

# 2022 ANNUAL REPORT



UC COOPERATIVE EXTENSION MARIN

# UC Cooperative Extension Marin 2022

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



*Discussing practical approaches to conserving water at a low-water field day for agriculture producers.*



**405**

volunteers donated  
**46,388**  
hours public service  
— estimated value  
of  
**\$ 1,873,147**



**19,349**

total educational  
interactions with the  
public



**11**

peer-reviewed and  
audience-requested  
publications and  
educational  
materials



**6**

activities bringing  
research to policy



**57**

academic-led  
workshops, field  
days, and classes  
with  
**1,463**  
participants



**17**

news media  
programs/  
mentions

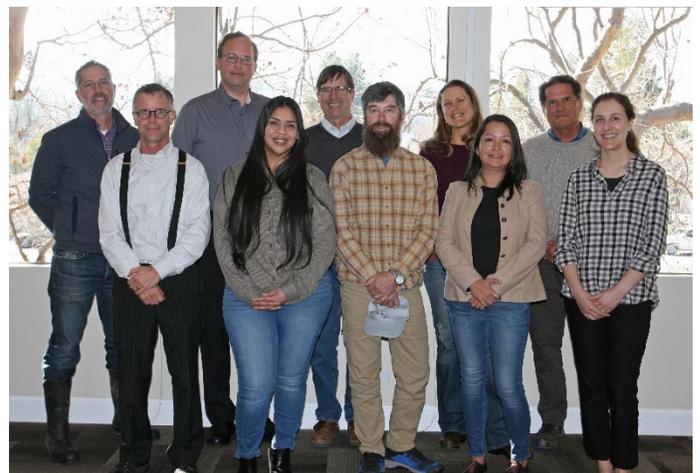


## UCCE Marin

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# Partnering for Change

UC ANR builds partnerships based on deep and long-lasting relationships with local, state and federal governments, community-based organizations, schools, nonprofits and private industry.

## UCCE Funding



**\$ 821,886**  
University



**\$ 462,280**  
County



**\$ 510,876**  
Advisor generated  
(grants, gifts, other, etc.)



Volunteers raised  
**\$ 62,200**  
to support local  
programs

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 for sharing your vast knowledge with us, your engagement, and your leadership of this program. I am so fortunate to have participated and learned from you."*

— Marin County staff and Agricultural Team member

*"Thanks so much for taking a look at these redwoods. This is really shaping how I think about planting "water loving" plants, going into drought/climate change."*

— Home gardener

*"I just want to let you know how impressed I was with your exhibit at Ember Stomp. You really hit the sweet spot by illuminating the key fire-smart tenets, showing real-world examples!"*

— Ember Stomp participant and homeowner

*"We saw remarkable growth in nutrition incentives at farmers markets in our coalition. This was due in part to the ongoing partner collaboration, research, interventions, and marketing campaign."*

— Farmers Market leader and study cooperater

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# Reaching Marin

## Educational Offerings and Consultations

In 2022, nearly 18,300 participants were served in 104 workshops, conferences, and tours organized with community partners. These offerings were held both in person and via webinar platforms. Participants included over 330 youth during in-person after school and virtual online offerings.

In addition to education through workshops, our program teams provided technical consultations to Marin agricultural producers, tree and landscape professionals, homeowners, and educators. In 2022, we provided approximately 1,310 consultations, either in our office, through our gardening help desk, or in the field on farms and properties.



*Virtual “brown-bag” session on grazing livestock for Marin County Agriculture Team.*

## 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 2022, these websites had more than 170,000 discreet views. Popular webpages include:

- [Plants for Common Marin Settings](#)
- [Drought Management for Farmers](#)
- [Plan Your Fire-Smart Landscape](#)
- [Top 20 Garden Problems](#)
- [Oak Identification](#)
- [Sudden Oak Death Hosts and Symptoms](#)
- [Find Marin Ag Products](#)
- [Monthly Plant & Garden Care Checklist](#)
- [Farm Labor Requirements Resources](#)
- [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  
**4x**  
more likely to complete a  
4-yr degree  
*Lerner, Lerner, et al.*  
(2013)

## Increasing workforce retention and competency

### Developing Marin's workforce through bilingual landscaping class

The 2022 Bilingual Landscapers' class provided 7 students, whose first language is Spanish, with hands-on learning in post-fire landscape management, proper pruning, irrigation, and Integrated Pest Management. The class was aimed at small, independent landscaping companies or contractors with limited access to culturally relevant professional development. The program grew participants' technical knowledge and skills they can utilize in providing service to their customers. Graduates are listed on the [UCCE Marin website](#).



