Connecting Communities and Science for a Stronger California

2024 UC ANR ANNUAL REPORT

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Trina Wood for UC Davis

Cultivating Partnerships and Solutions for Complex Challenges

In 2024, University of California Agriculture and Natural Resources (UC ANR) made significant progress in its goal to serve all 39 million residents of California through research and community engagement in our core areas: agriculture and food systems, natural ecosystems and working landscapes, and thriving people and communities. This year, we reached closer to that goal by expanding our presence to nine of the ten UC campuses.

We strengthened our capacity to deliver on our mission now and into the future by establishing the UC ANR Foundation, a new 501(c)(3) that will significantly elevate our research and extension programs, and developing the 2040 Strategic Vision, which will optimize and align UC ANR's research, programs, and partnerships for the next 15 years. This roadmap is the culmination of a year-long effort, bringing together feedback and insights from across our organization and collaborators. Volunteers, faculty, advisors, community educators, and administrative staff as well—as growers, community leaders, and other partners—gathered across the state to articulate what UC ANR is and where it can achieve the most impact.

Across our organization, we continued to build strategic partnerships to amplify our impact. These partnerships spur innovation in agriculture, including our work with F3 (Farms Food Future) and the VINE. They support the success and safety of California's foodways—through, for example, the Southwest Region Food Business Support Center—and connect Californians to our natural resources through California Naturalist and Climate Stewards, who volunteered over 87,000 hours last year alone. Critically, our partnerships expand our ability to meet our state's most pressing challenges. For instance, the UC ANR Fire Network's work with communities across the state has led to the development of 28 Prescribed Burn Associations, which strengthen local capacity to manage wildfire conditions.

Indeed, policymakers, the media, and the public continued to rely on UC ANR expertise to develop responses to critical issues affecting Californians...

Indeed, policymakers, the media, and the public continued to rely on UC ANR expertise to develop responses to critical issues affecting Californians, including extreme weather, avian flu, water scarcity, and more. Growers and ranchers rely on UC ANR expertise to save money and resources. Research from UC ANR informs policies on a host of topics, from how to restore oak woodlands to ensuring kids grow into healthy, confident, and science-literate leaders. Californians follow UC ANR guidance to create home spaces that are resilient to wildfires and attractive to pollinators.

UC ANR remains a trusted source of information and training for adapting to and meeting regulatory requirements. For instance, the UC ANR Small Farms Network supported growers in reaching food safety inspection standards and achieving organic certification—support that not only keeps farms operational but allows their products to enter new markets. And UCCE Specialists and Advisors helped communities to maximize their benefits when adopting California's new organic waste bill through locally identified opportunities. We are proud to share these and more examples of our accomplishments in the following pages.

None of this work would be possible without the dedication and passion of the many academics, staff, and volunteers that conduct the research, deliver the programs, extend the new knowledge, and ensure that operations run smoothly. We look forward to continuing to grow with you.

Glenda Humiston
Vice President
University of California Agriculture and Natural Resources

Vision 2040:
A Blueprint to Guide Our Efforts

For over 150 years, UC ANR has stood as a wellspring of information, innovation, and collaboration. We represent a critical link between UC research and the everyday challenges affecting lives and livelihoods.

Over the next 15 years, UC ANR will continue to serve as a catalyst for positive change, empowering Californians to build a brighter and more sustainable future together. To achieve this, we will catalyze partnerships across the rural-urban continuum to make California the world's leader in agricultural production and food systems, natural resources management, ecosystem resilience, community and youth development, nutrition and health, and economic development.

