



University of California

Agriculture and Natural Resources

Cooperative Extension

Cooperative Extension

Sonoma County 2019 Annual Report



A Message to the County of Sonoma Board of Supervisors

James Gore | Susan Gorin | Lynda Hopkins | David Rabbitt | Shirlee Zane

The University of California Cooperative Extension (UCCE) is excited to present our 2019 Annual Report, demonstrating our continued commitment to education, research-based information and technical expertise as it relates to agriculture and natural resources in Sonoma County. Our annual report highlights UCCE's research and education impacts, documenting efforts by UCCE advisors and County staff to bring the highest quality of science to our community, focusing on local issues, especially related to climate change, wildfire recovery, food access and insecurity and youth development.

In 2019, we provided science-based information to help landowners address fire fuel reduction, assisting them with better agriculture preparedness. A variety of educational workshops covering topics such as best practices for home gardening, prescribed burns, grazing and other vegetation management tools were held around the County for property and homeowners. To respond to the need for timely science-based wildfire recovery information, UCCE launched efforts to create a Prescribed Burning Association, known in the community as the "Good Fire Alliance" (GFA), along with the innovative program, "Match.Graze", to increase grazing opportunities. UCCE is working with Cal Fire, Sonoma Water and other agencies to create a tool kit that will provide private landowners an assessment of their property; resulting in the prioritization and implementation of best management practices. The data-based tool kit will assist landowner in identifying hazardous fire fuels and treatment areas and tools on their property. Our Viticulture and Dairy programs increased efforts on educate about climate impacts by employing climate smart agriculture practices, such programs as Alternative Manure Management Program (AMMP), with the UCCE Sonoma website provided recovery resources for all residents impacted by natural disasters. These outreach efforts continue to address climate impacts, catastrophic fires, and ecosystem services provided by Sonoma County's agriculture and natural resources.

Master Gardeners implemented programs that promote sustainable home gardening landscape practices and community-based locally grown food in home, neighborhood and school settings, with a particular focus on minority and ethnic food diversity. UCCE Sonoma facilitated a team that hosted an emergency food response gathering to look at the local response during the fires that resulted in a published summary report and inclusion of language around emergency food availability in the County of Sonoma Recovery and Resiliency Framework.

As policymakers in our communities and across the state explore initiatives to prevent wildfire, UCCE will work with the agriculture community, in order to further demonstrate fire fuel reductions, especially in the Wildland Urban interface (WUI). UCCE will expand its outreach and education to the public on the importance of managing our valuable agriculture and open space properties. Through UCCE's efforts, the public will better understand fire risks and how to manage them, resulting in collaborative management strategies and community resiliency.

With the UCCE and County's partnership, we will address climate challenges facing agricultural industries and Sonoma County residents; achieving long-term resiliency for generations to come.

Sincerely,

Stephanie Larson, PhD
County Director



4-H Youth Development Program



Serving Sonoma County Youth

The Sonoma 4-H program served 2,070 youth aged 5 to 18 years old with the support of 287 adult volunteers. The programs offered by 4-H help youth reach their fullest potential, develop confidence and character, and thrive in science, healthy living, leadership, and civic engagement.

Green Since 1902

Since its founding in 1902, 4-H has been a leader in providing opportunities for young people to learn about and practice being stewards of the natural environment. Sonoma 4-H programs provide authentic experiences for youth to learn about the environment, restore wildlife habitats, reduce human impacts, as well as conserve our natural resources. In the decades ahead, Sonoma 4-H is committed to reducing our carbon footprint through reducing plastic use, decrease waste, utilize more efficient technologies, and support youth in becoming advocates for greener living in our communities.



4-H All Star Ambassadors host a beach clean-up

Sonoma County 4-Hers met at Doran Beach in Bodega Bay in October. 4-H All Star Ambassador, Caroline Hampton, presented information about beaches and the impacts of litter in and near the ocean. Together the group walked almost a mile each way picking up trash. They found a pair of old water shoes, two soda cans, a lot of really small pieces of plastic, and many more things. They also found fish netting that was entangled with some bits of metal. The best part was the people who thanked the youth for picking up litter by saying things like “oh my gosh that’s so great that you kids are doing this for everyone! Thank you.” Overall, the group found a lot less trash than they were expecting. The youth bonded, provided a service to the community, and learned about the impact of litter worldwide. Vignette by Caroline Hampton.



