University of California Cooperative Extension Santa Barbara

Quarterly Report July— September 2017

Images of one of Dr. Surendra Dara's Strawberry Studies in Santa Barbara County. This study evaluated foliar nutrient treatments and concluded in summer 2017.

Submitted by: Katherine E. Soule, PhD
Director of UC Cooperative Extension
Santa Barbara County
October 30, 2017

University of California Programs- Advisors and Specialists in Santa Barbara County

PLANT SCIENCES AND HORTICULTURE led by Mr. Mark Battany, 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.

YOUTH, FAMILIES, AND COMMUNITIES PROGRAMS led by Dr. Katherine Soule. The mission of the UC Youth, Families, and Communities Program, San Luis Obispo & Santa Barbara Counties is to cultivate environments where local youth, families, and community members have access to science-based resources and knowledge in order to be the creators of a healthy, inspired, active, & connected Central Coast. Programs include: the UC CalFresh Nutrition Education, UC Master Food Preservers, 4-H Youth Development, and UC Master Gardener programs.

NATURAL RESOUCES, RANGE MANGEMENT, WATERSHED, AND LIVESTOCK led by Dr. Royce Larsen and Mr. Matthew Shapero, provides range and pasture livestock ranchers and producers with research-based information on ecosystem services, irrigated pastures, resource economies, livestock health, production and management, improvements, and watershed management and water quality issues on rangelands.

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, Dr. Katherine E. Soule

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.

Area Cooperative Extension Youth, Families, & Communities, Advisor, Dr. Katherine E. Soule, assumed the role of Director of Cooperative Extension in San Luis Obispo and Santa Barbara Counties on July 1, 2017.

Addressing the Challenge

Dr. Katherine E. Soule assumed the role of Director of Cooperative Extension in Santa Barbara County on July 1, 2017. Dr. Soule maintained contact with Agricultural Commissioner throughout the quarter as needed and began meeting with local agricultural stakeholders.

UC Advisors and Specialists collaborated with the Santa Barbara County Public Health Department, the Santa Barbara County Fire Safe Council, Dignity Health, THRIVE Santa Maria, Santa Maria Bonita School District, Santa Barbara County Public Works, Central Coast Regional Water Quality Control Board, Cachuma Resources Conservation District, US Forest Service, Vandenberg Airforce Base, Santa Barbara County Fair, Santa Barbara County Libraries, UC Santa Barbara, UD Davis, and the USDA to support educational programs and research.

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

Santa Barbara County Agricultural Advisory Committee meetings in July, August, and September were attended by Dr. Soule, Mr. Battany, and Dr. Larsen, respectively. Updates were provided on UCCE activities and upcoming events.

Dr. Soule served as an ex-officio member of a UCCE recruitment for a 4-H Youth Development Advisor for San Luis Obispo and Santa Barbara Counties. The recruitment failed and is expected to re-open in Fall.

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.

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Watershed, Natural Resources, and Rangeland Management- Dr. Royce Larsen

The Challenge

There are close to one million acres of native pasture and forestlands in Santa Barbara County, which are collectively referred to as rangelands. Comprising approximately half of the acreage of the County, these lands provide opportunity for multiple purposes. Rangelands serve as watersheds to capture, store, and release water for downstream uses; they provide forage for grazing by livestock; and their diverse plant communities provide habitat for many species of wildlife and recreational uses.

The UC Cooperative Extension Watershed and Natural Resource Program provide educational programs to inform people who own and/or manage the land and the animals grazing these lands. This work also includes applied research to develop new knowledge to effectively and efficiently manage rangelands and livestock in today's competitive and regulatory environment.

Photo of compost and forage production site. Advisor Shapero is clearing the old thatch from the plot preparing it for the growing season. The removal of excess old thatch, to a proper level of residual dry matter, is necessary for proper forage growth during the growing season.

Addressing the Challenge

Advisor Larsen is continuing to work on the compost and forage production project. Figure 1 shows the preparation of the plot for the coming growing season of 2017 – 2018. Advisor Larsen will also be coordinating, and working with, Advisor Shapero. While Advisor Shapero's work will focus more on animal health and production, there will be overlap and coordination on many projects for both of us.

Dr. Larsen continues to work with the USDA NRCS and Cachuma RCD on forage production in Santa Barbara County. In addition, he is currently working with the US Forest Service and Advisor Shapero to set up additional forage production plots this fall.