*Bilingual landscaping students review principles of assessing irrigation uniformity before testing the irrigation system.*

## Increased civic engagement

### Youth Development Advisor, Dr. Steven Worker receives national recognition

In April 2022, the American Educational Research Association's Out-of-School Time Special Interest Group met in San Diego for its annual meeting. UCCE Marin's Youth Development Advisor, Dr. Steven Worker, was recognized with the [Special Interest Group's Scholar Award](#). This award is for outstanding research in the out-of-school time field and honors a scholar in the early to middle stages of their career.



*Youth Development Advisor,  
Dr. Steven Worker.*

## Increasing effective public leaders

### A project catalogue and remodeled program to engage Marin youth

The Marin County 4-H Youth Development Program remodeled and upgraded how it provides high quality learning experiences to Marin County young people. Adapting to changes in society and other competing interests for youth, the 4-H staff remodeled 4-H delivery into one unified Marin County 4-H Club instead of distinct, smaller 4-H clubs. Youth join the countywide club and select one or more project learning experiences. The [Marin 4-H 2022-2023 Project Catalog](#) details the 2022 projects. In these projects, youth learn and practice through hands-on learning experiences that emphasize leadership, teamwork, communication, and technical skills. They include sewing, horsemanship, poultry and rabbit healthcare, design, outdoor survival, video making, and cooking. These experiences help to propel young people on a path of college and career readiness, including vocational and technical skills applicable to all young people's lives and future careers. Just halfway through the year, and 4-H youth enrollment is up compared to last year!



Fall 2022

Revised September 27, 2022

### Marin 4-H 2022-2023 Project Catalog



#### Marin County 4-H Club

The Marin County 4-H program helps young people, ages 5-18, reach their fullest potential as competent, confident individuals who contribute to and are connected with their communities.

In 4-H programs, youth set goals, develop plans, complete projects, and reflect on their experiences. Youth are encouraged to discover their passions, adopt a growth mindset, and practice self-reflection.

Read more in the UC 4-H Family Handbook at <https://ucanr.edu/sites/UC4H/files/27860.pdf>

#### 4-H provides youth amazing opportunities!

*"I took on the role of Club President! Learning people's names, taking up responsibility for the meetings and collaborating with the Club Leader taught me communication skills and team building."*

#### SIGN UP TODAY!

##### 4-H Youth

Must be at least 5 years old and not 19 years old on or before December 31, 2022.  
Enrollment Fee \$75

##### 4-H Adult Volunteers

Must be at least 18 years old. New volunteers must complete training & background check.  
Enrollment Fee \$30

#### QUESTIONS?

##### Enrollment

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*Marin 4-H's Project Catalogue gives youth multiple hands-on learning experiences to choose from.*

## Improving college readiness and access

### North Bay Science Discovery Day in-person, increasing youth interest in STEM

The North Bay Science Discovery Day is a one-day, free, public science festival that reached 6,000 people with 60 hands-on STEM exhibits from [52 organizations](#) on May 15, 2022. Returning to an in-person format this year, the event is intended to spark young people's wonder and curiosity for science, technology, engineering, and mathematics (STEM). It also strengthened the North Bay's STEM learning organizational network and capacity, bridging across sectors to deepen and sustain youth STEM learning. Data demonstrates that:

- 71% of youth increased a little or a lot their fascination and enjoyment of STEM
- 79% intend to seek out more STEM information
- 64% will go to other out-of-school time STEM activities



*Participants exploring reptiles and their biology.*

# Promoting Economic Prosperity in California

The estimated annual value of adoption of the UC Integrated Pest Management Program recommendations is **\$323-500M** to California agriculture  
*Giannini Foundation of Agricultural Economics (2016)*