Environmental Education at 4-H Summer Camp

Geo: 805 Las Posadas Road, Angwin

Annually, three hundred Sonoma County youth live, learn, and play at 4-H summer camp in the Las Posadas State Forest. Camp provides educational sessions centered around forestry, botany, ecology, and water where teenagers facilitate activities for younger children. Campers reconnect with the outdoors and the natural environment, strengthening their understanding and connection with the environment, which may lead to more thoughtful choices on reducing one’s impact.

New curriculum to educate youth about renewable plastics

Sustainable Polymers in 4-H: Move beyond recycling; explore the future of plastics

Development is underway to create a curriculum series for K-2, 3-5, and 6-8th grades to help youth learn about the prevalence and impacts of plastics in everyday life. The curriculum contains hands-on activities for youth to better understand types of plastics and positive and negative effects plastic on the environment. Youth explore how to reduce plastic use, choose plastics made from renewable materials that can also be composted, and plan a service learning project.

Climate Smart Agriculture

Our Community Education Specialist (CES) works in partnership with the California Department of Food and Agriculture (CDFA) on their Climate-Smart Agriculture programs, providing technical assistance to farmers and ranchers in Mendocino, Lake, and Sonoma Counties for the Healthy Soils Program (HSP) and the State Water Efficiency and Enhancement Program (SWEEP). She also contributes to the North Coast Soil Health Hub (SHH) with Resource Conservation Districts (RCD) and Natural Resources Conservation Services (NRCS) in Napa, Sonoma, and Mendocino Counties. The CES collaborates with growers to help with accessing funds to incorporate ecological management practices into their production. To learn more about the UCANR-CDFA Climate-Smart Ag partnership, check out our CES website (<http://ciwr.ucanr.edu/Programs/ClimateSmartAg/>) and visit the CDFA website to learn more about their Climate-Smart Ag grants (<https://www.cdfa.ca.gov/oefi/>). Visit <http://soilhub.org/> to follow along with the soil science happening right here on the North Coast!



Britta Baskerville Community Education Specialist

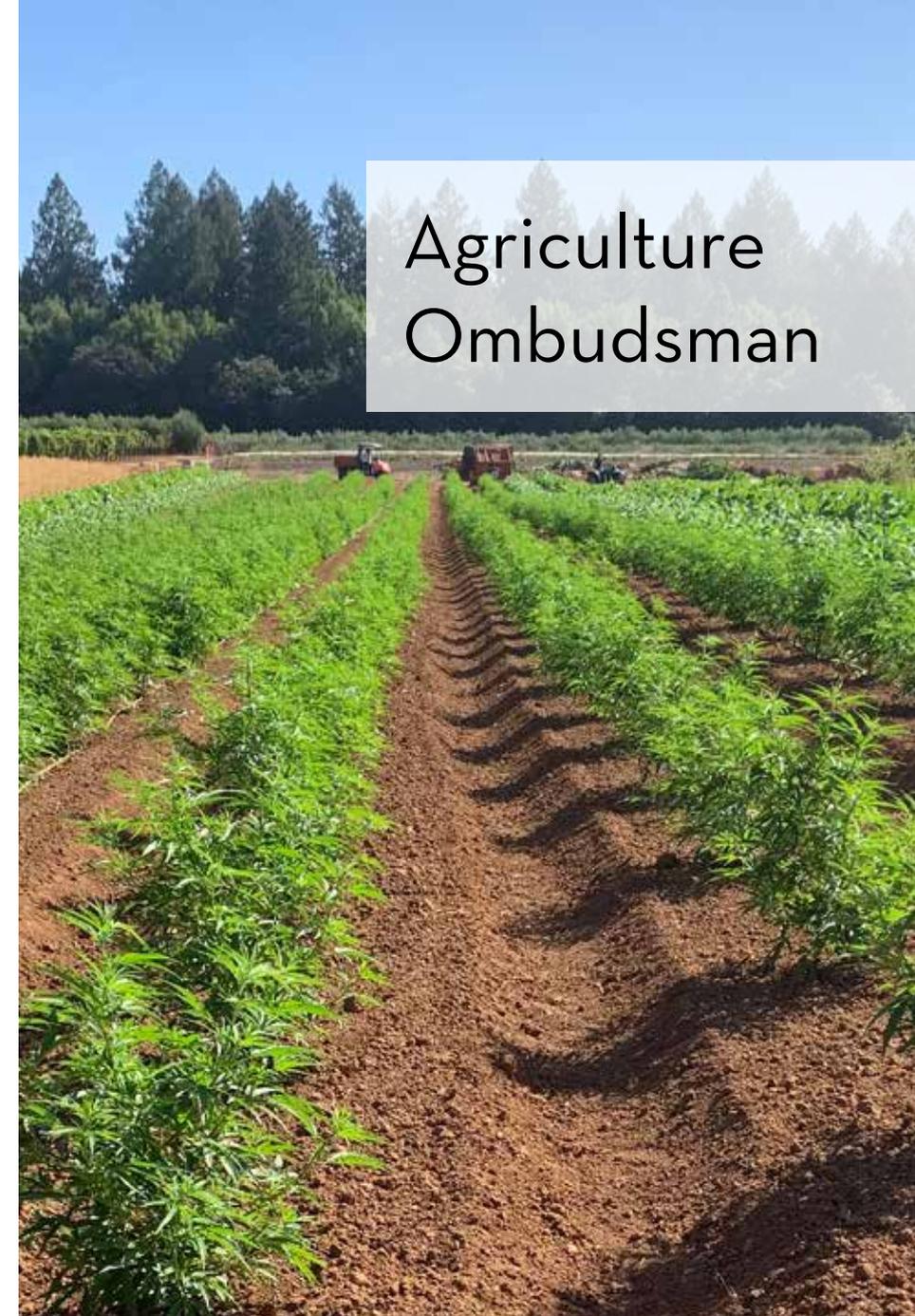
The Agriculture Ombudsman helps farming, ranching and food operators understand the ordinances and regulations that apply to diversification ideas or plans and will help them to navigate the various permits and agency approvals that might be required. Typical activities include land use, agritourism, milk and meat processing and value-add products. Fact sheets can be found at ucanr.edu/agombuds.