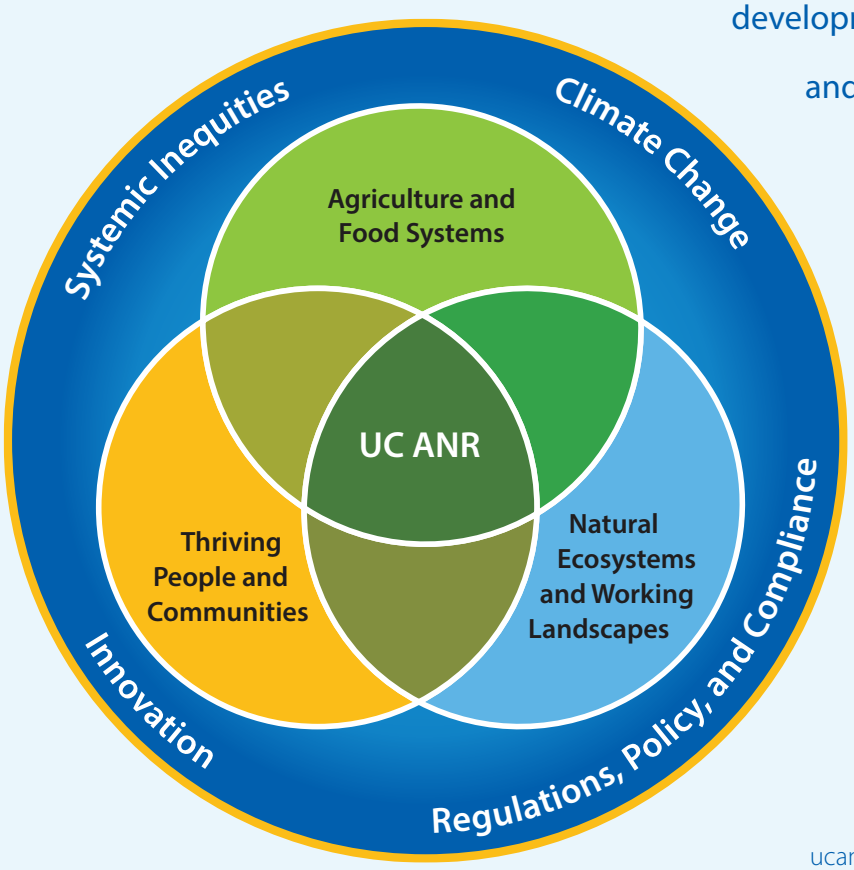
Our 2040 Strategic Vision document serves as a blueprint to guide our work, structure, and resource allocation. This Vision 2040 was informed by feedback and insights from hundreds of UC ANR personnel, external partners, and clientele across the state. The UC ANR mission and vision were refreshed, as was the list of challenges upon which UC ANR will focus our research and engagement. Examples of activities we will pursue for solutions are in the full document. A detailed strategic plan with specific goals, objectives, milestones, and defined metrics will be developed in Phase 2 when we refresh our UC ANR Strategic Plan for 2025-2030.

Our Vision

UC ANR will be valued in every California community for meaningful engagement and making a positive impact in people's lives.

Our Mission

UC ANR cultivates thriving communities, sustainable agriculture, resilient ecosystems, and economic prosperity in California through development and sharing of equitable and collaborative science-based solutions that have national and global impact.



ucanr.edu/sites/default/files/2024-10/403483.pdf

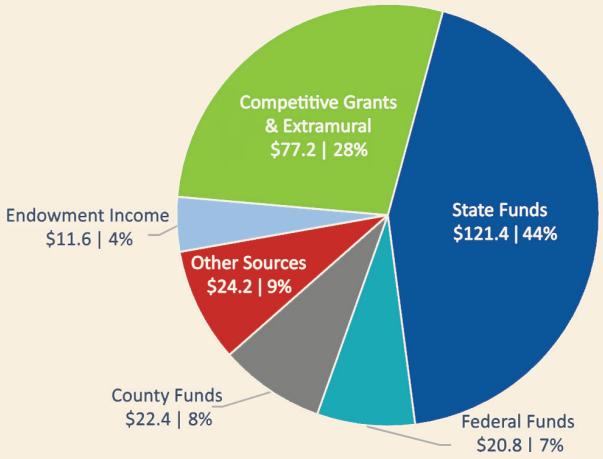
UC ANR is a growing state network of researchers and educators dedicated to the development and application of knowledge to address local agricultural, environmental, and health issues. The network of local Cooperative Extension sites and research and extension centers is often the face of the university to residents who may never set foot on a UC campus. By working and living among those we serve, UC ANR expands UC's reach to engage all people and communities in California, ensuring equal access to the UC system.

In 2024, more than 180 UCCE Advisors were conducting research, outreach, and education activities, serving all 58 counties from 70+ locations throughout California. Nine research and extension centers (RECs), located in a variety of ecosystems across the state, provide places for researchers to conduct field experiments and provide educational opportunities for the public. Over 510 affiliated Agricultural Experiment Station (AES) researchers were located at five campuses, and 111 UCCE specialists were located at nine campuses, RECs, and county offices.

