



# 2024 Annual Report

UC Cooperative Extension Marin



# UC Cooperative Extension Marin

## 2024

University of California Agriculture and Natural Resources (UC ANR) brings the power of UC research in agriculture, natural resources, nutrition, and youth development to local communities to improve the lives of all Californians.

Our University of California Cooperative Extension (UCCE) county-based advisors, community educators, and campus-based academics work as teams to bring practical, trusted, science-based solutions to Marin. We are problem solvers, catalysts, collaborators, educators, and stewards of the land, living in the communities we serve.



4-H youth work with a volunteer at an after-school club.



**382**

volunteers donated  
**39,791**  
hours public service  
— estimated value  
of  
**\$ 2,007,058**



**26,820**

total educational  
interactions with the  
public



**9**

peer-reviewed and  
audience-requested  
publications and  
educational  
materials



**10**

activities bringing  
research to policy



**67**

academic-led  
workshops, field  
days, and classes  
with  
**12,263**  
participants



**14**

news media  
programs/  
mentions



**800**

youth in  
UC 4-H Youth  
Development  
Program



**1,697**

residents  
reached by UC  
Master Gardener  
volunteers



**69**

certified  
Environmental  
Stewards providing  
service



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# Partnering for Change

Our team is grateful to be a partner, contributor, and leader on so many collaborations, including but not limited to:

- Agriculture Land Emergency Response Team
- Committee to House Agricultural Workers and Their Families
- Marin Carbon Project
- Marin County Farm Day
- Marin Food Policy Council
- Marin County Health and Human Services
- Multicultural Center, Advocacy Project
- Marin County Integrated Pest Management Commission
- Marin Healthy Eating Active Living (HEAL)
- Marin Wildfire Protection Authority Advisory Technical Committee
- Measure A Food, Agriculture, Resilient Ecosystems
- Sonoma Marin Agriculture County Climate Coalition
- Voluntary Pilot Weed Program

## UCCE Funding



**\$878,391**  
University



**\$507,350**  
County



**\$1,022,621**  
Advisor generated  
(grants, gifts, other,  
etc.)

It is estimated that for every  
**\$1**  
Invested in agricultural  
research and extension there  
is a return of  
**\$20**  
to the community.  
*Alston, Anderson et al (2010)*

## Leveraging the Power of the UC System



*"Thank you, learned a lot & now feel a little less intimidated by the prospect of improving my house's & landscape's fire preparedness."*

— Marin Homeowner

*"I so appreciate the guidance with our business plan."*

— Marin agriculture producer

*"Love the technical aspect combined with practical anecdotal evidence."*

— Marin farmer

*"Thank you very much for teaching the Conservation Corps North Bay members on everything related to native plants. Everyone attending learned a lot."*

— Marin Public Works staff

*"You are a reliable member and technical resource we can always count on. Your persistent engagement in critical meetings is invaluable."*

— Health Professional and Commissioner

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# Reaching Marin

## Educational Offerings and Consultations

In 2024, 26,820 participants were served in 110 workshops, conferences, and tours organized with our community partners. These offerings were held both in-person and virtually. Participants included over 2,000 youth during after school programs.

In addition to education through workshops, our team provided technical consultations to Marin agricultural producers, tree and landscape professionals, homeowners, and educators. In 2024, we provided approximately 1,850 consultations either in our office, through our gardening help desk, or in the field on farms and properties.



*Partners visit a local garden on a tour through Marin Healthy Eating Active Living (HEAL) Collective Impact initiative to learn about community food production, assets, and needs.*

## Online Resources

Complementing our educational offerings is the portfolio of web resources we curate to make up-to-date information available for use by Marin residents. These include:

- [UCCE Marin](#)
- [UC Marin Master Gardeners](#)
- [Grown In Marin](#)
- [Sudden Oak Death](#)
- [Marin Knotweed Action Team](#)
- [Marin Food Policy Council](#)

During 2024, these websites had more than 245,136 discreet views. Popular webpages include:

- [Find Marin Ag Products](#)
- [Monthly Plant & Garden Care Checklist](#)
- [Oak Identification](#)
- [Fire-Smart Landscaping Tips](#)
- [Drought Management for Farmers](#)
- [Garden Pests](#)
- [Sudden Oak Death Diagnosis and Management](#)
- [Farm Labor Requirements Resources](#)
- [Plant Care Index](#)
- [Sustainable Practices for Farmers](#)

# Bringing Value Through Programs

## Developing a Qualified Workforce for California

UC ANR's youth and community development programs equip the next generation for college, successful careers, and to be active participants in their communities. Growers and land managers learn cutting-edge skills that increase workforce competency and advance innovation. UC ANR helps develop a qualified workforce to increase opportunities for individuals to ensure a robust and thriving state economy.