This fall, the Ag Ombuds organized a Hemp Grower Workshop to introduce local farmers to the newly legal agricultural crop. The day long workshop included speakers from California Department of Food & Ag, the Sonoma County Department of Ag, UC Davis, Santa Rosa Junior College and experienced hemp growers from Oregon and North Carolina. The workshop was timed to give local farmers a chance to consider this crop for the next growing season. Workshop information can be found at ucanr.edu/hemp.

Testimonial:

“Your detailed response about selling eggs helped me out so much. Trying to decipher info found on the web was very time consuming. If I have any more questions, I’ll definitely ask you first. I now know the steps to move forward, thanks again.”

Karen Giovannini Agriculture Ombudsman



Agriculture Ombudsman

Livestock & Range Management

To create climate-resilient communities and ecosystems, UCCE is leading efforts to educate landowners on vegetation management tool(s) to assist with fuels reduction and ecological enhancement on private and public range and forest lands. UCCE is developing a variety of outreach materials for forest, oak woodland, and grassland owners, which addresses the economic and ecological management of vegetation for fire fuel reduction.

Good Fire Alliance

UCCE, in partnership with Audubon Canyon Ranch, continues to make headway growing the Good Fire Alliance. A collaborative group of private landowners, agency and non-profit personnel, and interested individuals, the Good Fire Alliance creates opportunities for landowners to manage vegetation using controlled burns, grazing, and other techniques, in order to promote landscape resiliency in an era of climate change and increasingly destructive wildfires. UCCE hired one full-time position to assist with the administration and capacity building of the Good Fire Alliance, with a goal to get involvement from more private landowners in Sonoma County.

With the newly hired Senior Agriculture Program Assistant, we are building on previous work by the Sonoma Water Fire Smart Lake Sonoma project, addressing collaborative management of range and forest landscapes to reduce catastrophic fires. With a grant from CalFire, UCCE is bringing resources from UC Berkeley and UC Santa Barbara specialists, to develop an online geospatial tool that will help landowners in the Lake Sonoma watershed decipher where on their property they should



prioritize fuels reduction projects to mitigate against wildfire hazard. The model will overlay biophysical attributes (e.g. slope, aspect, vegetation type, fuels, climate, etc.) with existing fire hazard data and generate a report and map indicating where on the property is high, medium, and low wildfire risk, and what types of fuels treatments would be best utilized in what areas. The reports will feed into applications for NRCS's EQIP and CalFire's CFIP grants - two types of cost-share grants available to landowners for vegetation management. UCCE is working with Natural Resource Conservation Service (NRCS) and Calfire's CFIP staff on how to link conservation practices to best support a landowner in applying for funding.