Rangeland and Watershed Advisor Dr. Royce Larsen serves on the Santa Barbara Agricultural Preserve Committee and he attended three meetings during this quarter. Additionally, Dr. Larsen continues to build relationships with the Santa Barbara County Cattlemen's Association. He held a workshop for Southern San Luis Obispo and Santa Barbara County on August 17th. The topics covered marketing, economic ranch tools, nutrition, drought, and invasive weeds on rangelands. All presentations can be seen on our website:

http://cesanluisobispo.ucanr.edu/Custom_Program355/Meeting_Announcements/

Public Value

The University of California Watershed/Natural Resource program in Santa Barbara County focuses on developing and extending research based information to help ranchers, managers and owners of rangeland manage their land in a sustainable and productive manner. The livestock industry is an important economic part of agriculture in the County. Research and education helps sustain the livestock industry in Santa Barbara County through:

- Improving rancher sustainability by improving their practices which sustain their production, lands, and families.
- Promoting best management practices for helping ranchers survive through the drought.
- Providing research data demonstrating severity of the drought on forage losses, helping ranchers obtain financial help through USDA programs designed for drought relief.

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Livestock & Range- Matthew Shapero

The Challenge

Rangelands in Santa Barbara County support a host of ecosystem services (water storage and filtration, wildlife habitat, carbon storage, scenic viewsheds), as well as provide the primary forage base for the county's thirty-million-dollar livestock industry. For generations, ranchers have worked to sustainably manage these rangeland ecosystems while providing a quality, safe agricultural product. Increasingly, however, the county's livestock industry faces new sets of ecological, economic, and regulatory challenges that complicate this work.

The ultimate goal of the UC Cooperative Extension Livestock & Range program is to assist producers and rangeland managers alike to successfully navigate these challenges. The Livestock & Range program will provide relevant, science-based information and will develop an applicable and progressive research program to respond to the questions and needs of local clientele.

In the field : Matthew Shapero standing aside one of Royce Larsen's forage production enclosures in Monterey County. Fall 2017.

Photo credit: Devii Rao

Addressing the Challenge

In September 2017, UC Cooperative Extension hired Matthew Shapero, M.S., to fill the role of Area Livestock & Range advisor. Matthew has devoted his first weeks to familiarizing himself with agriculture in Santa Barbara County. He has attended meetings of the SB County Board of Supervisors and SB Farm Bureau, met with representatives from Cachuma RCD the US Forest Service Los Padres National Forest, attended SB County Cattlemen's Board of Director and Land-Use Subcommittee meetings, and visited with ranchers and producers throughout the county.

Matthew will be a regular participant at AAC and Farm Bureau meetings and will fill in temporarily on the APAC in 2018. This Fall, Matthew has also assisted Dr. Royce Larsen, UCCE Watershed and Natural Resource advisor, with collecting forage production data for Santa Barbara County.

They expect to continue working in close collaboration; for example, they will both contribute to Cachuma RCD's pilot program examining rangeland compost application. Over the next few months Matthew will develop a research program intended to address local needs and will begin to organize workshops intended for ranchers, agency personnel, and NGO staff.

Public Value

The University of California Livestock & Range program in Santa Barbara County will provide science-based information to help ranchers, managers, and owners of rangeland manage their land in a sustainable and productive manner. Future research and education will benefit livestock operators and rangeland managers through:

- Addressing animal health issues that will increase the welfare and productivity of livestock.
- Promoting rangeland management practices that benefit both the land and the ranching operation.
- Facilitating conversation between community stakeholders in order to achieve lasting, responsible management.
- Improving animal genetics and performance, ranch profitability, and ecological sustainability.

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4-H Youth Development– Dr. Katherine E. Soule & Janelle Hansen

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.

Members of the La Graciosa 4-H Club took a break from helping at the Family Day in the Park 4-H Agua Pura booth to participate in a CPR demonstration.

Addressing the Challenge

4-H staff supported adult volunteers and youth members in delivering positive youth development programming to members and their families in 23 clubs throughout the county. Participants engaged in hands-on experiential learning projects in the focus areas of Science, Leadership, Healthy Living, and Citizenship. Countywide 4-H activities, training meetings, and educational outreach events were delivered to 4-H youth, families, as well as the community at large, including:

