



University of California Cooperative Extension
SONOMA COUNTY



SUSTAINING AGRICULTURE WHILE
PROTECTING OUR NATURAL RESOURCES
2011 ANNUAL REPORT





"Our mission is to sustain a vital agriculture, environment and community in Sonoma County by providing University of California research-based information in agriculture, natural resource management and youth development."



TO: County of Sonoma, Board of Supervisors: Shirlee Zane, Chair, Valerie Brown, Efren Carrillo, Mike McGuire, and David Rabbitt

The University of California Cooperative Extension (UCCE) is proud of our partnership with the County of Sonoma. UCCE's core services, education, outreach and research based programs, compliment the County's strategic plan issues including Economic and Environmental Stewardship, Safe, Healthy and Caring Communities, and Invest in the Future. UCCE led efforts to address an urgent need for food system innovation, through several programs. The UCCE, on behalf of the Board of Supervisors, received a USDA Beginning Farmer and Rancher Development Program (BFRDP) grant. The grant, supported

by Supervisor Valerie Brown, will increase access to 1) customized business training, 2) local "Master" Farmers and Ranchers for hands on experience and 3) affordable farmland. UCCE also led the County Lands for Food Program (CLFP).

The UCCE viticulture and Integrated Pest Management program addressed emerging issues, such as vineyard frost protection, so growers could make sound decisions on wind machines as compared to other frost protection methods. UCCE also addressed pests that threaten the sustainability of vineyards through designed research which tested low impact pest management programs.

The UC Sea Grant program's Russian River Captive Broodstock Coho Salmon Recovery program documented the successful migration of salmon smolts to the ocean and their subsequent return to the Russian River. UCCE also developed a matrix to assess implementing best management practices on local rangelands to help landowners and agencies improve ecosystem services.

The UCCE 4-H program continued to lead in strengthening families and communities by employing research based knowledge from the University system into our 70 plus projects, fostering leadership and volunteerism in our local youth.

The UCCE Master Gardener program provided information, through educational meetings, such as their library series, and developed food gardening specialists. The UCCE Master Gardeners partnered with County Regional Parks, iGrow and other food system groups, to create curriculum on practical food gardening techniques for new vegetable and fruit growers in Sonoma County.

The University of California Cooperative Extension looks forward to the continued partnership with Sonoma County and its residents.

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Viticulture and Integrated Pest Management



European grapevine moth adult
Photo by Jack K. Clark

Since the discovery of European grapevine moth (EGVM) in September of 2009, UCCE has generated and disseminated critical information on identification, monitoring and control strategies to all affected parties. The UCCE IPM Advisor is one of two UC researchers on the USDA APHIS Technical Working Group on EGVM. In that role she provides a local perspective and presents the results of her field research on EGVM biology and control in the North Coast. UCCE has assumed a leadership role to support and advise local (Agricultural Commissioner), State (CDFA) and Federal (USDA APHIS and NRCS) regulatory agencies. Our management guidelines on

of systemic insecticides will provide soil application guidelines for controlling vine mealybug that reduces risk of offsite movement in our soils.

The UCCE is currently positioned to address pests that threaten the sustainability of vineyards. We designed a low impact pest management program to avoid potentially damaging secondary pest outbreaks and to protect the environment and waterways. We developed multimedia outreach materials and delivered in-season weekly alerts through electronic media to strategically time applications and avoid unnecessary use of pesticides.



UCCE IPM Advisor, Lucia Varela, received the 2011 Viticulture Award of Excellence from the Sonoma County Winegrape Commission (SCWC). SCWC annually presents the Viticulture Award of Excellence to recognize individuals who have made significant contributions to SCWC, to Sonoma County viticulture, and the greater wine and local community.

ECONOMIC AND ENVIRONMENTAL STEWARDSHIP

materials and timing will continue to be implemented in 2012, a critical year to meet the criteria for deregulation of EGVM in Sonoma County.

The Viticulture and IPM advisors also address monitoring and management strategies for two other exotic pests affecting grape growing in Sonoma County. Through a multi-year survey of light brown apple moth populations, we are assessing its potential as a pest under our conditions. Studies on soil texture and vine uptake

To determine the threat of dispersal in unfermented winery waste, we investigated the survival of EGVM larvae in infested clusters processed in a stemmer-crusher. All research was performed inside the UC Davis Contained Research Facility.