UCCE is conducting research to determine the impact of grazing on wildfire risk and severity working with numerous large property (500+ acres) owners in Sonoma, Napa and

Marin Counties to assess the management of fire fuels. Grazing can alter fuel characteristics of an ecosystem, however, little is known about the influence of grazing on fire, in particular, ignition and initial spread and how it varies by grazing management differences. Our results will be used to 1) suggest to individual landowners the potential for grazing to reduce their risk of wildfire and 2) influence policy makers to reduce barriers to grazing in all California Counties.

Match.Graze

Grazing is a cost-effective vegetation management alternative that works best in cases where other options are impractical and financially ineffective. Specifically, targeted grazing can be more cost-effective on landscapes that are too steep, rocky, or remote for conventional vegetation management (like mowing or chemical treatment), or in the urban-wildland interface where burning is not an option. UCCE, partnering with CropMobster, has created a Match.Graze system, which connects landowners, who have no animals, to grazers, in order to bring animals onto Sonoma County properties for vegetation management.

UC Cooperative Extension, partnering Santa Rosa Junior College Agriculture and Natural Resources Department, offered a grazing school at Shone Farm. Landowners and targeted grazers learned how to implement targeted grazing on local working landscapes. Participants gained knowledge on how to design a grazing program on their own managed lands or, if they decided not to own animals, how to use this knowledge when hiring a targeted grazer. A neighborhood grazing partnership was created at the school along with new opportunities for targeted grazers.

Animal Access in Disasters

UCCE will continue to work with Sonoma County Animal Services to finalize a comprehensive disaster evacuation plan for livestock producers on the north coast.



Dairy Program

Increased statewide efforts to reduce climate impacts offer a unique opportunity for local dairies to become part of the climate solution. Employing climate smart agricultural practices can help mitigate methane emissions on farm and potentially lead to carbon neutral dairies through increased carbon sequestration. UCCE, with funding from the California Department of Food and Agriculture, assisted dairy producers in submitting funding proposals to implement climate smart practices on their dairies, focused on reducing methane emissions from manure ponds.

The California Department of Food and Agriculture awarded three local dairy producers nearly \$2.5 million to reduce their greenhouse gas impact by 9,327 metric tons of CO₂ equivalent over the next 5 years. This reduction is the equivalent of removing 2,028 passenger vehicles from the road for a year. The state's investment in reducing dairy greenhouse gas emissions also allows dairies to invest in important technologies that reduce input costs and improve economic and environmental sustainability.

UCCE's dairy program also focused on delivering educational workshops to dairy producers and staff in areas of climate smart agriculture and dairy management. The dairy advisor serves on the technical advisory committee for the Sonoma RCD's Conserving Our Watershed Program, helping dairies in the Sonoma Creek watershed implement practices to improve water quality. She also collaborates with the local dairy industry, regional water board, groundwater sustainability agency, and other UCCE advisors and specialists on water quality regulations.

Environmental Horticulture



UCCE Forest programs support a broad range of local stakeholders, from county-wide agencies such as County Parks and Fire Safe Sonoma, to locally based efforts such as Resource Conservation Districts and local Fire-Safe programs, to private small-parcel landowners. Private landowners manage most of the forest land in Sonoma County, and we support them via an active partnership with the Sonoma County Forest Conservation Working Group, providing educational and research-based information on issues related to the resiliency of Sonoma County forests. UCCE's program strives to make Sonoma County forest management sustainable through generations. Programs include shaded fuel breaks, installing emergency water storage for firefighting in rural areas, and managing roads so that they are both passable in emergencies and sediment does not wash into fish-bearing streams.

UCCE provides locally based research on topics such as post-fire mortality of local fire-adapted tree species as well as acting as a conduit for informed dialog that will shape the future of our County.

Plant pathology for small farmers

Disease management can be a vexing challenge for small farmers, particularly if they are just starting out. UCCE provides on-site consultation for difficult disease management issues such as white rot of garlic, verticillium wilt of strawberry, fusarium wilt of basil, and various damping off diseases that kill greenhouse grown seedlings. Emphasis is on prevention and sanitary practices that should be applicable in any farming system, including organic, biodynamic, and conventional.

Sudden Oak Death (SOD)

Sudden Oak Death is still a critical issue in Northwestern Sonoma County, and because tanoak mortality can elevate fuel loading in specific areas, UCCE continues to monitor fuels where the disease is present. UCCE is working with research labs at Berkeley to support both an active monitoring program in North Bay counties and ongoing professional training for local landscape professionals. Educational meetings and future research will help to inform landowners about disease management strategies and removal of standing dead fuels.