- Collaborating with our community partners - 15 Vandenberg Air Force Base Youth Center Staff received 4-H curriculum and program training and a Junk Drawer Robotics project was provided to 10 youth at the Isla Vista St. George YMCA youth center.
- 4-H volunteer project leaders, 4-H members, and parents contributed a significant amount of their time and resources to the 2017 Santa Barbara County Fair with a combined total of over 700 exhibits of livestock, hand-made items and educational displays.
- 4-H Family Camp where adult and teen 4-H volunteers providing 4-H youth and their families a safe and fun summer camp experience including archery, STEM and traditional camp activities during the weekend.
- Community Club Leaders training for 19 participants focused on youth engagement, policy and program management.
- THRIVE Santa Maria-Bonita Healthy School Food Pantry where 4-H staff and volunteers present hands-on educational activities to 400+ visitors at this monthly event.
- A team of 4-H families along with 4-H staff provided Agua Pura watershed education and wildlife education, to over 150 visitors at the YMCA's Family Day at Waller Park.

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.

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Master Food Preserver Program- Dr. Katherine E. Soule & Dayna Ravalin

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.

From right, Braeden Rappozo, trained as a Junior Master Food Preserver through 4-H in Santa Barbara County, is pictured here helping teach attendees at our Saturday Class how to make bread and butter pickles with Master Food Preserver Trainee, JoJo Brungs. (Photo by Dayna Ravalin)

Addressing the Challenge

As we began the new program year, our certified Master Food Preservers (MFPs) working in Santa Barbara County continue their efforts working with 4H clubs in Goleta, Lompoc, and Santa Maria expanding participation in home food preservation programming.

Our Open House recruitment for new Master Food Preserver Trainees held in June was very successful. We interviewed and accepted 8 new trainees of which 2 are from Santa Barbara County. With our volunteer expansion in Santa Barbara County, we are encouraged our community education efforts on safe home food preservation techniques will continue to increase. After 12 weeks of lecture and hand on labs, these 8 individuals should graduate by the end of October 2017.

We have had four very successful community classes this quarter with multiple attendees coming from Santa Barbara County. One of our Santa Barbara County's Jr. Master Food Preservers, Braedon Rappozo, assisted one of our Master Food Preserver Trainees recently at our Saturday Community Class on pickling. He assisted in the preparation of the pickles as well as canning them using a special process called "low pasteurization." The class were very impressed with his skill level.

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.

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Master Gardeners– Linda Baity

The Challenge

Communities beyond the reach of the land grant campuses of the University of California present special challenges for outreach and extension of research in new horticulture practices to home gardeners. Research based information about home horticulture, pest management; sustainable landscape practices and other environmental and natural resource issues support informed decisions by home gardeners promoting healthy, safe and prosperous communities in Santa Barbara County. Local Master Gardener volunteers, trained by the University of California.

Addressing the Challenge

Master Gardeners presented a free public workshop entitled "Successful Fall Gardening" on Saturday, September 23rd at the Central Library in Santa Barbara. Topics presented included the local planting calendar, soil and mulch preparation, succession planting, harvesting and seed collection, and proper care for garden tools. A new project was launched in July that features Master Gardeners attending monthly gatherings of the San Roque Garden Exchange. Local residents share the excess produce harvested from their home gardens and exchange gardening tips with their neighbors. Master Gardeners will be a regular presence at these monthly gatherings and hope to extend their participation to similar exchanges in other parts of the city. A contingent of Master Gardener volunteers and staff attended the 2017 Statewide Master Gardener Conference in Long Beach from August 22-25, and brought back valuable information they shared with the membership during the September monthly Meet-Up. Additional continuing education opportunities for members included classes on pesticide safety in June, and invasive shot-hole borers in August.

Two Information Overview sessions were held last month for the purpose of recruiting new volunteers. These sessions were held at Goleta Library for South County residents, and Stone Pine Hall in Lompoc for North County residents, both of which attracted a number of highly motivated applicants. Master Gardeners staffed a Help Table during the annual Santa Barbara County Horticultural Society Plant Sale on September 23rd, and they extended research-based horticultural information at their bi-monthly Help Tables at the downtown Santa Barbara Farmers' Market and through the Master Gardener Helpline. Volunteers also continued to reach out to residents at Alice Keck Park Memorial Garden, Santa Ynez Valley Botanic Garden, Mesa Harmony Garden, and La Huerta Historic Garden at the Old Mission. These educational activities and events reached a total of 414 residents as Master Gardeners donated a total of more than 616 hours of volunteer service during this quarter, representing a value of $17,531.36 to Santa Barbara County.

Santa Barbara County Master Gardeners Helen Wong Ken Falstrom and Diane Galvan recently attended the 2017 Statewide Master Gardener Conference in Long Beach.

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.

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UC CalFresh Nutrition Education– Dr. Katherine E. 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.