**78%**  
of alumni say 4-H  
helped them  
succeed in their  
work and career  
*4-H (2020)*

4-H participants  
are  
**1.8x**  
more likely to  
graduate with a  
Bachelor's degree  
*UC 4-H (2021)*

## Increasing workforce retention and competency

### Growing the community's fire science capacity

The UCCE Fire Science Program partnered with the Ecologically Sound Practices Partnership, Marin County Fire, and others to provide an ecological viewpoint to fire and land stewardship for Marin County Fire Foundry recruits. Known as the "Fire Foundry – Frontiers of Fire Course," this education prepares participants for sustainable wage careers in fire management through increased knowledge and skills in home hardening and landscape management to create defensible space and protect structures from wildfire. As a result, the participants help to grow the core of the future fire workforce with state-of-science knowledge and understanding.



*Field tour and discussion on fire ecology in oak woodlands by Fire Science Advisor Tori Norville. (Photo credit: Louis Choy)*

### Landscaping professionals bridging languages to build skills and knowledge

In 2024, 10 students participated in the Spanish Bilingual Landscapers' class. The class is aimed at small, independent landscaping companies or contractors whose primary language is Spanish. The class is taught in English, with Spanish language materials and discussions held in both languages. Our Environmental Horticulture Team covers a broad range of topics, including proper irrigation and troubleshooting, post-fire landscape management, proper pruning, and Integrated Pest Management. Graduates of the program are listed on the UCCE Marin website: [cemarlin.ucanr.edu/Programs/Green\\_Gardener/Class\\_graduated/](https://cemarlin.ucanr.edu/Programs/Green_Gardener/Class_graduated/)



*Environmental Horticultural Advisor Steven Swain and participants in the 2024 Bilingual Landscapers class.*

## Increasing effective public leaders

### There are daily achievements, and then there is Achievement Day

In Marin County, 4-H youth ages 5 to 18 are engaged through projects, from sewing to geology, to reach their fullest potential. The achievements participating youth make daily in leadership, public speaking, and civic engagement are catalysts for their success as leaders going forward. As one youth participant shared “true leaders reach people of all ages and experiences. They bring those around them up and connect with them on their own specific level. I want to be a leader who leads with compassion, confidence, and character.” Once a year, our adult volunteers and participating youth gather for Achievement Day to recognize the full year’s worth of effort and progress participating youth have made. Achievement Day is the culmination of the program year, a moment to recognize and commemorate all that our youth and adult volunteers have accomplished.



Participants and awardees from the 2024 Marin County 4-H Achievement Day.

## Improving college readiness and access

### A day of science not to be missed

Over 10,000 attendees participated in the 12th annual North Bay Science Discovery Day, supported by 52 sponsors, 75 exhibitors (with 120 hands-on activities), and 150 volunteers. The North Bay Science Discovery Day is a one-day public free science festival designed to spark children’s wonder and curiosity for science, technology, engineering, and mathematics. Through interactive exhibits, youth explore rockets and beehives, robots and sharks, catapults and hearts, animation and animals, and more.



Youth explore science, technology, engineering, and mathematics with hands-on activities at the North Bay Science Discovery Day.

# Promoting Economic Prosperity in California

UC ANR partners with public, nonprofit, and private groups to create and extend new knowledge about agricultural and natural resource management. Participants change practices that result in increased yield and efficiency as well as reduced inputs, thus increasing economic return. UC ANR also conducts research and education leading to improvements in individual and household financial management practices. These changes improve individual and business financial stability, increasing the viability of California's economy and maintaining our role as a global leader.