Forestry and Wildlands Ecology

The Forestry and Wildlands Ecology Program focuses on efforts to keep oak and conifer forests, and the habitat they provide, healthy and productive. Through research, education and advice, the program encourages biodiversity and sustainable management of these forestlands. A variety of outreach and educational efforts highlight the ongoing components of this important program.

UCCE, in collaboration with Audubon Canyon Ranch, Sonoma RCD, and NRCS developed a stewardship field tour for landowners impacted by the Kincadee Fire. Participants were educated on the impact of the fire on the landscape, managing forested areas that have burned, mitigating erosion and water quality issues, and managing for invasive plant species. We have also compiled an online resource page related to these topics: <https://ucanr.edu/sites/fire/>.

A newly detected exotic species of ambrosia beetle (*Xyleborus monographus*) has been detected in several declining and dying valley oak and blue oak in northern Napa County and along the 128 corridor into Sonoma County. Working with CalFire, US Forest Service, and local arborists, we are attempting to delimit the extent of the infestation and better understand the insect and the impact it will have on oaks.

Viticulture / IPM



The IPM and viticulture advisors collaborating with researchers from UC Berkeley, UC Riverside and UCCE Napa County wrapped up a three-year study that investigated the Pierce's disease epidemic in Sonoma and Napa that began in 2013-2014. We collected the primary insect responsible for moving the bacteria and causing disease from nearly 400 sticky traps in 32 vineyards every two weeks. Over 1800 insects were tested individually for the presence of the bacteria and an increase in the proportion of insects testing positive in the fall was unexpected. Further research will determine if different disease management strategies will be more effective in reducing the number of vines lost to PD.

The viticulture advisor is initiating a long-term vineyard irrigation survey in Sonoma County with the UCCE Water Management and Biometeorology Advisor in San Luis Obispo County with the goal of improving the estimated volume of water applied each year in vineyards in specific groundwater basins. Currently, the Groundwater Sustainability Agencies (GSAs) are estimating the total water volume applied to vineyards with the use of models. It is likely that modeled irrigation volumes overestimate actual vineyard water use because of site variability and grape grower irrigation practices which purposely create water stress in vineyards. Direct measurements of applied water in several vineyards will provide baseline information for the basin-wide water budgets the GSAs are required to establish. The UCCE project is a hands off survey in which monitoring devices will be installed in vineyards and the duration of each irrigation is recorded for four years after which the data are retrieved and anonymized.

Dr. Cindy Kron has recently joined UCCE as the new IPM Advisor serving Sonoma, Napa, Mendocino and Lake Counties. She is a UC Davis graduate with a BS degree in Viticulture & Enology with a minor in Agricultural Pest Management and a PhD in Entomology. She continued on to a postdoctoral position with the USDA-ARS. Her research has focused on invasive species and insect pests of grapevines. Her dissertation research was on the biology and behavior of the threecornered alfalfa hopper, a vector of Grapevine Red Blotch virus. Cindy will bring her expertise in entomology, integrated pest management, and invasive species to assist growers of grapes, pears, walnuts, olives, and specialty crops in her four counties. She will help growers address their insect pest problems utilizing integrated pest management tools and tactics. Her program's focus is on education to prevent the establishment of new invasive species, field research and collaborative projects with UC and government researchers to address insect pest challenges facing growers and dissemination of new information to the industry via publications, presentations, and in-field and hands-on workshops.



Cindy Kron, PhD Area IPM Advisor | **Rhonda Smith, MS** Viticulture Advisor
Lucia Varela, PhD North Coast IPM Advisor



Community Food Systems

A strong and connected local food system and a flourishing agricultural sector provide healthy food on a daily basis, help the community respond to and recover from disasters, and provide social, economic, and environmental benefits that act as protective factors for vulnerable communities. Ultimately, a robust local food system is an indicator of a resilient community. UCCE Sonoma is engaged in several initiatives that support community resiliency in the face of climate change.

Improving Emergency Food Response

UCCE Sonoma advanced the topic of emergency food response during disasters, initiated after the October 2017 fires and continued through the Kincade Fire and Public Safety Power Shutoffs. To build a more climate resilient community, improve efforts during future disasters, and minimize the number of community members who transition from short-term emergency food assistance to long-term chronic food insecurity, UCCE continues to champion key findings from a 2018 emergency food response study done in partnership with the Sonoma Food System Alliance and goals in the County of Sonoma Recovery & Resiliency Framework.