"No-Prep" Nutrition Education kits include everything the classroom teacher needs to conduct a hands-on nutrition education lesson.

Addressing the Challenge

During the summer months, the UC CalFresh Nutrition Education team prepared, revised and refilled our "No-Prep" Nutrition Education kits. These curricula kits go out each Fall to enrolled Teacher Extenders in Kindergarten through 6th grade. Teacher Extenders use the evidence-based curricula to teach their students nutrition and physical activity concepts so they have the knowledge and skills to make healthy eating choices. In August, the staff met with stakeholders at participating schools in Santa Barbara County to assess their health and nutrition goals for the year and establish positive working relationships for comprehensive nutrition education services.

For the 2017/18 academic year, over 90 Teacher Extenders enrolled and agreed to deliver the curriculum in their classrooms reaching over 2,700 students. In August and September UC CalFresh Nutrition Educators began introductory lessons in second through sixth grade classrooms. In addition, UC CalFresh and 4-H Youth Development partnered to recruit and initiate the 4-H Student Nutrition Advisory Council (SNAC) clubs at four school sites in Santa Maria. The 4-H SNAC clubs focus on developing youth leaders in 5th and 6th grades to advocate and promote healthy living on campus and in their communities.

UC CalFresh continued outreach to parents through the Spanish language Facebook page, El Éxito Es Salud (a partnership with Santa Barbara County Public Health and Dignity Health) and the monthly Healthy School Pantry (including Santa Barbara County Food Bank and Santa Maria THRIVE) reaching over 200 families with nutrition and physical activity information.

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

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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.

Powdery mildew infecting Chardonnay grapes in Santa Barbara County

Addressing the Challenge

The 2017 season had very challenging powdery mildew conditions at many vineyards in Santa Barbara County. These conditions where likely a result of the cool wet springtime weather in many areas, but another factor of resistance to certain fungicides may also play a role. One particular class of fungicides, the strobilurins, are relatively more prone to having powdery mildew develop resistance to the product due to their particular mode of action. Since they were first registered by the EPA 20 years ago, the strobilurin fungicides have been valuable tools for providing broad-spectrum control of important grape diseases such as powdery mildew, phomopsis, and downy mildew. However, both the powdery mildew and the downy mildew strains that infect curcubit crops have been demonstrated to have developed resistance to the strobilurins, and thus similar risk likely exists with the disease strains that are of importance to grapes and other crops. To help determine whether or not strobilurin resistance does exist in local strains of powdery mildew infecting grapes, Farm Advisor Battany has been collaborating with USDA plant pathology researchers in Oregon to have local samples tested for resistance. This sampling will be ongoing throughout the fall, and the summary results will be shared with industry upon completion. The findings may help explain why the 2017 powdery mildew season was so challenging for many growers; if they relied heavily upon the strobilurin fungicides but the local powdery mildew is resistant to that class of product, then poor control of powdery mildew would be expected.

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

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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.

Established tea plantings at Forbidden Fruit Orchard (Lompoc, CA) which served as training for meeting participants as part of the tea agritourism grower meeting on August 9, 2017.

Addressing the Challenge

Evaluation of tea-based agritourism as an alternative new small farm crop enterprise.

UC Farm Advisor Gaskell has planned and conducted two meetings now with a growing group of Santa Barbara and other coastal California farmers interested in developing tea gardens and small scale UPik/Uprocess tea farms. The second of these meetings was held at Forbidden Fruit Orchards near Lompoc on August 9, 2017 with participation of James Allen of FarWestTea in Santa Barbara as the guest speaker. The meeting was attended by 17 grower, nursery people and advisors interested in tea as a small farm crop.

Development of post harvest management website devoted to special needs of small farms.

In September, UC Farm Advisor Gaskell worked with staff from the Post Harvest Institute at UC Davis, to film two webinars in which he presented some key aspects of fruit and vegetable post harvest management as part of a new grant - funded project to establish a website for information on post harvest management directed at small farms operations. One of these webinars will also be part of a workshop presented by Gaskell and other UCANR Specialists and Advisors at the California Small Farm Conference on October 29, 2017 in Stockton.

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

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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.

Solar-powered UV light trap being tested for strawberry pest management.