The estimated annual Expanded Food and Nutrition Education Program (EFNEP) graduates reported an average of

**\$63.95**

monthly food cost savings.  
*(EFNEP 2023)*

In one year California EFNEP families collectively saved over

**\$1.5M**

on food costs.  
*(EFNEP 2020)*

The value of adoption of the UC Integrated Pest Management Program recommendations is

**\$323-500M**

to California agriculture  
*Giannini Foundation of Agricultural Economics (2016)*

## Increased agricultural and forestry efficiency and profitability

### Dry farming for wise water use and a better bottom line

Our UCCE Specialty Crops Advisor, Ellie Andrews, heard from Marin farmers their interest in receiving more dry farming education. In particular, farmers shared the need for implementation strategies and water-related decision support tools to improve climate resilience on farms that then also support farm viability through reduced costs. In response, Advisor Andrews co-hosted a Dry Farming Strategies Workshop at Table Top Farm with experienced Marin dry farmer Arron Wilder and UC Berkeley dry farming researcher Yvonne Socolar. Topics covered included key considerations, strategies (such as mulching and deep-planting), farmer anecdotes, research updates, and decision support tools with demonstrations.



*Marin farmers discuss dry farming methods and opportunities.*

## Increased agricultural and forestry efficiency and profitability (continued)

### Pathways for agricultural engagement in policy

In 2024, the County of Marin embarked on two major updates to policy that carried implications for the agricultural community. UCCE Marin facilitated multiple convenings of farmers and ranchers to help them understand the County's policy-making process, explore their own needs and concerns and engage with County staff to provide input. This work played out in virtual gatherings, one-on-one consultations and in organized focus group sessions that included County staff. One manifestation of this work was inclusion of agricultural specific language within the adopted Marin County Short-Term Rental ordinance.



*Marin agricultural producers and county staff discuss land use policy.*

## Increased emerging food economies and markets

### Launching Marin's local food system funding program

Marin County residents approved the extension of Measure A funds in 2022 to continue important conservation work in the county. The measure also included monies to create a grant program to fund projects that would help build a more resilient food system. UCCE Marin's Food System Advisor, Julia Van Soelen Kim, and Sustainable Agriculture Coordinator, Vince Trotter, collaborated with Marin County Parks to develop this program to be inclusive and accessible for community-based organizations and leaders to develop and deliver impactful projects. UCCE Marin team members helped to promote the program throughout the community, facilitating outreach sessions and providing one-on-one technical



*Food Agriculture and Resilient Ecosystems (FARE) Program outreach event.*

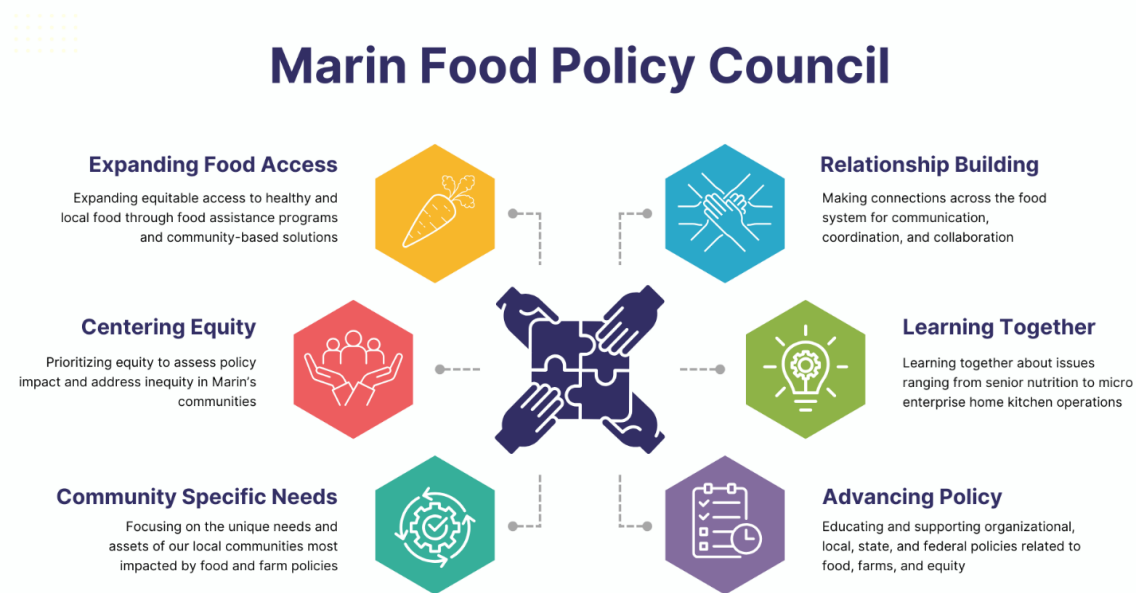
assistance to producers and community organizations in preparing and submitting applications. In the first year of the Food Agriculture and Resilient Ecosystems Program, \$1.7M was awarded to 21 individual grant recipients for projects ranging from school and community gardens to micro food enterprises to sourcing locally produced food to Marin institutions like schools.



