



**University of California**  
Agriculture and Natural Resources

## **Santa Barbara County Cooperative Extension**

Quarterly Report January – March 2014



**Mark Gaskell, Small Farms Advisor, has been instrumental in developing variety and cultural information on blueberries and blackberries as new crops for Santa Barbara County.**

Submitted by: Mary Bianchi  
County Director, Horticulture Advisor  
Santa Barbara County, April 30, 2014

## University of California Programs, Advisors and Specialists in Santa Barbara County

**PLANT SCIENCES/HORTICULTURE, led by Advisors 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.

**FIRE ECOLOGY AND MANAGEMENT, led by UCCE Specialist 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.

**UC CALFRESH NUTRITION EDUCATION PROGRAM, led by Advisor 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 Advisor 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 Advisor 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.



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## Strawberries and Vegetables

Advisor 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.



Ag Innovations conference on March 26, 2014 in Santa Maria

### 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.

- Organized an Ag Innovations meeting, the first of its kind, to showcase innovations that help growers and PCAs with improved plant production and protection practices.
- Presented five talks at different extension meetings about strawberry and vegetable pest and disease issues.
- Communicated with and provided technical expertise to Ag Commissioner's pathologist and entomologist about pest and disease issues.
- Provided input to two magazines for articles on pest issues.
- Published four articles to different newsletters about compatibility of an entomopathogenic fungus and fungicides, new UC strawberry cultivars, and Ag Innovations Conference; one popular magazine article about strawberry IPM studies; one blog article about a new invasive pest, weeping fig thrips; and an article in a scientific journal about endophytic colonization and pest management potential of an entomopathogenic fungus.
- Initiated two herbicide trials in lettuce and one plant health study in cabbage which are currently in progress.
- Continued three field studies in strawberries to reduce sprinkler irrigation and to improve plant health and growth.
- Communicated with chemical and fertilizer industry, and strawberry and vegetable growers to develop new studies for the spring and summer seasons.
- Reached to 325 people through direct contact and 330 people through meetings held during this period.
- UCCE continues to provide timely information on production practices, pest, disease, and weed management to the clientele groups.

### 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.

## 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.



Temperature inversion tower being installed at a future vineyard site in Santa Barbara County

### Addressing the Challenge

The main determinant of wind machine performance for frost protection is the strength of the temperature inversion that occurs on a frost night. If the air high above the ground surface is warmer than near the ground surface (an inversion), then this warm air can be mixed with the colder air to raise the temperature at the crop. A strong inversion occurs when the air high above the ground is much warmer than the air near the ground.

Previously, assessing the temperature inversion strength was a difficult and expensive task. To address this, Mark Battany developed a very inexpensive and practical method to take temperature readings at 35 ft. above the ground. The data from these 'inversion towers', which cost \$250 a piece and are sourced primarily from local hardware stores, can predict what the potential benefit of a \$30-40,000 wind machine will be when operated at the same site. Assessing conditions before purchasing wind machines reduces the risk of investing large amounts of money on a protection measure that may not work well at that particular site.

This method has proven its value in the current UCCE project that assesses temperature inversion conditions in Santa Barbara, San Luis Obispo, and Sonoma counties with over 60 towers operating each spring since 2012. Growers and consultants have recognized the value of this method, and the number of privately-operated towers now exceeds this number and continues to grow statewide.

For more information, please see the following UCCE website:

[http://cesanluisobispo.ucanr.edu/Viticulture/Frost\\_Protection/](http://cesanluisobispo.ucanr.edu/Viticulture/Frost_Protection/)

### 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 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 on the farms of cooperating growers and the results of those 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 in Santa Maria are evaluating efficient use of organic fertilizers for strawberries

### Addressing the Challenge

Acreage and value of organic fruit and vegetable production continue to expand in California and nationwide in response to growing public demand for organic produce. New and established growers need research-based information to guide them for efficient management of organic strawberry and other long season organic fruit and vegetable production. Data from field trials conducted during 2013 showed that there was little difference in strawberry production between different rates of nitrogen fertilization. Field trials during the reporting period have compared two types of liquid organic fertilizers and a sampling regime has been established to follow the fate of nitrogen applied as organic fertilizer as it passes through routine filtering and then sampled at various points along the irrigation stream and then as it emerges from the drip emitter. Those trials will continue until mid-April 2014 and samples collected for the first 12-16 weeks are being analyzed at the UC Davis Analytical Lab.