Investigating Post-Fire Food Safety

The October 2017 fires created poor air quality and distributed toxic air contaminants over the region. Following the fires and the incredible response from local farmers and gardeners who donated fresh produce, UCCE Sonoma investigated post-fire produce

and backyard chicken egg safety. Findings indicated local produce is safe to eat, while backyard chicken eggs in some regions outside of Sonoma County show evidence of environmental contamination unrelated to smoke and ash. In 2019, UCCE Sonoma shared the findings at community workshops and through online resources with other communities experiencing wildfires. For more information and to view the study's report or webinar, go to ucanr.edu/Post-FireProduceSafety.

Expanding Food Recovery

Reducing food waste in the landfill where it generates methane is a critical component of climate change mitigation. Reducing food waste and expanding food recovery also helps address hunger and build community resiliency. The Sonoma County Food Recovery Coalition (SCFRC), a community coalition chaired by UCCE's Mimi Enright, works to increase food recovery and reduce food waste in Sonoma County by building community connections, awareness and resilience. The Coalition educates the community through web resources ucanr.edu/SCFRC and a Food Distribution Directory in partnership with Crop Mobster, connecting food donations with food distribution organizations, and an educational brochure for commercial institutions on food donations, which is now used by the County of Sonoma Environmental Health Services inspectors. Membership of the SCFRC has grown in 2019 to include more County government departments, and the team is developing a funding strategy in anticipation of SB 1383, State of California Organic Waste legislation, which mandates food recovery for large and mid-size food businesses.

North Bay Food Systems

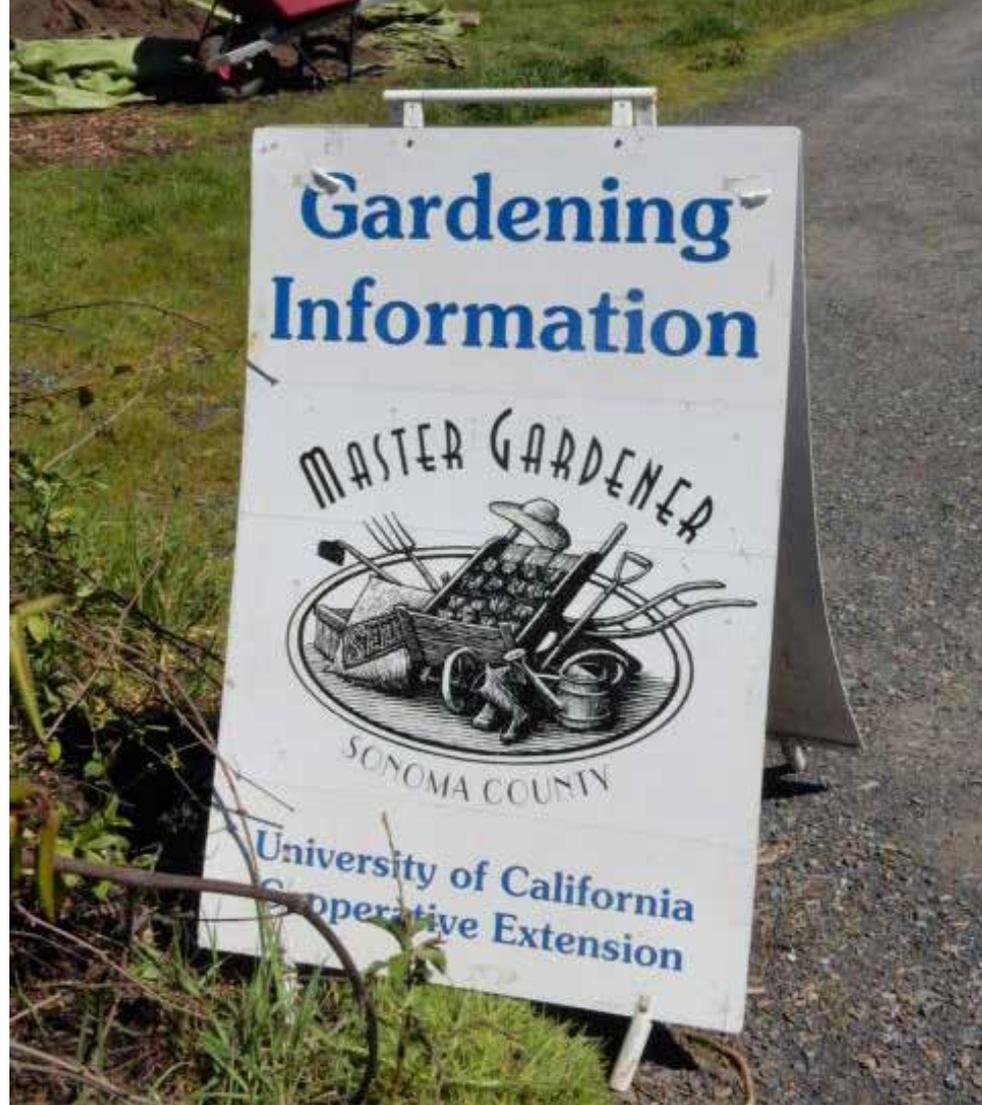
This year, UCCE Advisor Julia Van Soelen launched a multi-year community-engaged research project to identify obstacles for low-income residents to shop at farmers' markets in Sonoma County and to collaboratively devise locally relevant innovations to make farmers' markets more inclusive and inviting for the whole community. In partnership with Petaluma Bounty, the Center for Well-Being, and Farmers' Market LIFE, the project seeks to improve the financial viability of farmers' market vendors, support regional economic development, and improve community food security. In future years, community-defined interventions based on research findings will help mitigate commonly experienced obstacles to shopping at farmers' markets, make markets more reflective of the communities where they are located, and expand the overall customer-base of shoppers.