CURRENT ISSUE

VINEYARD FROST PROTECTION: INVESTIGATING THE FEASIBILITY OF USING WIND MACHINES AS AN ALTERNATIVE TO THE USE OF WATER

BACKGROUND: Reliable frost protection is required for sustainable and profitable wine grape production in Sonoma County; however, growers in the Russian River watershed are facing significant reductions in the availability of water for sprinkler frost protection due to environmental concerns and/or lack of supply. As a result, growers are keenly interested in the feasibility of using wind machines to protect vines from damaging low spring temperatures. To ensure that large investments in expensive wind machines provide a predictable frost protection benefit, local temperature inversion conditions need to be quantified before purchasing and installing the equipment.

STATUS: Beginning February 2012, the UCCE Viticulture Advisor, in collaboration with a UCCE colleague in San Luis Obispo County, will assess temperature conditions in a minimum of 10 locations representative of the frost-prone vineyard regions in Sonoma County. The information we obtain will allow growers in the assessed regions to quantify the potential benefit wind machines can be expected to deliver in their particular locations. This will allow growers to make calculated decisions regarding the potential return on investment of their expenditure on wind machines as compared to other frost protection methods.

MITIGATING THE IMPACTS OF CLIMATE CHANGE

Rangeland Conservation

Ecosystem Services on Rangelands. Rangelands have traditionally been a source of forage for marketable products, such as livestock, a leading agricultural commodity in Sonoma County. In addition, local rangelands also provide valuable ecosystem services, such as biodiversity, habitats, and carbon sequestration. UCCE documented research on best management practices that could be implemented on rangelands to increase ecosystem services. This information, found at <http://ucanr.org/sites/RangelandES/>, informs rangelands owners and managers, agencies and decision makers of the types of ecosystem services enhanced through management practices. Data generated documented potential for payments to lands owners for ecosystem services provided by rangelands. The project strived to build partnerships with land owners, agencies, NGO's and decision makers to acknowledge the importance of managing local rangelands, not only for the benefit of the manager, but for the extend benefits to the community receiving the subsequent increases in

Monitoring conservation practices includes this newly constructed fence along Tolay Creek to enhance riparian resources while maintaining grassland diversity and local food systems.



Watershed Program has led the integration of existing conservation programs with policies and regulations that support biological resource conservation.

Improving water quality is critical to sustaining Sonoma County agriculture and protecting natural resources. Sonoma County's conservation partnership has encouraged private landowners to implement stewardship projects and conservation practices based on the common objectives to increase production of fields by maintaining healthy soil rich in nutrients, water and carbon that improve water quality downstream.

UCCE shared recent scientific evidence that properly

- AGRICULTURE AND NATURAL RESOURCES PROGRAMS

ecosystem services.

Watershed Management Program. Farmers and ranchers have been keystone participants in the public-private partnership to protect Sonoma County's streams from pollution and its agricultural land from fragmentation and development. With research and education, the UCCE

managed livestock management can benefit ecosystem functions including plant diversity and instream habitat. In addition to private landowners, UCCE is providing services for Sonoma Land Trust to monitor the success of their conservation practices and prioritize future projects to improve Tolay Creek Ranch.

CURRENT ISSUE

INCREASING FOOD ACCESS IN SONOMA COUNTY THROUGH INCREASED AGRICULTURAL EDUCATION AND OPPORTUNITIES

BACKGROUND: Sonoma County recognizes and supports the need for local food production. Unfortunately, the increasing age of farmers and ranchers nationwide has resulted in fewer agriculturists producing local food. In addition, the lack of access to land to grow food has also decreased the viability of local food production. Because of these issues, access to local, healthy food has decreased. More farmers and ranchers and available land for food production, will not only increase the viability of agriculture but also local food access for Sonoma County.