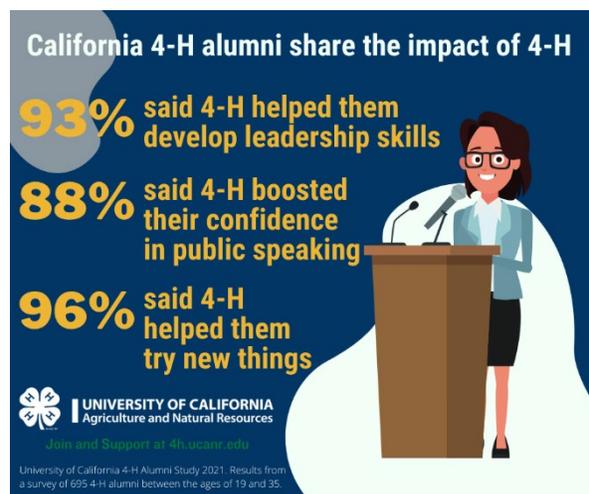
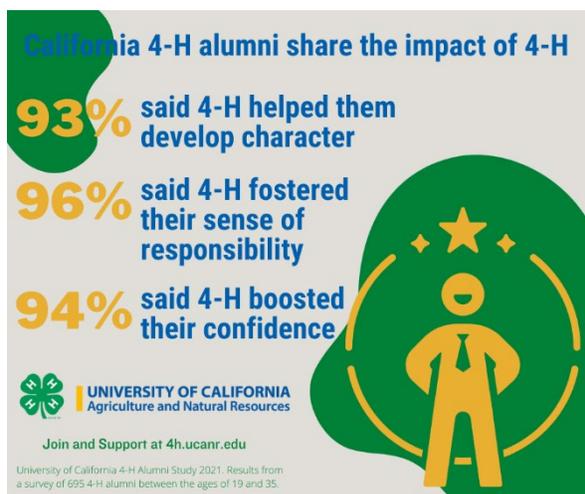
UC ANR partners with public, nonprofit, and private groups to create and extend new knowledge about agricultural and natural resource management. Participants change practices that result in increased yield and efficiency as well as reduced inputs, thus increasing economic return. UC ANR also conducts 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.

## Improved individual and household financial stability

### Early adult 4-H alumni confirm positive influences from youth development programs

One goal for all of our youth development programming is to provide opportunities that help prepare youth for adulthood. Positive 4-H youth development frameworks and programs are designed and delivered for youth to realize a more successful transition to early adulthood (between the ages of 19 and 34), marked by economic stability, good health and well-being, and community involvement. Surveys of early adult 4-H alumni confirmed that:

- More than two-thirds of California 4-H alumni responded that 4-H made positive impacts on them by fostering a sense of responsibility, developing leadership skills, and cultivating confidence in public speaking. Similarly, more than half responded that life skills, character, and being a good citizen were increased through participation in 4-H.
- California 4-H adult alumni indicated more positive long-term outcomes for economic stability, health and well-being, and community involvement, than comparable adults who did not participate in 4-H.



# 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)*

Expanded Food and Nutrition Education Program (EFNEP) graduates reported an average of **\$58.10** monthly food cost savings. In one year California EFNEP families collectively saved over **\$1.5M** on food costs.  
*EFNEP (2020)*

## Improved food security

### Leading policy change with the Marin Food Policy Council

The [Marin Food Policy Council](#) brings local food system stakeholders together to solve food access issues and support Marin County agriculture and local food system. North Bay Food Systems Advisor Julia Van Soelen Kim supported the Council's exploration of topics related to equitable access to senior nutrition programs, opportunities related to universal school meals and farm to school programs, and support of micro-enterprise food businesses. The Council identified opportunities and challenges, developed a policy platform, and took policy action to support improved access to healthy food and to support local food systems at the local, state, and federal levels.



# 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.

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)

Studies show that for every **\$1** invested in EFNEP, more than **\$8** is saved in current and future healthcare costs. Pradhan and Goldman (2006)

## Improved community health and wellness

### Expanding community engagement with farmers markets

North Bay Food Systems Advisor Julia Van Soelen Kim led community-engaged research to identify barriers and opportunities to support CalFresh users and Latinx community members to shop at farmers markets in the region. The 4-year study piloted innovations to make farmers markets more welcoming to the whole community, expand the customer base of farmers markets, and improve the financial viability of farmers market vendors. The project was done in collaboration with Petaluma Bounty, the Northern California Center for Well-Being, and Farmers Market LIFE — a network of four farmers market organizations operating farmers markets in Marin and Sonoma counties. The project pivoted to digital community engagement methods during the pandemic, finding surprising success with virtual focus groups and surveys distributed using social media.



*A girl and her family shop at a local farmers market. Photo credit: Paige Green.*

# 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 sustainable 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.