Mimi Enright, MBA Community Food Systems Program Manager
Julia Van Soelen Kim, MPH/MS North Bay Food Systems Advisor

UC Master Gardener Program

The UC Master Gardener Program of Sonoma County (UCMGSC) extends sustainable landscaping educational outreach to our community via many channels including lectures, workshops, information tables, demonstration gardens and special projects. We have been on a learning journey in 2019 to incorporate climate change practices for the home gardener into our content. In fact, many of the sustainable landscape practices that we have espoused for years reduce carbon emission and increase carbon sequestration, such as growing food at home, composting, soil health and much more.



2019 by the numbers:

- Number of active Master Gardeners: 287
- Number of UCMGSC web site page views: 249,160
- Number of people reached: 11,546
- Number of events: over 300

Mimi Enright, MBA

Program Manager, UC Master Gardener Program of Sonoma County & Community Food Systems

UCMGSC is proud of its partnerships with local government agencies and non-profits which help protect California's natural resources including:

- With the Zero Waste Sonoma to teach composting via a series of 7 workshops each year, including 2 in Spanish. Estimated organic matter diverted from landfill from our last fiscal year composting outreach: 4672 tons
- With Sonoma Water to educate on water conservation practices via our Garden Sense program – a unique model wherein 2 Master Gardeners visit a gardeners' home to consult on lawn conversion, irrigation conversion from spray to drip and site specific site low water use plant recommendations.
- With Habitat Corridor Project (a local non-profit advocating for use of native plants), Sonoma Water and Santa Rosa Junior College (SRJC), we developed a series of sustainable and firewise landscape designs that are being implemented as demonstration gardens on the SRJC campus.
- In 2019 we began development of a new partnership with Sonoma Ecology Center, Habitat Corridor Project and Fire Safe Sonoma to expand the firewise landscaping content and outreach UCMGSC has been conducting since the October 2017 wildfires. This project will provide practical education to Sonoma County homeowners via a series of design and maintenance workshops in individual neighborhoods. Our workshops will provide a thorough interpretation of defensible space requirements and guidelines, along with extensive visual examples of sustainable, fire-wise landscaping and maintenance, encouraging participants to take immediate and proactive steps to improve their properties. The result will be use of plant materials, design, and maintenance practices that reduce fire-prone vegetation, increase well-hydrated, less flammable landscapes, reduce water consumption, and enhance wildlife habitat in the WUI.
- Our Food Gardening Specialists help promote healthy people and communities via a collaboration with Landpaths at Bayer Farm in the Roseland area with a demonstration garden highlighting how to grow food sustainably and workshops in Spanish and English. To help increase access to sustainable landscaping information to a more diverse audience, we have developed a variety of food gardening resources that are available in Spanish on our Espanol page: <http://sonomamg.ucanr.edu/es/>





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