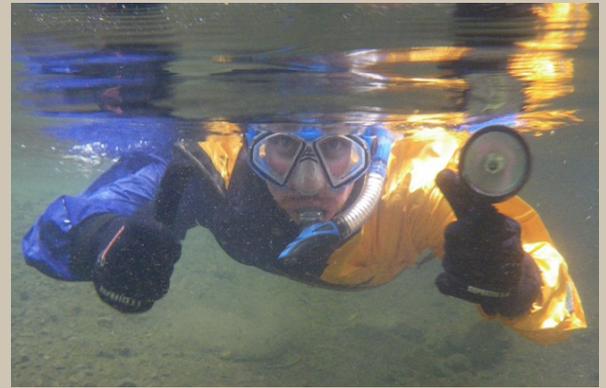
STATUS: On behalf of Sonoma County, UCCE received the USDA Agropreneurship, A Collaborative Model for Diversifying and Strengthening Beginning Farmers and Ranchers grant. The grant places a priority emphasis on service to new farmers and ranchers, especially, underrepresented populations, to teach individual business development and production skills for farming and ranching. The project strategic goals are; 1) increase access to customized business training for beginning farmers and ranchers; 2) increase access to hands on mentorship for beginning farmers and ranchers; and 3) increase access to affordable farmlands. The project involves participating partners to provide a collaborative learning community, supporting the broad dissemination of sustainable agricultural practices to increase the number of future farmers and ranchers providing local food to Sonoma County. In addition, UCCE is leading efforts to provide County owned land to residents for food production on community gardens, farming or ranching lands to increase food access. The County Land for Food Production (CLFP) program leads efforts to address the future of local food systems in Sonoma County.

ASSURING STEWARDSHIP OF NATURAL RESOURCES

Russian River Coho Salmon Broodstock Program

Some still remember watching bright red salmon each year splashing around in small Russian River tributary creeks between Thanksgiving and early February. As a result of the Coho Salmon Captive Broodstock Recovery Program, this is being observed once again. In the late 1990s, Russian River coho salmon were on the verge of localized extinction after once numbering in the thousands. To prevent this from happening, an agency team from the California Department of Fish and Game (DFG), NOAA Fisheries, the Army Corp of Engineers, the Sonoma County Water Agency, Sonoma County UC Cooperative Extension and Sea Grant created the Russian River Coho Salmon Captive Broodstock Program. Through this program, juvenile coho were collected from streams within the Russian River watershed by DFG, and subsequently raised to maturity and spawned at Don Clausen Warm Springs Hatchery at Lake Sonoma. In 2004,

*Fisheries
Biologist,
Nick Bauer,
conducting a
dive survey in
Mill Creek to
look for juvenile
coho salmon.*



tributaries of the Russian River. UC biologists monitor outmigration of smolts in the spring as they make their way to the ocean and adults returning to spawn about 18 months later. Since the launch of the recovery program in 2001, through 2008, returning adult coho salmon averaged less than six per year. In the 2010-2011 winter, biologists estimate that more than 190 adult coho may have returned to the Russian River system, beginning with early storms in October and peaking in December. This year's results

ECONOMIC AND ENVIRONMENTAL STEWARDSHIP

DFG began releasing the offspring of these captive-bred wild fish into Russian River tributaries that historically held runs of coho salmon. These fish are closely monitored by UC Cooperative Extension and Sea Grant to document the program's accomplishments. Documenting wild salmon is a challenge and biologists use electronic tags and antennas, traps, and visual dive surveys to accurately assess population status. The goal of this program is to restore self-sustaining runs of coho salmon to multiple

are particularly exciting as summer snorkel surveys have confirmed the presence of wild juvenile coho in several non-project streams such as Devil, Maacama, Pena, Mark West, and Porter Creeks. For many streams, this is the first time that wild coho juveniles have been observed in several years; demonstrating that the program is having a basin wide impact. A total of 5,390 wild coho juveniles were observed during the 2011 summer dive surveys; a clear sign of a successful spawning season.

CURRENT ISSUE

IDENTIFYING NEEDED STREAM FLOWS FOR THE RECOVERY OF ENDANGERED COHO SALMON

BACKGROUND: In response to the precipitous decline of coho salmon in the Russian River watershed, the Russian River Coho Water Resources Partnership formed in 2009 to develop a systematic approach to improve streamflow and water supply reliability for water users in five Russian River tributaries. UCCE and California Sea Grant monitored juvenile coho survival in response to stream flow in order to develop flow targets and evaluate the long term effects of stream flow enhancement projects on coho survival. Of critical importance is to continue working with landowners to maintain and improve habitat and capitalize on the initial adult returns in order to establish strong wild salmon runs. Research to identify needed stream flows is ongoing and this will inform decision making regarding conflicting water demands, water availability and conservation.

STATUS: UC Cooperative Extension and California Sea Grant personnel continue a comprehensive monitoring program to document the success of the Russian River Captive Broodstock Coho Salmon Recovery Program. Personnel currently monitor all life history stages documenting the successful migration of yearling salmon smolts to the ocean and their subsequent return approximately 18 months later to spawn in Russian River tributaries. This monitoring program is part of a collaborative effort and contributes to the Department of Fish and Game's statewide coho salmon recovery program and the Biological Opinion developed by the National Marine Fisheries Service to guide recovery efforts.