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

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)*

## Improved management and use of land

### Managing the landscape and ecosystems through prescribed grazing

There is limited published research on the effectiveness of livestock grazing in directly reducing fuel loads in California shrublands. Research documents that cattle grazing was considered a method of preventing the encroachment of coyote brush onto grassland. The removal of disturbance — such as grazing — in the coastal prairie, has resulted in extensive land type conversion to shrublands on Marin coastal lands. To inform balanced decision making, UCCE's Livestock & Range Management Advisor Stephanie Larson is analyzing past and current practices for brush management, effects of brush on fire severity, and the relationship between grazing and herbaceous species encroachment, particularly coastal sage scrub.



*Comparison of open grassland pasture and shrubland.*

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

### Developing capacity for working with agriculture

A team of cross-departmental Marin County public agency staff was assembled to receive and process agricultural projects ranging from diversification to natural resource management to climate adaptation. This team of 22 members participated in nine webinars, panels, and field trips to orient team members to Marin's food system dynamics and familiarize them with the unique challenges and opportunities on Marin County farms and ranches. The learning heightened team members' awareness of the complexity behind agricultural project applications and prompted thinking around how existing permitting policies and procedures align with the challenges facing agriculture. Currently, the Marin County Agriculture Team is developing a set of recommendations for updates to County permitting policies and procedures that align with the complexity on agricultural operations.



*Farmer Mickey Murch shares his experiences farming and running a farmstand with Marin County staff.*

### Compost 101 Training – How to source materials and make compost on-farm

Dairy and livestock producers participated in three days of hands-on training to learn how to produce compost on-farm. Rancher interest in making and using compost is increasing, motivated by improved soil conditions that in turn lead to quantity and quality improvements in forage. Additionally, utilizing compost as bedding for dairy cows is advantageous and cost-effective if done correctly. And there is a climate benefit in reduced greenhouse gas emissions through composting farm manure. Participants learned about compost ingredients and options for sourcing them. They also built compost piles using recommended recipes, and practiced monitoring compost pile temperature, density, and moisture levels. Lastly, they explored different technologies and options for making compost on-farm and the uses of that finished product. Day three of the program was a tour of dairies with a variety of active composting methods, which provided networking with fellow composting enthusiasts. Skills learned will assist participants in producing and assessing compost for quality to meet their farms' needs and uses.

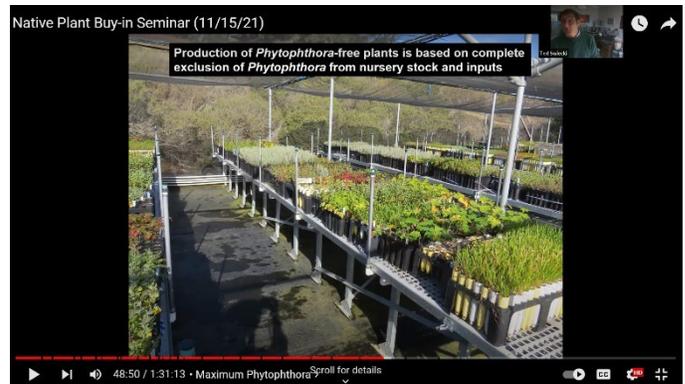


*Training participants assessing compost density and moisture content.*

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

### Clean plant stocks for plant nurseries and native plant sources

Using nursery-grown native plants in large scale restoration projects, and even home gardens, can carry the risk of introducing and spreading plant pathogens, including numerous *Phytophthora* species, into the environment to drastic effect. To mitigate that risk, UCCE organized and hosted the Native Plant Buy-in seminar on November 15, 2021. The more than 140 seminar participants – from nursery plant managers, restoration ecologists, to other vested stakeholders and agency leaders – gained insights into managing native plant nurseries to reduce the presence of pathogens, guidelines for testing native plant nursery stock for pathogens, and how to work with nurseries already certified for clean nursery stock. This includes a complementing [Frequently Asked Questions](#). This work by the *Phytophthora* in Native Habitats Work Group, combined with other California Oak Mortality Task Force accomplishments, contributed to the California Forest Pest Council being awarded the 2021 Francis H. Raymond California Forestry Award.