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

During this quarter Dr. Surendra Dara:

- Initiated two studies in tomato to evaluate treatments to improve yield, health, and nutrient management. Completed a study in zucchini to evaluate chemical, botanical, and microbial pesticides against various arthropod pests. Made arrangements for field studies in fall-planted strawberry.
- Organized the 2nd Ag Innovations Conference: Microbial Control in San Diego that was attended by the farmers, PCAs, industry people from Santa Barbara County. Made arrangements for the fall strawberry and vegetable meeting.
- Authored/co-authored five articles about entomopathogenic fungal infections, pest and disease management in strawberry, and IPM-based food production systems.
- Reached out to 214 people through three extension presentations and to 66 people through individual consultations. Gave input for two trade journal interviews.
- The 30 articles on my Pest News eJournal were viewed 5125 times and the 89 on Strawberries and Vegetables eJournal were viewed 16,311 times during this quarter.
- UCCE continues to provide timely information on production practices, pest, disease, and weed management to clients.

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

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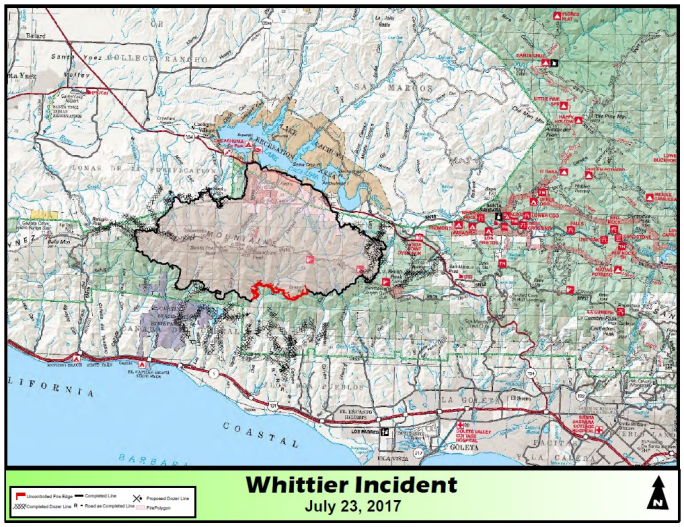
Fire Ecology & Management- Dr. Max Moritz

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.



Official fire perimeter map near end of Whittier Fire. Students toured area near Cachuma Lake where early resprouting of oaks was already apparent after only 1 week since burning.

Addressing the Challenge

During this quarter Specialist Max Moritz continued working with local citizen science volunteers to maintain local Live Fuel Moisture (LFM) data sampling and processing, which feed into regular updates and distribution though the Santa Barbara Botanic Garden website; discussions continued with Los Padres National Forest personnel to assemble and display local LFM data.

As a board member of the Santa Barbara County Fire Safe Council, Moritz continued to work with local constituents on fire-related issues; the community wildfire protection plan (CWPP) for San Marcos Pass area continues and is nearing a complete draft.

The UCSB project on restoration of big cone Douglas fir in the Zaca Fire area of Santa Barbara County continues; UCSB summer workshop students were also taken to see immediate post-fire impacts of the Whittier Fire (above).

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

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Soils, Water, Subtropicals- Dr. Ben Faber

The Challenge

Santa Barbara County's agricultural competitiveness depends on adopting new scientific and technological innovations derived from new knowledge in agriculture. Research and educational efforts must enhance the opportunities for markets and new products. Creating a sustainable local agricultural economy also depends upon improving water quality, quantity, and security; managing pests and diseases; and improving cultural management practices for subtropical producers.

The Soils/Water/Subtropical Program has a 60 year history of local research and extension that optimizes crop production, maximizes net farm income, conserves natural resources and protects the environment.

Packed Pitahaya fruit, a.k.a. Dragon Fruit

Addressing the Challenge

In August, we had a meeting to introduce local avocado growers to a disease that is now affecting much of the South East of the US. It attacks many members of the laurel family which is an important component of forests there. Here, the major member of that family is California Bay Laurel.

The disease kills Bay Laurel just as easily as it does the red bays in Florida and the surrounding state. This pest/disease complex is similar to Polyphagous Shot Hole Borer/Fuarium Wilt complex which affects sycamore, alder, coast live oak amongst many other native tree species here.

This new complex also affects avocado and does so in a much more rapid and lethal fashion than PSHB. Five University of Florida researchers came to our area to talk about the problem and how they are dealing with it – what to look for and how to treat the disease and its spread. The meetings were attended by 45 growers from this area.

Dead avocado from Laurel Wilt Disease in Florida

Ongoing research includes studies on pitahaya as an alternative perennial crop and various avocado and citrus production improvement studies, such as Asian Citrus Psyllid control, snail control and rootstock selection.

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

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