INCREASING LOCAL PRODUCTION OF FOOD

Specialty Crops



Specialty Crops Advisor, Paul Vossen, teaches a seminar about grafting techniques.

Unique microclimates and rich soils have made Sonoma County a preeminent Bay Area agricultural region, with nearly 3,500 farming operations, 800 of which are small-scale producers growing specialty crops. Paul Vossen, the UCCE Farm Advisor

has been providing practical specialty crops production information to farmers for 30 years. He recently returned from a sabbatical leave in Europe, Australia, and New Zealand where he discovered a number of potential new

field greenhouses. He continues to help farmers with one-on-one consultations to assess their land's potential, solve production problems in the field, improve efficiency, and increase the use of sustainable production methods.

Local Food Systems. UCCE has led the County Lands for Food Program (CLFP) efforts to support local agriculture and healthy communities, as components of Sonoma County's strategic plan, through the use of publicly owned land for food production. The UCCE has documented land that can be used for community gardens, farming and ranching, providing the County an opportunity to support the viability of local agriculture and increase access to healthy food. Last February, over 300 farmers, ranchers, and concerned stakeholders attended the first Sonoma County Food Forum which was hosted by the Board of Supervisors, UCCE, Department of Health Services and the Food System Alliance. The day-long program featured presentations and discussions on improving access to healthy local foods and supporting the local agricultural economy. At the end of the day,

- AGRICULTURE AND NATURAL RESOURCES PROGRAMS

specialty crops that we might grow for profit in Sonoma County. These will be researched and demonstrated in future plantings with local growers and the SRJC Shone Farm. He also recently completed a cost study for producing bottled olive oil in coastal California. Work is currently being done, in conjunction with the Slow Food Movement, to help apple farmers increase their profits by promoting the unique heritage of the Gravenstein apple. This last year he taught four seminars in cooperation with the Santa Rosa Junior College Agriculture Department and Shone Farm to train farmers about specialty apples, berries, olives, and extending the growing season with

eleven issues were identified for further action including increasing agricultural tourism in Sonoma County and increasing food production on public lands.



Sonoma County food production and access issues were discussed at the February 24, 2011 Food Forum.

CURRENT ISSUE

SUPPORTING AGRICULTURE BUSINESSES BY ENHANCING DIVERSIFICATION AND PRESERVING OUR FOOD PRODUCTION HERITAGE, WHILE MAINTAINING A PRISTINE NATURAL ENVIRONMENT

BACKGROUND: New growers and existing farmers are constantly seeking different crops that will provide them with an edge in the market and ways to increase profits selling heritage crops such as Gravenstein apples, Santa Rosa plums, Crane melons, Tuscan-style olive oils, and Specialty Salad Mixes. The UCCE Farm Advisor has been providing practical specialty crops production information to farmers for 30 years.

STATUS: UCCE is in the process of establishing some new crop demonstration sites for interesting new specialty crops such as: early maturing figs, mulberries, the Florina apple variety, quince, heirloom potatoes, and Asian style melons. Existing trial sites for blueberry, raspberry, chestnut, citrus, apple, and oil olives will continue to provide local farmers with practical examples of new cultivars and show them how these crops can be grown. Local farmers and the SRJC Shone Farm maintain those plantings, which are also used to collect data on cultivar performance. Several crop production seminars are being planned to provide farmers with reliable science-based information.

INVESTING IN THE FUTURE

4-H YOUTH DEVELOPMENT PROGRAM

ENGAGING YOUTH IN THE COMMUNITY



The 4-H Program uses a learn-by-doing approach to enable youth to develop the knowledge, attitude, and skills they need to become competent, caring and contributing citizens of the world. This goal is reached by using the knowledge and resources of the land grant university system.

4-H Summer Camp 4-Her's and their friends, throughout Sonoma County, come together every

summer to experience the wonders of summer camp in the beautiful wooded areas of Los Posadas State Forest. The camp culminates a year of planning by our teen 4-H leaders with the assistance of adult advisors. More than 80 teen staffers develop leadership skills as they plan and implement an exciting environmental educational curriculum. The teen leaders also direct the activities at both camp sessions. Campers are divided into groups with a teen leader, then meet every day to plan activities, including skits, songs, sand painting, and fire building for the evening campfire. Participating in camp groups allows 4-Her's to meet and make new friends from all over Sonoma County. As many as 300 youth enroll each year for this memorable experience.