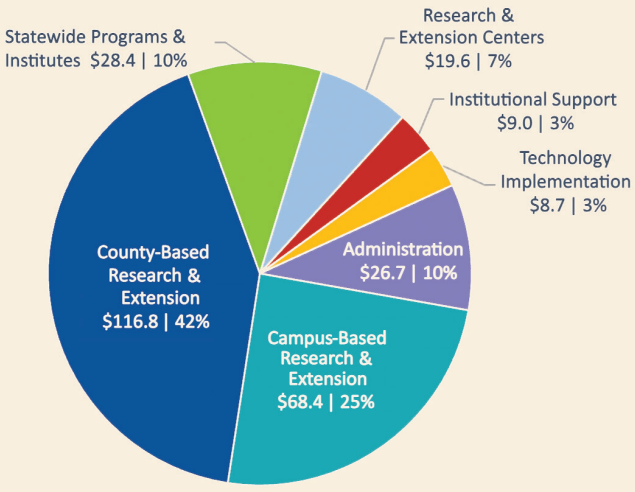
This year, UC ANR's statewide programs and institutes worked through and with our county offices and community partners. The statewide programs include UC Environmental Stewards; UC Master Gardeners; 4-H Youth Development Program; Expanded Food and Nutrition Education Program; UC Master Food Preservers; Informatics and Geographic Information Systems; UC Integrated Pest Management; UC Sustainable Agriculture Research and Education Program; Agricultural Issues Center; and CalFresh Healthy Living, UC. The institutes include the Nutrition Policy Institute, California Institute for Water Resources, and UC Organic Agriculture Institute.

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

2023-24 Total Fund Source = $277.6M



2023-24 Total Fund Uses = $277.6M



2023–24 Highlighted Outputs and Activity

12 **novel ideas** led to **patents**

1,830 **science-to-policy** activities

There were **2,130** **credible, audience-driven educational materials**

33,810 **meetings, workshops, field days** and **courses** held

606,560 **direct contacts/ educational exchanges** with **adults** and **youth**

Dustin Blakey for UC ANR

Promoting Economic Prosperity in California

Improved individual and household financial stability

EFNEP prepares Californians to navigate rising food costs

Across California, the Expanded Food and Nutrition Education Program (EFNEP) helps families take control of their money through curricula in strategic grocery shopping, budgeting skills, and food resource management techniques. In Los Angeles County and Orange Counties, 95% of 284 and 93% of 149 participants in each county, respectively, improved in at least one food resource management practice. (Natalie Price) In Butte, Colusa, Glenn, Sutter, and Yuba Counties, 83% of 230 EFNEP participants showed improvement in five or more areas of food resource management, including cooking dinner at home, comparing food prices, meal planning, looking in the refrigerator or cupboard before shopping, and making a list. (Veronica Van Cleave-Hunt)

Enhanced community economic development

UCCE creates jobs to reduce wildfire risk

In the Sierra Foothills, a UCCE Advisor works with local leaders on pathways to improve protection of forest resources while expanding community economic development opportunities through biomass utilization. Through outreach and needs assessment, the Advisor was able to highlight the significance of local biomass utilization projects and provide the most comprehensive recommendations to the Mariposa County Planning Commission. The Mariposa Biomass Energy Project obtained approval to break ground. The successful establishment of this facility will help pay for the removal of dead trees from around homes and public infrastructure, which will reduce fuel for wildfires, and diversify the local economy with high-paying jobs. (Cindy Chen)

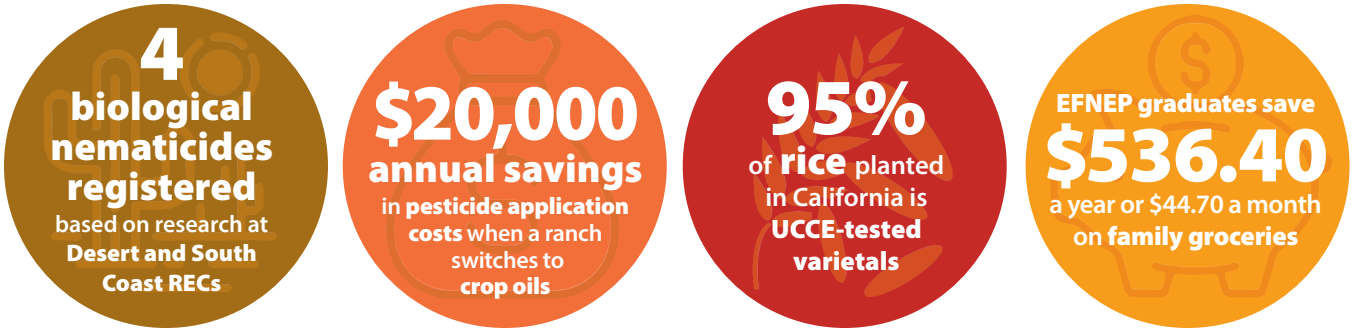
Improved animal management, productivity and efficiency

