monthly Healthy School Pantry, 4-H staff, adult volunteers, and members provided hands-on educational activities to 300 – 500 residents each month.
- Seventy five youth submitted record books for county judging, and three youth participated in State Presentation Day at UC Davis.

With the end of our program year, 760 youth members were enrolled in 4-H Community Clubs. 164 youth participated in 4-H Military Club projects at Vandenberg Air Force Base. The 4-H Agua Pura watershed education, hands-on science, Santa Maria-Bonita Healthy School Food Pantry, and other community and school events reached 11,113 youth.



**Goleta 4-H Club attend Cal Focus at the State Capital. They met with Senator Hannah-Beth Jackson and Assembly member Das Williams.**

### 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.

### Addressing the Challenge

Three Certified Master Food Preservers (MFP) are serving Santa Barbara County. These volunteers graduated from a nine week training course instructed by UC Cooperative Extension staff on various preservation topics such as: water-bath canning, pressure canning, dehydrating, freezing, as well as food safety and proper food storage techniques. After completing the courses, they passed a comprehensive exam to become a certified Master Food Preserver. In order to maintain their certification, they will provide 25 hours of volunteer education for Santa Barbara County, as well as complete 12 hours of continuing education per year.

UCCE MFP's of Santa Barbara County have begun to survey and assess a few Santa Barbara communities to seek out what types of preservation classes and outreach would be of interested and applicable to the community. During this period, MFPs hosted a booth for the City of Lompoc Health Fair. The city was awarded a League of California Cities grant to build the city's Workplace Health Program, which included a Wellness/Health Fair for their employees. The city requested UCCE's participation to provide information on nutrition and home gardening to help benefit the Total Workforce Health. The UCCE Master Gardener (MG) Program and the MFP Program hosted a booth on home gardening and home food preservation. The MFP's distributed research based literature on how to properly preserve summer's bounty, while showing visual examples of fresh canned tomatoes, Jardinière, dilly beans and strawberry jam. They also demonstrated how to use a water bath canner, explained other canning equipment and taught 55 health fair participants how to thoroughly check their canning jars before using them.

This event also brought forth future collaboration efforts with the Lompoc Parks and Recreation Department, as well as partnering with the UCCE MG Program to host a Farmers' Market booth at the Solvang Wednesday afternoon markets.

As the program expands over the next year, the UCCE MFP program will continue to serve the community in bringing them current and up-to-date research on home food preservation through Farmers' Market outreach, public classes and newspaper articles.



The UCCE Master Food Preserver Booth at the city of Lompoc's Workplace Health Program Wellness Fair

### 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- 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

In May the Master Gardeners had their first North County Earth Day information table at the Santa Ynez Valley Botanic Garden's Earth Day Festival. They reached 55 backyard gardeners at this one day event. They had demonstrations on how to make Mason Bee houses and information on Native Bees.

In June, Master Gardeners held their first series of classes beginning with Raised Bed Gardening 101, at Grace Lutheran Church Community Garden. The 90 minute presentation was presented by five Master Gardeners and attended by six community members. Seeds were donated by Trinity Community Garden. The next series of workshops will occur in the fall.

Our 2015 Trainee Class graduated and we added 19 more Master Gardeners to our program. Our volunteer activities at Alice Keck Park Memorial Gardens and Huerta Garden at the Mission reached 137 community members and helped raise awareness of sustainable methods of planting and composting.

The information table at Santa Barbara Farmers' Market reached 131 home gardeners by answering questions on drought tolerant landscapes, pests, and fruit and ornamental trees.

Bilingual Master Gardener volunteers provided instructions on growing food for home gardens for the Santa Barbara Food Bank – “Grow Your Own Way” project at two events reaching 92 largely Spanish-speaking community members.

Master Gardeners volunteered 1,075 hours to community education representing \$23,810 in educational activity on water conservation and integrated pest management.



Master Gardeners at Santa Barbara Food Bank –  
“Grow Your Own Way” project

### 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— Advisor, 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

UC CalFresh staff continued to provide nutrition education services at Robert Bruce, Rice, Adam, Bonita and Taylor Elementary schools, reaching over 80 classrooms in the Santa Maria-Bonita School District (SMBSD).

UC CalFresh partnered with K-6 teachers to provide research-tested curriculum kits, classroom food demonstrations, garden education and lunchtime vegetable tastings to approximately 4000 students. In addition, staff worked with student leaders to conduct one school-wide physical activity event reaching 800 students and two extender trainings on garden enhanced nutrition education (GENE), and implementing afterschool nutrition curriculum.

In June staff hosted a GENE training for ten preschool through elementary educators in the SMBSD. The workshop was hosted at Bruce Elementary where UC CalFresh has been implementing the Shaping Healthy Choices pilot project and collaborating extensively with the school community. Through the GENE workshop, educators were presented with hands-on training on how to utilize existing gardens for nutrition education. Educators who do not have an existing garden were introduced to the process of garden start-ups, planning, planting and harvesting a school garden. A UC Cooperative Extension Master Gardener was on hand to provide gardening information and answer questions about how and when to plant edibles. At the end of the workshop, 100% of participants agreed with the statement: *I have a better understanding of how to use a garden to promote the consumption of fruits and vegetables.* A majority of participants stated they will incorporate the information gained in this workshop into their operations in the next six months.