Sonoma County 4-H camp has been operating for decades. In the spirit of giving back, many of our youth return when they become adults and volunteer to continue this great tradition.

Research on Impacts Research on youth development has documented the important role that youth programs like 4-H play in the lives of young people as well as our community. Conclusions of a recent Tufts University study confirm that 4-H youth are behaviorally and emotionally more engaged with school, are more likely to see themselves going to college, get better grades and score much lower on a risk/problems behavior measure than youth who did not participate in a youth development program. Why? Because good youth programs provide young people with access to caring adults, responsible peers as well as skill building and leadership activities that can reinforce the values and skills that are associated with doing well in school and maintaining good physical and emotional health. More than 400 Sonoma County adult volunteer leaders give their time each year to assist young people in developing a sense of belonging, mastery, independence and generosity.

Sonoma County has a large stake in the healthy development, productivity and leadership capacity of its next generation in order to build strong communities and address the many challenges facing the future.



CURRENT ISSUE

PROVIDING POSITIVE YOUTH DEVELOPMENT THROUGH ADULT-YOUTH PARTNERSHIPS AND EXPERIENTIAL LEARNING IN THE AREAS OF HEALTHY LIVING, SCIENCE LITERACY AND CITIZENSHIP

BACKGROUND: Since the first 4-H club in Sonoma County was created in 1934, UCCE has provided the opportunity for tens of thousands of youth and adults to gain skills by participating in the 4-H program. Although the demographics of the county have changed over the years, the core values of the 4-H program remain the same as we meet the needs of our county participants. Adult volunteers and teen educators are essential to this learning; facilitating the learning process using hands-on, experiential methods where youth are free to explore.

STATUS: UCCE is currently positioned to continue to address the needs of our 4-H community. Today, as never before, 4-H youth pledge to work for the betterment of the community, the county and the world. The process of assisting young people to become productive citizens who are engaged in positive change is accomplished by strengthening families and communities, employing research based knowledge from the land grant university system into our 70 plus projects, fostering leadership and volunteerism in youth and adults as well as embracing and expanding the traditions of the Sonoma County 4-H youth program.

SAFE, HEALTHY AND CARING COMMUNITY

MASTER GARDENER PROGRAM

VOLUNTEERING TO CREATE A HEALTHY COMMUNITY



Master Gardener, Linda King, speaking to a crowd at the Sonoma County Fair.

Master Gardeners (MG's) are trained and certified University of California (UC) volunteers whose mission is to provide unbiased, high quality and science-based information to non-commercial home gardeners in Sonoma County. The program has been operating for 30 years. There are currently 220 active Master Gardener Volunteers and 36 new trainees in the program. The volunteers offer information and provide technical assistance to home gardeners by

answering gardening questions at two offices in Santa Rosa and in Sonoma. They take a proactive role in extending information through library talks, hands-on training in community gardens and urban neighborhoods, farmer's market booths, garden shows, the Sonoma County Fair, demonstrations, workshops, and teaching in school classrooms.

This last year 27,002 people were reached through approximately 362 events, community gatherings, workshops, farmers' markets, library series talks, and the resource desks. Several thousand more were reached via our website that provides educational information on home composting, pesticide use reduction strategies, water conservation, plant care, Sudden Oak Death (SOD) prevention, and growing your own food. School composting presentations reached 440 school children.

Based on these efforts, an estimated 2,629 tons of organic materials (kitchen scraps and yard waste) were diverted from the landfill this last year. About one-fifth of those receiving information from MG's were motivated to start or increase back yard composting.

Most people who received information from Master Gardeners have changed their attitudes toward garden pesticides. Just over one-third tend to leave problems alone instead of treating them with something, another one-third now seek out the lowest possible toxicity products for application, and one-fifth have changed their gardens to include more appropriate plants that have fewer pest problems. This should lead to less pesticide use in the home garden, cleaner runoff water, and fewer unused toxic pesticides requiring disposal.

Master Gardener SOD Specialists directly contacted 3,650 people in their Sudden Oak Death (SOD) outreach activities. They gave 15 presentations and participated in 27 trainings throughout the county. Their primary goals were to determine where SOD exists in the county, slow the spread of SOD into non infected areas, and to help land owners, parks personnel, and arborists protect highly valued specimen trees from the disease.