*Dr. Ted Swiecki explaining results of nursery research to produce pathogen free plant stock.*

## Improved water-use efficiency

### Low-water farming field day

Continuing efforts to provide adaptations and relief to the extreme dry conditions from 2019 through 2022, a field day on “low-water” farming offered growers an opportunity to share and learn from each other. UCCE Marin, in collaboration with the Agricultural Institute of Marin (AIM) and the Marin Agricultural Land Trust (MALT), designed and delivered the day-long program that included the science of deficit irrigation and descriptions of practical approaches to conserving water in specialty crop systems. Speakers included UC Davis Specialist in Soil-Plant-Water Relations and two Marin County producers, complemented with farm tours and on-site demonstrations of practices and technologies.



*Farmer Arron Wilder discusses water use and conservation options for vegetable production in Marin.*

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

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

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

### Teaching fire-smart landscaping and defensible space in Spanish

In 2021, our Fire-Smart Landscaping team launched several videos to extend research-based information for creating defensible space and fire resilient landscaping. The popular lead video for this series – [“Fire-Smart Landscaping: Make your home and garden safer for wildfire”](#) – received more than 500 views. In 2022, our team reproduced this film in Spanish – [“Diseño de jardines para prevenir incendios”](#) – with nearly 200 views to date. This and other home gardener education programs is in collaboration with FireSAFE Marin and Marin Wildfire Prevention Authority.



Educational video on fire-smart landscaping in Spanish.

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

### Fire-smart landscaping demonstration garden at the first Marin Ember Stomp forum

The UC Marin Master Gardeners are 350 volunteers strong, within which is the 10-member Fire-Smart Landscaping core team. This team and the UCCE Marin Fire Science Program Coordinator, Sophia Porter, were invited by FireSAFE Marin and the Marin Wildfire Prevention Authority to develop and deliver a demonstration garden for defensible space at Marin's inaugural Ember Stomp forum. This one-day event was provided for Marin residents to learn about resources and information to prepare for and build resilience in the face of wildfire risk. UCCE Marin's Fire-Smart Landscaping program focuses its delivery of research-based information on garden and landscape design and maintenance principles that contribute to defensible space. The demonstration garden at the May 2022 Ember Stomp gathering advanced this goal through home gardener education. More than 2,000 visitors toured the garden, learning about plant spacing and other material options for home gardeners to be successful in creating fire resilient landscapes ([see this news clip to learn more](#)).

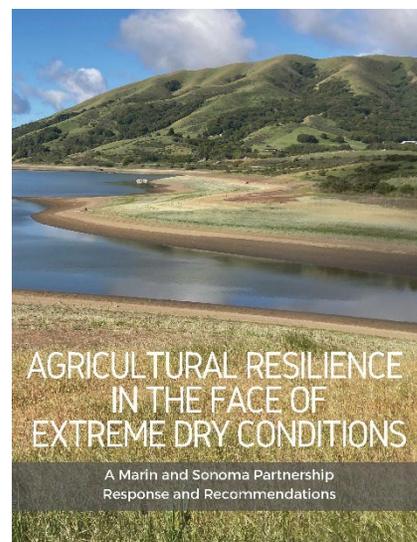


*Defensible space demonstration garden at the 2022 Marin Ember Stomp event.*

UCCE Marin's Fire-Smart Landscaping program focuses its delivery of research-based information on garden and landscape design and maintenance principles that contribute to defensible space. The demonstration garden at the May 2022 Ember Stomp gathering advanced this goal through home gardener education. More than 2,000 visitors toured the garden, learning about plant spacing and other material options for home gardeners to be successful in creating fire resilient landscapes ([see this news clip to learn more](#)).

### Partnering to support community resiliency

Between 2019 and 2022, California including Marin and Sonoma Counties incurred extreme dry conditions. By both measured precipitation amounts and anecdotal field observations and experiences the lack of available water, dry soil conditions, and limited to zero forage production were the most pronounced in over 50 years. In coordination with leadership from Supervisors Dennis Rodoni in Marin and David Rabbit in Sonoma, including Sonoma Water, Marin Water, and North Marin Water District, a partnership of county departments, resource conservation districts, land trusts, and community-based organizations partnered to implement practices and adaptations for making emergency water available to agricultural producers and enhancing farm and ranch water management capacity. Partners documented their collaboration, including recommended needed advancements to grow community and individual farm resiliency in their report – [Agriculture Resilience in the Face of Extreme Dry Conditions](#).



*Marin Sonoma Partnership report presenting solutions for agriculture in the face of extreme dry conditions.*

# UCCE Marin



*Exhibitor conducting a science experiment for youth participants at the North Bay Science Discovery Day.*