## Increased emerging food economies and markets (continued)

### Convening stakeholders to support Marin food systems

UCCE Marin continued to partner with diverse food and agriculture groups across Marin through the [Marin Food Policy Council](#). The Council brings together local food system stakeholders in a roundtable format that allows for policy engagement, information exchange, and collaboration. Together with the Council, UCCE Marin facilitated meetings monthly, learned about key food system issues—including food access, food business development and the unique food needs of older adults in Marin—and developed a local policy platform.



*Marin Food Policy Council's interconnected goals.*

### Strengthening regional emergency food systems

Our Food Systems team continued their work to strengthen the region's emergency food systems with the North Coast Emergency Food System Partnership project. This \$1.5m project spans six counties, from Marin to Del Norte, facilitating a 275-person Community of Practice to build relationships and increase capacity among local food systems stakeholders and emergency managers. One goal is to increase the amount of local food in emergency food systems, including everyday distributions from food banks, pantries, and soup kitchens during acute disasters such as wildfires, earthquakes, and floods. As an example, Marin VOAD (Voluntary Organizations Active in Disaster) shared experiences and expertise from Marin's first ever emergency feeding plan and launching of a survey to inventory emergency food system assets available during disasters.



*Community of Practice participants discuss emergency feeding during a breakout group.*

# Safeguarding Sufficient, Safe, and Healthy Food for all Californians

UC ANR's research creates practical solutions leading to improvements in food production and processing practices. Given one out of every eight Californians does not know where their next meal will come from, UC ANR educational programs enable individuals and households to improve their food budgets and food management practices. As a result, Californians have increased access to abundant, affordable, safe, and healthy food.

Enhancing food assistance programs such as school food programs, food banks, and CalFresh acceptance at farmers markets increases access to fruits and vegetables.  
*County Health Rankings (2020)*

**54%**  
of UC Master Gardener event participants across the state applied gardening practices that reduced food loss  
*UC Master Gardener Program (2022)*

## Improved food security

### Expanding access to farmers markets in Marin and the North Bay

Food Systems Advisor Julia Van Soelen Kim continued community-engaged research to expand access to farmers markets in collaboration with community partners Farmers Market LIFE, Agriculture Community Events Farmers Markets, and Petaluma Bounty. Based on research findings, the project is piloting innovations to make farmers markets more welcoming to the whole community, expand use of CalFresh and Market Match nutrition incentives at farmers markets, and improve the financial viability of farmers market vendors. An impactful new development this past year included a [Farmers Market Ambassadors](#) program to help bring the community to the farmers market and the farmers market to the community. Read about some of the project's findings in the peer-reviewed article, [The Impact of COVID-19 on CalFresh and Market Match Spending at Farmers Markets](#) in the journal California Agriculture.



*Farmers Market Ambassadors working to increase market reach for diverse communities.*

# Promoting Healthy People and Communities

UC ANR produces tools, programs, and policy-relevant research that result in healthy living for individuals and communities. Program participants adopt healthier lifestyles and communities gain improved access to green spaces and healthy foods. Benefits also include safe drinking water, clean air, and reduced exposure to pesticides. In this way, UC ANR promotes public health for people and the communities where they live, learn, work, and play. Collectively these efforts contribute to a healthier California, improving public health and reducing healthcare costs.