California Bay Laurel leaf newly infected with *Phytophthora ramorum*, the pathogen that causes sudden oak death. Infected bay trees drive the spread of sudden oak death in Sonoma County forests.

CURRENT ISSUE

CONSERVING WATER AND HELPING HOME GARDENERS PRODUCE THEIR OWN FOOD

BACKGROUND: There has been an ongoing effort to help county residents convert their water-hungry lawns into drought tolerant and beautiful landscapes. This has been accomplished through library talks, developing a brochure of "star" replacement plants that do especially well here, with demonstrations and workshops at private and public gardens, articles in the local newspaper, and by answering questions at farmer's markets, fairs, garden shows, and at the offices. Converting lawns into food producing gardens is an important part of the effort too.

STATUS: Food Gardening Specialists within the MG program are working closely with community gardens, Regional Parks, the Food Access Workgroup, and iGROW to develop curriculum and provide hands-on workshops on practical food gardening for new vegetable and fruit growers in Sonoma County.

THANK YOU TO OUR PARTNERS

UCCE is able to accomplish many of its goals through collaborative efforts, none of which would be possible without the devotion of our valued partners. Their continued dedication towards our common goals is greatly appreciated. Following is a list of some of the partners whom we collaborated with this past year.

4-H Foundation
American AgCredit
Americorps
Army Corp of Engineers
Audubon Canyon Ranch-Bouverie Preserve
Bodega Marine Lab
Boys and Girls Club Rohnert Park
California Aquaculture Association
California Association of Pest Control Advisers
California Coastal Conservancy
California FarmLink
California Oak Mortality Task Force
California Olive Oil Council
California Sea Grant
California State University, Sonoma
Carneros Vine Mealybug Workgroup
Center for Ecosystem Management and Restoration
City of Santa Rosa
 Creek Stewardship Program
 Schools
Clos du Bois
Clover-Stornetta Farms
Community Action Partnership of Sonoma County
County of Sonoma Department or Agency:
 Agricultural Commissioner
 Agricultural Preservation and Open Space
 Economic Development Board
 Emergency Services
 Fair
 Health Action, iGrow
 Health Services
 Libraries
 Office of Education
 Regional Parks
 Transportation and Public Works Materials Lab
 Waste Management
 Water Agency
Domaine Chandon
Don Clausen Warm Springs Hatchery
Envirichment
Farm Trails
Fire Safe Sonoma
Future Farmers of America
Grange Credit
Hubbs SeaWorld Research Institute
Laguna Farms
Latino Service Providers
Marin Resource Conservation District
Napa County Agricultural Commissioners
Napa County Farm Bureau
Napa Resource Conservation District
National Sea Grant Office
Natural Resources Conservation Service
NOAA Fisheries
North Coast Regional Water Quality Control Board
North Bay Woolgrower's Association
Marin County Agricultural Commissioners
Occidental Arts and Ecology Center
Ocean Production Council
Olive Press, The - Sonoma
Oregon State University
Pacific Aquaculture Caucus
Pacific Shellfish Institute
Pesticide Applicators Professional Association
Point Reyes Bird Observatory
 Conservation Science
 Restoring a Watershed
 Student Teachers
Prunuske Chatham, Inc.
Resource Conservation Districts, Sonoma County
 Gold Ridge
 Sotoyome
 Southern Sonoma County
San Francisco Bay Regional Water Quality Control Board
Santa Rosa Junior College
 Shone Farm
Scripps Institution of Oceanography
Slow Food Movement
Sonoma County Farm Bureau
Sonoma County Grape Growers Association
Sonoma County Vineyard Technical Group
Sonoma County Winegrape Commission
Sonoma Ecology Center
Sonoma Fish and Wildlife Commission
Sonoma Land Trust
Sonoma Marin Animal Resource Committee
Sonoma Marin Cattlemen's Association
Sonoma Marin Weed Management Area
Sonoma Olive Festival Association
State of California, Departments:
 Fish and Game
 Food and Agriculture
 Forestry and Fire Prevention
 Pesticide Regulation
Trout Unlimited
University of California, Berkeley
University of California, Davis
University of California, San Diego
University of California Division of Agriculture and Natural Resources
University of Southern California
US Army Corps of Engineers
USDA Sustainable Agriculture Research and Extension Program
USGS Conte Anadromous Fish Research Center
Vino Farms
Walsh Vineyard Management
Western Regional Aquaculture Center
Western United Dairymen
Westside School