Advanced genetic technologies tackle avian influenza and other poultry diseases

Infectious diseases in poultry such as avian influenza and Newcastle disease are major challenges for poultry health and productivity. They also pose a threat to the health of other livestock and humans. An AES researcher at UC Davis works on a multistate collaboration that utilizes genetics, epigenetics, genomics, and bioinformatics to identify potential DNA variants that contribute to disease resistance as well as growth and feed efficiency in poultry. The research team has developed a new platform that can significantly improve genetic selection accuracy for poultry production and health traits that will benefit the poultry industry, especially breeding companies. The innovative and affordable disease reduction strategies support sustainable agriculture and global food security by enhancing poultry production systems. (Huaijun Zhou)

Plumas National Forest protects ranchers' livelihoods with UCCE post-wildfire research

After wildfires in the Northern Sierra, a UCCE Advisor conducted ecological monitoring to assess the potential impact of grazing in burn areas. Historically, grazing has been delayed three to five years after a wildfire. However, the UCCE findings gave Plumas National Forest the information they needed to allow grazing on allotments one year out following the Dixie Fire. As a result, ranchers were not forced to liquidate cattle or purchase forage for over 3,000 cattle (estimated $660,000 annual value). (Tracy Schohr)



Evett Kilmartin for UC ANR

Increased agricultural and forestry efficiency and profitability

Improved rootstocks help walnut growers to combat soil-borne pathogens

Soilborne pathogens cause an estimated $241 million in walnut orchard and nursery tree losses every year in California. To address this challenge, a UCCE Orchard Systems Advisor provides technical assistance and trainings to growers on improved rootstocks. At one workshop, 32 of 37 growers indicated that they are already using or plan on using improved rootstocks. As more acreage is planted with improved rootstocks, losses across the industry will decrease. (Luke Milliron)

Learning to leverage native bees in agricultural pollination

In North America, managed honeybees provide most of the agricultural pollination, which is valued at over $15 billion annually. The heavy reliance on this single pollinator increases the vulnerability of agricultural production, highlighting the need for alternatives. An AES researcher at UC Davis is demonstrating how to support native honeybees and bumblebees to provide pollination to numerous crops in Northern California. The research identifies crop-pesticide-time of year combinations in California that could be especially risky for bees and other pollinators by mapping pesticide applications and exposures to bees. The results have been shared with beekeepers and growers, as well as the California Department of Pesticide Regulation, to inform reduced-risk pesticide strategies and state regulations. The research also quantified the benefit of wildflower plantings to augment nesting opportunities for wild soil-nesting bee communities. As a result, a standardized protocol for testing of nesting substrates was refined as part of the US Native Bee Monitoring network. (Neal Williams)

Researchers attract songbirds to combat vineyard pests

A UCCE Human-Wildlife Interactions Advisor led research on a novel strategy for managing insect pests while reducing pesticide use in Napa County: attracting songbirds to vineyards. The research team studied nest box occupancy, songbird foraging patterns, diet, and insect presence on 20 farms. In collaboration with the Wild Farm Alliance, the team shared findings with producers at tailgate breakfasts, a farm field day, and other events. As a result, a prominent vineyard in Napa worked with UCCE to implement a songbird nest box network, which has proved a success and inspired others to adopt the approach. Overall, the project is instrumental in providing novel data-driven management recommendations to guide pest management decisions in vineyards, a crop that is worth over $1.2 billion covering 46,000 acres in Napa County. (Breanna Martinico)

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Advisor's recommendations shape San Diego's import and export policies

San Diego County's Department of Agriculture, Weights, and Measures made export and import policy decisions informed by 13 recommendations from the UCCE Area IPM Advisor for Southern California, including for four A-rated pests. Pests are rated an "A" when they are known to cause economic damage and may trigger regulatory actions to restrict, contain, eradicate, reject, and/or hold the pest and its known hosts. These recommendations allowed growers, shippers, and processors to bring in imports without having to ship them back or destroy them, to reduce pesticide use when treatment is necessary, and to help prevent invasive pests from spreading. (Eric Middleton)

Increased emerging food economies and markets

Multistate center grows food and farm businesses

The Southwest Regional Food Business Center improves opportunities for food and farm businesses across Arizona, California, Nevada, and Utah. The center provides coordination, technical assistance, and capacity building. Training topics include market development, accessing institutional consumers, how to develop or maintain a direct-to-consumer enterprise, using new strategies to improve local/regional food processing and distribution, and more. Across the four states, over 300 food and farm business professionals increased their knowledge about new market opportunities and 145 reported increased revenue. In addition, 63 new food and farm businesses have been created through the center's activities. In this way, the center fosters resilient, diverse, and competitive local and regional food systems. (Tracy Celio)