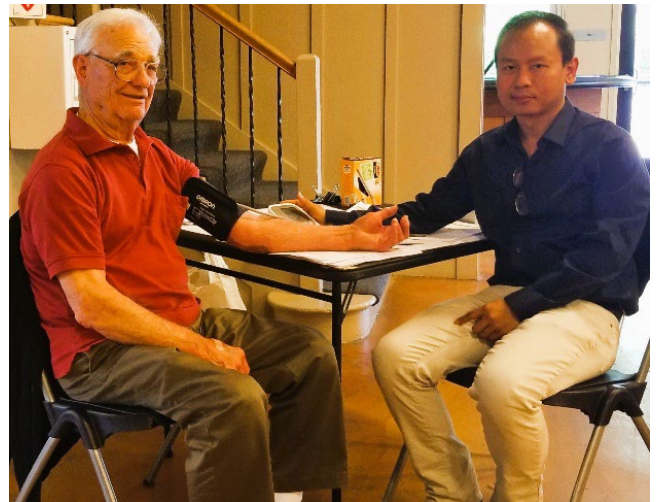
**71%**  
of CFHL, UC adult  
participants surveyed  
statewide ate more fruits  
and vegetables  
*CFHL, UC (2022)*

UC Master Gardener  
participants improved  
green spaces on  
**3.8 million**  
square feet of home,  
school, and community  
gardens across  
**California.**  
*UC Master Gardener Program  
(2020)*

## Improved health for all

### Putting heart health and nutrition in Marin residents' hands

UCCE Community Health and Nutrition Advisor, Dr. Zaw Wai Htoo, is having impact on the well-being of Marin County older adults through enhancing nutrition literacy, health equity, and community engagement for older adults, while also contributing to impactful statewide initiatives. Interactive workshops in Belvedere provided engaging discussions on healthy eating, respiratory health, quizzes, and some practical points on older women's health and nutrition. Similarly in Corte Madera, Dr. Htoo led a session entitled Hypertension, Heart Health Management and Nutrition that included hands-on experience for proper blood pressure monitoring techniques and meal planning for heart health.



*Community Health and Nutrition Advisor, Dr. Zaw Wai Htoo, demonstrates proper heart health monitoring with program participant.*

# Protecting California's Natural Resources

UC ANR translates research into actionable management strategies to protect our farming, ranching, forestry, and urban environments. Through outreach and education, participants learn to adopt recommended practices, such as grazing and rangeland management, sustainable use of forest and wildland resources, protection against fire, and water conservation. These measures contribute to improving air, soil, and water quality while also protecting wildlife and plant habitat. Increased ecological sustainability of agriculture, forestry, and urban landscapes helps California realize the many benefits of the state's rich and diverse natural resources.

Adoption of California Irrigation Management Information Systems (CIMIS) weather station data can save California nearly **147 billion** gallons of water annually  
*Zilberman, et al. (2019)*

UC Master Gardener participants improved **4 million** square feet pollinator habitat statewide  
*UC Master Gardener Program (2020)*

## Protected and conserved soil quality

### Farmers improving their soils, getting down in the dirt

Our Dairy Science and Specialty Crops Advisors are teaming with the USDA-funded Sonoma-Marine Agriculture and County Climate Coalition, to support area agricultural producers in doing their part to produce climate smart commodities. At a soil sampling field day, more than 25 agricultural producers and partners gathered to participate. Participants got the opportunity to develop soil management goals and sampling plans for their operations and then participate in hands-on soil sampling to confirm methods for sample handling and analysis. All participating farmers left with one free sample collection and laboratory analysis fee covered for their farms through this USDA funded workshop and collaboration.