Multiple projects underway with blueberries, blackberries, and coffee assist growers to more efficiently and profitably produce these crops in Santa Barbara County and along the southern California coast. Field trials during the reporting period are directed toward identifying:

- Blackberry varieties, mowing, and pruning practices for the most efficient production season to match the most profitable market window.
- Blueberry varieties that produce during the most profitable part of the market season and /or extend the harvest season.
- Critical cultural practices for successful coffee production and evaluation of cropping systems to interplant coffee in established 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.
- Continuing support and problem solving for established small farm operations.

## Fire Ecology & Management

Specialist Dr. Max A. 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.



**A P2V air tanker drops on the White Fire, May 28, 2013. Photo by Mike Eliason, Santa Barbara County FD**

### Addressing the Challenge

During this quarter Specialist Max Moritz continued to develop his statewide fire research and extension program based out of the Santa Barbara County Cooperative Extension office in Goleta. This led to numerous consultations with local individuals and organizations on fire-related issues.

Moritz attended regular meetings of and communicated with the Santa Barbara Fire Safe Council (including being a member of the Board of Directors). He continued working with them to design and launch their web-based communications with stakeholders.

In the Santa Barbara Botanic Garden's Master Naturalist series (a UC – sponsored program), Moritz led a class on fire and climate change, providing local attendees detailed background on modeling and policy with respect to fire.

Moritz participated in several meetings and field outings during this period with local volunteers (Santa Barbara Botanic Gardens) and local UCSB academics (Bren School) to:

- Continue refining live fuel moisture sampling protocols and expanding the network of sampling sites; recruit new volunteers.
- Participate in Bren School's "Strategic Environmental Research Initiative" on fire-related topics, involving local public and fire agency personnel.

### 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.

## 4-H Youth Development Program

Advisor Dr. Katherine E. Soule and Program Representatives Sherry Mills and Andrea Borunda

### 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.



4-H Program Representative, Sherry Mills demonstrating the Agua Pura model at the Goleta Union School District 5<sup>th</sup> Grade Health Fair.

### 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.

### Addressing the Challenge

4-H staff supported the delivery of positive youth development programming to more than 760 youth and 700 community members and families in the county through various events and activities, including:

- **California 4-H South Section Teen Involvement Conference:** Local teens and adult chaperones traveled to Mountain Center for this leadership event.
- **Goleta Union School District 5<sup>th</sup> Grade Health Fair:** Healthy living and watershed education (using the 4-H Agua Pura model) concepts were presented to 540 students.
- **County 4-H Presentation Day/Sectional 4-H Presentation Day:** 131 youth displayed their public speaking skills and were judged by Toastmasters, Rotary Club members, and other volunteers.
- **County 4-H Animal Science Level Testing:** 18 Youth assessed their knowledge of animal science.
- **County-wide 4-H GIS Project:** 13 Local youth and 4 adult volunteers connected with volunteers from UCSB to create an interactive campus map.
- **4-H LEaD (Leadership, Education and Development) Conference:** A county-wide committee led by 15 teens and 11 adults implemented this conference; 78 people attended.
- **4-H Camp Wahoo Youth Staff and Counselor Screening Day:** 11 teen volunteers kicked off six-months of preparation for the county's annual week-long residential summer camp in July.
- **California State 4-H Camping Conference in Boulder Creek:** Staff, adults, and youths were trained in summer camp programming.
- **County 4-H Livestock University:** 38 youth and 17 leaders participated in training on raising swine.
- **Santa Maria-Bonita Healthy School Food Pantry:** 4-H staff and volunteers presented hands-on educational or recreational activities to the 580-640 participants each month.