UC SAREP supports California's growing elderberry industry

Western blue elderberry (Sambucus nigra spp. cerulea), a native plant with long-standing ties to Indigenous cultures, grows widely throughout California's natural landscape. Elderberry is also among the top-selling herbal supplements in the U.S., with over $200 million in annual sales. The UC Sustainable Research and Education Program (UC SAREP) team collaboratively co-led four workshops on best practices for harvesting and processing elderberries, which are increasingly grown in California's agricultural hedgerows. Registration and waitlists for all four workshops totaled 133 individuals, indicating great interest in the topic. After the workshop, participants reported stronger intent to adopt or engage with various elderberry processes, including making value-added products, adopting food safety practices, freezing, drying, growing, and selling. (Erin DiCaprio, Gwenaël Engelskirchen, Alicia Baddorf, and Sue Mosbacher)

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Safeguarding Sufficient, Safe, and Healthy Food for All Californians

Improved food safety

AES research reduces post-harvest food waste and safety

Post-harvest diseases of tree fruit lead to a significant waste of resources and food. Infections by fungal pathogens can occur pre-harvest, remaining latent until later, or can occur between harvest and consumption. AES research at UC Riverside investigated how to more safely and effectively prevent post-harvest diseases and decay through pre- and post-harvest applications of fungicides. Use of these fungicides in fruit production and post-harvest handling will reduce post-harvest losses and increase availability of fresh produce. (James Adaskaveg)

UCCE improves food safety certifications among small farmers

In the Imperial Valley, a UCCE Food Safety and Organic Production Area Advisor delivered Produce Safety Rule certification workshops in English, Spanish, and Korean, reaching many small and first-time farmers. A follow-up with 40 growers who attended the Produce Safety Alliance Grower Training course and received certificates of completion revealed an average 7% increase in sales prices when selling to large retailers. Five farmers secured new contracts with major chains, including Walmart and Kroger, resulting in an estimated $12,000 average annual revenue increase per certified farm. The percentage of small-scale farmers in both counties who completed the Produce Safety Alliance training course and received certificates increased from 60 to 78%. (Cuong Huu Nguyen)

EFNEP teaches adults and youth about food safety

UC Expanded Food and Nutrition Education Program (EFNEP) delivers food safety education to low-income adults and youth, ensuring the health of a vulnerable population. When EFNEP surveyed over 2,190 adult participants, 84% showed improvements in one or more food safety practices, such as using safe methods to thaw frozen foods or using a meat thermometer, as a result of participating in the program. Out of 4,323 youth EFNEP participants surveyed, 56% of youth in kindergarten through grade 12 showed improvements in food safety skills and knowledge. (EFNEP)

Venda Yeates for CalFresh Healthy Living, UC

Improved food security

NPI helps secure free school meals for California students

The Nutrition Policy Institute (NPI) researches nutrition and food security policies, translating its findings to help lawmakers make informed decisions. NPI studied the impacts of California's Universal School Meals Program, which offers breakfast and lunch daily to all public school students at no charge, regardless of family income level. NPI found that the program is overwhelmingly supported by parents across all income levels, that participation has gone up, and that the program has multiple benefits, including improved food security for families and reduction of stigma around use of school meals. NPI academics shared these findings with state legislators who passed California Assembly Bill 107, securing ongoing funding for the program and ensuring students will continue to have access to healthy meals. (Christina Hecht, Wendi Gosliner, Dania Orta-Aleman, and Monica Zuercher)

UC Master Gardener Program strengthens local food networks

The UC Master Gardener Program builds a network of volunteers trained to educate communities and help them grow their own food. Volunteers teach people how to start and maintain gardens using effective and sustainable practices, bringing fresh fruit and vegetables to local neighborhoods. In 2024, 79 UC Master Gardener participants statewide grew and donated produce to community programs that support individuals in need of food assistance. The UC Master Gardener Program creates a ripple effect in the community, with participants enjoying their own harvests and also sharing their bounty with others. (UC Master Gardener Program)

Developing a Qualified Workforce for California

Increased workforce retention and competency

UC Environmental Stewards helps alumni secure jobs and advance careers

The UC Environmental Stewards Program engages the public in the study and stewardship of California's ecosystems and natural landscapes. Working with partners across the state, the program provides courses to train and certify California Naturalists and Climate Stewards. A survey of program alumni found that 217, or 66% of respondents (n=328) indicated that the course improved their capacity to do work for pay. In addition, 73, or 22% of alumni indicated their course also helped them find new work in a related field—and 48, or 15% reported that it helped them advance professionally through promotions or moving to a higher-level position in another job. (Greg Ira)