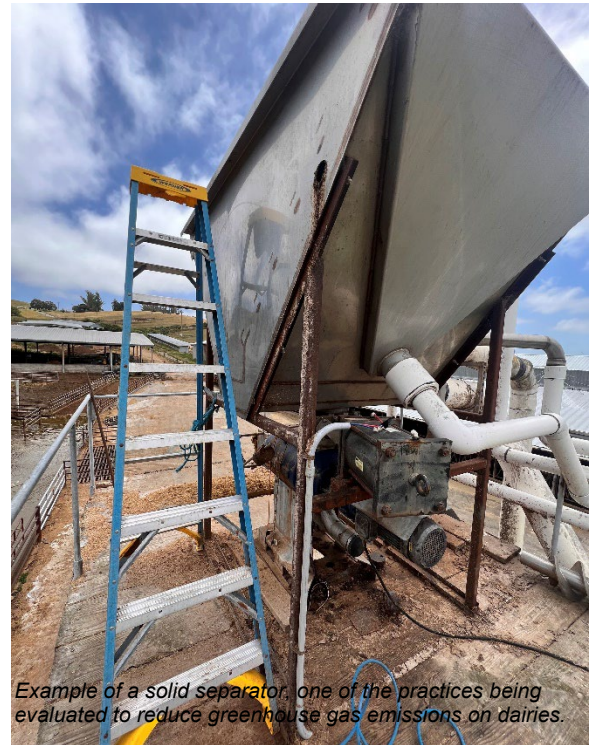


*Soil sampling field day participants practice sample collection and handling.*

## Increased ecological sustainability of agriculture, landscapes, and forestry

### Pay-off for farm practices to manage climate

Local farms are increasingly investing in and adopting climate smart practices. To fully realize the opportunities that agriculture represents as a solution for climate management, better understanding of the long-term efficacy and costs of these technologies is needed. Our Dairy Science Advisor is collaborating on a California Department of Food and Agriculture funded statewide study to gather this needed information across 30 California dairies. The study aims to quantify mechanical manure separation efficacy from different types of manure separators, composting efficacy in compost bedded pack barns, and costs to operate the different technologies annually. Equipping dairy farmers with regional and seasonal expectations for cost and efficacy can improve practice implementation and long-term commitment to improving the climate.



*Example of a solid separator, one of the practices being evaluated to reduce greenhouse gas emissions on dairies.*

### Making a difference for forest health for more than two decades

Over 20 years ago, the pathogen *Phytophthora ramorum* and its role in Sudden Oak Death was discovered in the United States and California. Marin County was ground zero with the first realization that “something’s not right” in the landscape. That first inkling that there was something new and different in area forests launched a national and international collaboration to understand the pathogen and manage forest health in the face of it. To learn more about this trajectory and timeline, visit the partnership [Storymap](#) our Forest Health Coordinator contributed to. An example of support and progress in management of this pathogen in ecosystems is the [Phytophthoras in Native Habitats Work Group](#) formed to determine steps needed to protect wildlands and assist the restoration industry.



*Storymap for Sudden Oak Death and Phytophthora ramorum relates the timeline from discovery to management of this forest health collaboration.*

## Increased ecological sustainability of agriculture, landscapes, and forestry *(continued)*

### Protecting landscape health through detective work

Environmental Horticulture Advisor Steven Swain is on the path of multiple plant pests and diseases impacting urban and wildland landscapes. This includes collaboration with Smithsonian and international counterparts to complete the identification of a new species of moth, *Etainia thoraceleuca*, that is compromising manzanita shrubs and madrone trees.

Investigations into a fungal pathogen *Verticillium*

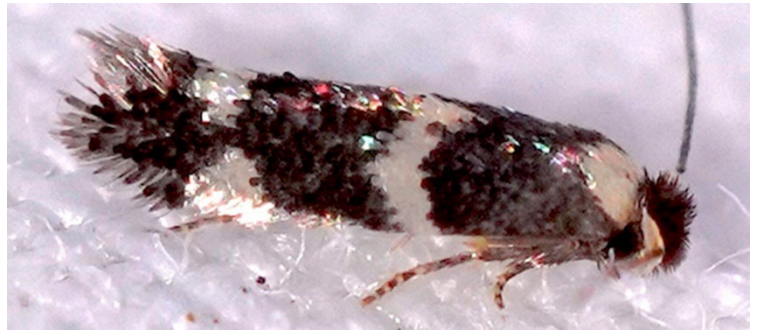
that is impacting privets in home and urban

settings are underway. So too is the exploration,

with UC Berkeley and UC Davis pathology experts, of another fungal pathogen *Botryosphaeria* in North

Bay woodlands. Advisor Swain continues to pursue these pests and diseases with his colleagues from

identification through to treatment and management testing.