SMBSD Educator enjoys a lettuce taco at the June Garden Enhanced Nutrition Education training at Bruce Elementary.

### 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— 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.



Photo: Mark Battany  
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**Root-bound vine after ten years**

### Addressing the Challenge

Some decisions made in the vineyard at planting time will exert an influence over the life of the vines, without any possibility correction later. A good example of this is the arrangement of the initial roots that are on the vine, whether planted as a dormant benchgraft (no leaves) or as a potted green-growing vine. If the roots of the benchgraft are not extended vertically downward in the planting hole but instead are bent upwards, this will give the vine a “J-rooted” condition. If a green potted vine has extensive root growth that circles around the circumference of the pot, this can create a “root bound” condition for the vine.

The orientation of these initial roots at planting will be maintained throughout the life of the vine.

If these roots are excessively crowded or bent, they can suffer from root strangulation and pinching as they expand in girth with age. If this occurs, the vine will gradually decline in growth and productivity, and in severe cases will die. Because this root pinching occurs after the root diameter has increased with growth, vines may have reached eight or more years of age before they begin to decline and collapse.

A number of decade-old vineyards in Santa Barbara County that have been suffering unexplained vine decline have been determined to be afflicted with J-rooted and root-bound vines. These vineyards are generally being replanted as a result. Thus more careful attention at planting to ensure proper root orientation is critical.

### 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 trials are evaluating alternative pruning practices for Pakistani mulberries in Santa Barbara and San Luis Obispo Counties.

### Addressing the Challenge

Some new and continuing projects are underway to improve small farm profitability and sustainability. Some growers in Santa Barbara and San Luis Obispo counties are evaluating potential new crops for their crop mix. Pakistani mulberries (*Morus alba* 'Pakistan') are one such crop that shows promise at several farm sites. These “berry-like” fruits are produced on deciduous trees. They are very sweet and attractive for fresh consumption and fit in well for growers that are growing other types of berries for fresh markets. The few growers who have planted to date are reporting solid market demand good sales from initial harvests that came between March and June of this year. The trees are very vigorous but new growth where fruit is set can be tall. Trials are being initiated at selected fields to compare the effects of pruning practices on subsequent yield and fruiting height.

Coffee is another new and promising small farm crop that has emerged after more than a dozen years of R&D at Goleta-based Goodland Organics and has been described in prior reports. Coffee has now been established on more than two dozen farms from N. San Luis Obispo county down the coast to Carlsbad and inland to Temecula. Several new sites in Santa Barbara County are being established in open field and interplanted in avocado orchards. For more information see: <http://goodlandorganics.com> and <http://www.cacoffeegrowers.com> .

### 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

## 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.

- Completed two studies in strawberries that addressed water conservation, disease and pest management, and improving crop health and yield. Completed a downy mildew management study in beets. Continued irrigation and nutrient optimization study in strawberries. Started brown marmorated stink bug monitoring in different areas. Planned for additional studies in strawberries and vegetables.
- Released the first UC smartphone app “IPMinfo” about strawberry pests and diseases. Produced six extension articles about the app, weed management in lettuce, a new invasive pest in figs, and stink bugs in strawberries; two handouts about micro-sprinklers and microbial enhancers; edited Spanish and English strawberry production manuals; and revised cilantro and parsley pest management guidelines. Released Central Coast Agriculture Highlights quarterly newsletter.
- Article on my two eNewsletters were viewed about 14000 times during this quarter.
- Provided input for 11 media enquiries about various crop production and protection topics.
- Reached out to 268 people through direct contact and 138 through extension meetings.

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



Micro-sprinkler study presentation at the Strawberry Field Day, Manzanita Berry Farms.

### 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.



(From Ironwood, Summer 2015, Santa Barbara Botanic Garden Quarterly Publication).

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

As a board member of the Santa Barbara County Fire Safe Council, Moritz also helped finalize and resubmit a grant proposal (to CAL FIRE) to fund “native type conversion” fuel break project (i.e., from flammable shrublands to safer oak woodland buffer, instead of to invasive grasses).

### 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, 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 and water delivery cutbacks, with more than 40 grower contacts during this quarter.

An avocado grower meeting in April covered information on irrigation and salinity management, and in June covered avocado pruning. Approximately 60 growers attended these meetings. Citrus growers attended a meeting on Asian Citrus Psyllid which included discussion of salinity management and grower needs to follow food safety measures.

Ben also coordinated and/or authored 25 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 15,655 direct hits during this report period. Typical viewership is more than 300 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. We are also in the process of editing a grower manual in both English and Spanish on Strawberry Production with the Cachuma Resource Conservation District.

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



Salinity damage to avocado from under-irrigation

### 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