Prescribed Burn Associations spark pathways to forestry and fire careers

The benefits of participating in a Prescribed Burn Association (PBA) go beyond wildfire mitigation. UCCE Advisors found participation also positively impacts career pathways and strengthens the forestry career pipeline. Using Ripple Effect Mapping to measure outcomes of the Central Coast PBA, the advisors identified seven people who either changed their career path or gained substantial professional development as a result of participating in the PBA. Three participants transitioned into forestry and natural resource careers or professional wildland firefighting. Another retooled their existing GIS business to fire-specific GIS work. Two students parlayed their work into formal professional opportunities, including an internship. (Devii Rao and Barb Satink Wolfson)

UCCE develops California Master Beekeepers

The California Master Beekeeper Program, which is run by a UCCE Specialist at UC Davis, provides science-based education on beekeeping for the general public, educators, youth, beekeepers, growers, and pest management professionals. Participants advance through the program by demonstrating increasing mastery. This past year, 117 participants advanced to new levels and seven obtained their Master certification by completing independent projects to benefit California, such as disaster preparedness for honeybee removal and cataloging nutritional analysis of local plants that attract pollinators. A certification helps demonstrate professional-level beekeeping skills and can lend credibility to beekeeping businesses. (Elina Niño)

Evett Kilmartin for UC ANR

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Increased effective public leaders

UC 4-H cultivates teen leaders and educates students

In the UC 4-H On the Wild Side (OTWS) program, teens learn how to develop and deliver field trip–based environmental education for elementary-aged youth. In the past year, 18 teens delivered OTWS to 44 students from two elementary schools. Of the 18, 72% indicated they grew in their ability to plan. Teens also grew in their ability to lead discussions, teach, and organize their time. The teen instructors were also effective: 90% of 4-H OTWS elementary school participants scored better in their understanding of fire ecology, water quality, salmon migration, forest ecology, and limiting factors. (Marianne Bird)

Improved college readiness and access

Kearney REC prepares future agricultural and food system workers

The Kearney Research and Extension Center (REC) hosted high school students as part of the USDA-UC Merced Bridge program. The incoming UC students immersed themselves in agricultural science and research, including UCCE Specialist-led presentations and a field tour at Kearney REC. Afterward, 98% of participants gained new knowledge, indicating that they are better prepared to pursue agricultural and food-related studies and careers. (Jackie Atim)

Increased civic engagement

Volunteers engage in community service to strengthen UC ANR's impact across California

More than 18,420 volunteers across California dedicate their time to UC ANR programs like UC 4-H Youth Development Program (UC 4-H), UC Master Gardener Program, UC Master Food Preserver Program (UC MFP), Environmental Stewards, CalFresh Healthy Living, UC (CFHL, UC), and the Expanded Food and Nutrition Education Program (EFNEP). These passionate volunteers help educate people on topics from healthy eating to climate stewardship; mentor youth in science, technology, engineering, and mathematics; and build connections with local communities. In 2024, volunteers donated over 1.3 million hours, furthering UC ANR's vision of making positive impacts in people's lives. (UC 4-H, UC Master Gardener Program, UC MFP, CFHL, UC EFNEP)

93%
adoption rate
of GIS tools among 297 natural resource and forest practitioners after **UCCE trainings**
(up from 6%)

34,905
fieldworkers—
estimated reach of **UC IPM PSEP train-the-trainer program**

86%
of **youth** increased **their interest in STEM** after attending **4-H North Bay Discovery Day**

Building Climate-Resilient Communities and Ecosystems

Increased preparedness and resilience to extreme weather and climate change

AES researchers work with the Winnemem Wintu Tribe to re-introduce salmon to ancestral habitats

Changing weather paterns are a significant stressor on aquatic environments, affecting salmon health and habitats. AES research at UC Davis investigates whether California's salmon populations have the physiological resilience to cope with the impacts of drought, warming, and other climate-related changes to their environment. To that end, the AES researchers are working with the California Department of Fish and Wildlife and the Winnemem Wintu Tribe, applying indigenous science to bring back salmon to their ancestral home, the McCloud River. The approach has resulted in significant improvements to the successful reintroduction of salmon into historic habitats and is gaining traction as a new method for salmon conservation efforts more broadly. (Anne Todgham and Nann Fangue)