*A newly identified moth species, the size of a sand grain, is a risk to some area shrubs and trees. (Photo credit: Greg Smith)*

### Protecting livestock and predators

UCCE Wildlife and Human Interactions Advisor, Dr. Carolyn Whitesell is working on two mountain

lion research projects with direct implications for

agricultural producers and wildlife. In

collaboration with the Bay Area Carnivore-Livestock

Interactions Project (a collaboration between UCCE, Panthera, UCSC Puma Project, and others, based in San Mateo County), she is

testing nonlethal deterrents for mountain lions

through funding by the Midpeninsula Regional

Open Space District. She is also collaborating

with Audubon Canyon Ranch's Living With Lions Project, to examine mountain lion diet,

movements, and behavior. The results of both

projects will help inform best practices for

mitigating conflict for agricultural producers, small parcel livestock owners, and residents living in the rural-suburban matrix of the North Bay.



*Non-lethal deterrents like this light are currently being evaluated for predator control in agricultural settings.*

# Building Climate-Resilient Communities and Ecosystems

UC ANR conducts research to understand and develop solutions to increase the resilience of agriculture, communities, and natural ecosystems to extreme weather and climate change. Our programs assist communities, farmers, and ranchers in implementing climate-smart soil and water management practices, reducing greenhouse gas emissions in forested and working landscapes, and expanding public awareness of climate risks and effective adaptation strategies. As a result, communities are better prepared and able to deal with the growing risk of fire, droughts, and flood hazards. Our work leads to a safer, more climate-resilient California.

UC Climate Smart  
Agriculture Educators  
helped growers  
statewide reduce  
greenhouse gas  
emissions equivalent  
to removing  
**7,000**  
cars from the road  
*Based on CDFA calculators  
(SWEEP and HSP 2021)*

UC ANR contributed  
to reduced fire risk  
through prescribed  
burns in over  
**6,800**  
acres  
across the state  
*(2021)*

## Increased preparedness and resilience to extreme weather and climate change

### Growing cooperation and capacity for using prescribed burning

Partnering with Marin County Fire, Marin Agricultural Department, and other important Marin organizations, our Fire Science Advisor Tori Norville is helping to establish the Marin Prescribed Fire Cooperative. The goal of this group is to promote multi-organizational collaboration to use prescribed fire for community safety, stewardship, and creating resiliency within the County. In its first year, the Cooperative has gathered the different groups within Marin County who are implementing or are planning to use prescribed fire to coordinate and prioritize planned burns and expand the use of this important fire management tool in future years. Already, there is increased communication between organizations and shared training resources and knowledge in prescribed fire implementation. Marin County and its diverse landscapes will benefit from the Cooperative through larger scale fire fuel management and improved function of its fire-adapted ecosystems.



*Low-intensity prescribed fire implemented on rangelands.*

## Increased preparedness and resilience to extreme weather and climate change (*continued*)

### Increasing homeowner participation in defensible space

Homeowners, through their landscape design and management decisions, are critical in creating gardens and home landscapes to achieve numerous objectives at the same time. One critical objective is the creation of defensible space. Our Fire-smart Landscaping team organized a two-day training, including an all-day garden tour to educate on the principles and demonstrate home landscape designs that contribute to defensible space. More than 125 participants joined the two days of instructions and discussion. Their post-training comments indicate both an increased understanding in defensible space and confidence to apply that understanding in their home landscapes. More information about [how to create a Fire-smart landscape](#) is available on our UC Marin Master Gardener website.



*Vegetation Specialist Mike Swezy discusses defensible space landscaping with four participants.*

### Adapting gardens to Marin's climate for water conservation

According to the California Department of Water Resources, about 40% of household water use is for outdoor landscape watering. Our team and partnership with Marin Water focuses on efficient and effective use of this water. We train our UC Marin Master Gardeners to engage individual homeowners, tour and evaluate those home landscapes, and provide homeowners with both landscape design and irrigation system management recommendations. Through these in-person consultations and provided reports, Marin residents are supported with options to achieve beautiful climate adapted gardens that conserve water. In 2024, our team provided over 138 individual Garden Walks and consultations countywide. Through our partnership and the commitment of our volunteers, we have conducted 2,330 walks since 2008.



*UC Marin Master Gardeners consulting with a homeowner on best water usage practices.*



# UCCE Marin



Marin 4-H youth display their awards at the West Marin 4-H Fair in Pt. Reyes.

Front cover: The 2024 Fire Foundry cohort and UCCE Fire Science Advisor Tori Norville engaged in the Fire Frontiers Course.