## UC CalFresh Nutrition Education Program

Advisor Dr. Katherine E. Soule and Program Representatives Lisa Paniagua and CR Taylor-Burns

### 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

The UC CalFresh Nutrition Education Program provides no-cost, no- prep, research based nutrition education to K-6 students in the Santa Maria-Bonita School District through participating educator extenders. One hundred and ten (110) educator extenders each taught their students an average of 15 hours of nutrition education between January and March.

UC CalFresh Staff conducted 37 classroom visits, exposing over 1,000 students to healthy fruit, vegetable and dairy recipes that they share with their families at home. The UC CalFresh Adult Nutrition Educator presented a 4-class series to over 25 adults at Adam Elementary School over a 4 week period. This series stressed the importance of nutrition education, healthy recipes, portion size, and physical activity. Each month UC CalFresh staff in collaboration with THRIVE! Santa Maria assisted the food bank community advocate volunteers in preparing and presenting a healthy recipe from fresh ingredients in their Healthy School Panty food bag, reaching an average of 250 family members per month.

UC CalFresh staff presented a culturally relevant healthy recipe food tasting at Evans Park Housing Authority in collaboration with Santa Barbara County Food Bank. UC CalFresh staff participated in the THRIVE! Santa Maria Parent Consortium and worked collaboratively with Santa Barbara County Public Health Nutrition Program staff to provide support and education for the local community.



**Congratulations to the Adam Elementary parents who participated and completed the ESBA class series! Felicidades a los padres de la escuela Adam quienes participaron y completaron el serie de clases, ESBA.**

### Public Value

The UC CalFresh NEP in Santa Barbara County 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.

## Master Gardeners

Advisor Mary Bianchi and Program Representative 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 delivered three public workshops that reached 278 community members:

- **The Seed - Pollination to Propagation** workshop covered seed dormancy cycles, starting plants from seeds in winter, and seed propagation by seasons.
- An **Edible Landscape** workshop was held in Santa Maria and provided guidelines for edible landscape design and maintenance, harvest and safe storage.
- **Sensational South African Plants** workshop highlighted the planting and caring requirements of South African plants many of which are drought tolerant, and thrive in a Mediterranean climate.

Bilingual Master Gardener volunteers demonstrated growing food for home gardens for the Santa Barbara Food Bank – “Grow Your Own Way” project, reaching 125 largely Spanish-speaking community members

Information tables staffed by Master Gardeners at the Annual Community Seed swap and downtown Santa Barbara Farmers’ Market reached 321 home gardeners by answering questions about seed storage, providing information to promote successful and sustainable edibles, and drought tolerant plants. Through our volunteer work at Alice Keck Park Memorial Gardens and Huerta Garden at the Mission, Master Gardeners reached 102 community members and helped raise awareness about butterfly gardens and sustainable methods of planting, care, composting, and soil management in collaboration with other community organizations.

Master Gardeners volunteered 840 hours to community education on sustainable gardening, representing \$18,606 in educational activity on water conservation, integrated pest management, composting, and reduced urban pesticide use



Master Gardener presenting Sensational South African plants

### Public Value

The University of California Master Gardener Program in Santa Barbara County 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.

## Soil/Water/Subtropicals

Advisor 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 in Santa Barbara County 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 20 contacts during this quarter.

Ben also coordinated and/or authored 34 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 12,227 direct hits during this report period. 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. Typical viewership is 300 per day.

- Applied research that will benefit subtropical producers in Santa Barbara County includes projects examining the following:
  - Iron nutrition for avocado, including alternative sources of iron, in collaboration with Brokaw Nursery
  - Introduced native bees for avocado pollination, in collaboration with Dr. Ruben Alarcon of Cal State University Channel Islands
  - Introduced pollen sources for improved avocado pollination, in collaboration with Dr. Gordon Frankie of UC Berkeley
- Projects with local grower cooperators, including
  - Girdling effect on lemon production
  - Lemon rootstock effect on lemon production
  - Strawberry establishment with reduced water applications
  - Pitahaya variety evaluation and cultural practices



**Pitahaya, or dragon fruit, a potential new crop for Santa Barbara growers being researched by UC Cooperative Extension Advisors.**

### 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