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Small farmers improve water and energy efficiency with UCCE assistance

California's State Water Efficiency and Enhancement Program (SWEEP) provides financial assistance to growers to adopt irrigation systems that reduce greenhouse gases and save water. In Fresno County, the UCCE Small Farms Network followed up with 57 small-scale farmers who had implemented SWEEP projects with UCCE support. They conducted pump efficiency tests on 19 farms and found an average increase in pump efficiency of 11%. UCCE also verified reduced energy costs for 12 farmers and reduced water use for 21. The results indicate increases in water and energy efficiency that both benefit farmers financially and reduce greenhouse gas emissions and groundwater pumping. (Ruth Dahlquist-Willard)

UCCE collaboration supports sustainable solutions in community composting

In the San Joaquin Valley, a UCCE Specialist at UC Merced supported local partners to establish three community composting sites through the Central Valley Community Composting Project. At the community scale, composting is a tool for reducing greenhouse gas emissions, diverting organic waste from landfills, promoting agroecosystem adaptation, and fostering social justice. (Srabani Das)

Improving plant resilience to extremes in water availability and temperature

In California, extreme heat, drought, and high solar radiation are straining plants. An AES researcher at UC Davis explores ways to improve plant resilience in these harsh conditions to both help farmers sustain food production and support urban planners in creating greener, more livable spaces. Work with UCCE specialists and advisors at the UC ANR Kearney REC evaluates the use of hydrogels to improve soil moisture and plant survival for small-scale vegetable farmers. The research also examines how urban trees respond to varying thermal environments, such as parking lots. Collaborating with urban landscape managers helps ensure actionable insights to inform urban landscaping for more resilient and sustainable environments. (Matthew Gilbert)

UC ANR Fire Network builds resilience to wildfire across California

The UC ANR Fire Network is a multidisciplinary, statewide team of UCCE Advisors, Specialists, and staff committed to delivering fire-related research and outreach that is adapted to local conditions and community needs. Two ways that they support making California more resilient to wildfire are through prescribed fire such as through Prescribed Burn Associations (PBAs), and targeted grazing. This year, ANR-led efforts successfully applied beneficial fire to over 650 acres. (UC ANR Fire Network) Additionally, UCCE's collaborative virtual fencing research in Lassen County resulted in a 50% reduction of fine fuel loads, creating a 500-yard-wide defensible space. (David Lile) Collaborative UCCE research on targeted grazing for fuel reduction also helped lower fire risk on 106 acres of forestland in Butte County and 46 acres in El Dorado County. This ongoing research will provide land managers and grazers with best practices on treatment timing, herd monitoring, and identifying ruminant toxicity, further supporting wildfire mitigation efforts across the state. (Ricky Satomi, Tracy Schohr, Dan Macon, Roselle Busch, and Katie Low)

UCCE models help CAL FIRE protect communities

Fire probability models developed by a UCCE Specialist at UC Santa Barbara are being used to inform statewide Fire Hazard Severity Zone Maps and in CAL FIRE's protocol for proposed fuel treatment projects. By utilizing UCCE models, CAL FIRE grounds its "avoided wildfire emissions program" in the most current scientific understanding of climate and fire interactions. In turn, this will help identify where fuel reduction treatments are likely to intersect with expected fire activity in coming decades. (Max Moritz)

Alternative Manure Management Program projects reduced release of **20,600+ metric tons** of CO_2 per year

California Naturalist and Climate Stewards program alumni reduce individual carbon emissions by **2.86 tons** of CO_2 per year

Mitigating microplastic pollution and post-fire runoff risks

An AES researcher from UC Riverside investigates how sediments and pollutants like microplastics move through rivers, coastal systems, and post-fire landscapes, affecting water quality and ecosystem health. Using field sampling and machine learning, the team analyzed how natural processes and human impacts influence sediment and contaminant transport at watershed scales. Their findings support improved monitoring methods and inform regional and state-level strategies for managing microplastic pollution and post-fire runoff risks. (Andrew Gray)

Evett Kilmartin for UC ANR

Promoting Healthy People and Communities

Improved health for all

Statewide programs foster healthy behaviors in program participants

CalFresh Healthy Living, UC (CFHL, UC) empowers underserved and low-income communities across California to improve their health through education, awareness, and community partnerships. Program participants gain valuable skills and knowledge for leading healthier lives and often incorporate the healthy behaviors they learn. In a statewide survey of 700 adult participants, 52% reported increasing the number of days they engaged in at least 30 minutes of physical activity and 52% made small changes to be more active more often after completing CFHL, UC education. (CFHL, UC)

Another federally funded program, the Expanded Food and Nutrition Education Program (EFNEP), provides nutrition and physical activity education to low-income populations to combat food and nutrition insecurity, and improve health outcomes. In 2024, EFNEP reached 13,673 adults and youth. Of 2,190 adult participants surveyed, 83% reported improvement in their physical activity behaviors. Sixty-five percent made small changes to be active more often and 54% increased the number of days they exercised for at least 30 minutes. Out of 4,323 youth EFNEP participants surveyed, 47% reported improvement in physical activity practices or knowledge. Twenty-five percent of 3rd through 5th graders and 43% of 6th through 12th graders increased the number of days they were active for at least 60 minutes. (EFNEP)

Together, these programs support their participants to incorporate behavior changes that will improve health outcomes and decrease their risk for cardiovascular disease, high blood pressure, and diabetes.

UCCE provides enrichment to youth in juvenile hall

A UCCE Advisor partnered with UC 4-H, UC Master Food Preservers, and CFHL, UC to bring healthy cooking education to youth at a juvenile hall facility. During the weekly two-hour sessions, youth learned about healthy cooking, food safety, and nutrition while also gaining skills to prepare for careers in food service. After completing the program, all participants reported learning new cooking skills, and several expressed interest in pursuing food systems careers. (Sally Neas with UC 4-H, UC Master Food Preserver Program, and CFHL, UC)

AES researcher tests consumer preferences to promote healthy food choices

At UC Davis, AES research investigated how taste and other factors influence people's food and drink choices, particularly when it comes to adopting healthier and more sustainable eating habits. This research has introduced new strategies for testing consumer preferences and identifying the factors that influence choices for foods like tomatoes, table grapes, sweet foods, and beverages. An example of a strategy to modify consumer behavior and to encourage healthier choices is a 'Sugar Flip' which uses culinary and sensory strategies of a product to boost impression of sweetness and maintain consumer acceptance of drinks that have 25-30% less sugar. These strategies can pave the way for the development of healthier, viable food options for consumers. (Jean-Xavier Guinard)

Improved community health and wellness

AES research enhances personal protective equipment with antiviral material

An AES researcher at UC Davis is developing materials that enhance protection for both professionals and the public. These include reusable daylight-activated biocidal films, nonwoven fabrics, and hydrogel beads designed

Evett Kilmartin for UC ANR

for multiple applications, such as food containers, face masks, and packaging. Two key innovations with direct public benefits are antiviral clothing and self-disinfecting nonwoven fabrics. This research has already led to new funding and collaborations with Iowa State University and the University of Cincinnati to develop reusable face masks, creating more sustainable products that enhance protection against communicable diseases like COVID-19. (Gang Sun)

NPI ensures elementary school student access to physical activity

Researchers at the Nutrition Policy Institute (NPI) work with policymakers to understand and support the physical activity needs of California students. Their analysis of elementary school data revealed that only 56% of schools provided more than 20 minutes of recess per day. Since children ages 6-17 are recommended to get at least 60 minutes of daily physical activity, recess plays a vital role in their health and well-being. NPI shared its findings with California policymakers, highlighting gaps in children's access to physical activity and the need for legislative action. These efforts contributed to the passage of California Senate Bill 291, requiring elementary schools to provide at least 30 minutes of recess daily to students in grades K-6 and prohibiting recess from being withheld as punishment. Because recess is linked to both physical health and academic success, this policy has the potential to improve community health while also supporting college and career readiness. (Janice Kao, Carolyn Rider, Hannah Thompson, and Miranda Westfall)

UCCE Specialist at UC Berkeley bolsters nutrition education and farming businesses

A UCCE evaluation helped shape state policy, securing continued funding for farm-to-school programs in 2024. The findings showed that these programs not only stabilize farmers' businesses but also promote climate-friendly farming practices and provide critical support to small and mid-sized farms. The evaluation also found that farm-to-school programs have increased the availability of fresh, local, and organic produce, meat, and dairy in schools. These results played a key role in the California Legislature's decision to expand funding for farm-to-school projects. Since 2021, funding has grown from $8.5 million to $52.8 million in 2024, strengthening local agriculture while ensuring students have access to healthy, nutritious food. (Christy Getz)

Improved access to positive built and natural environment

UCCE facilitates community garden rejuvenation

CalFresh Healthy Living, UC (CFHL, UC) and UC Master Gardener Program in Alameda County partnered to revitalize a large edible garden at the South County Homeless Project, a 24-bed residence for individuals experiencing homelessness. The UC Master Gardener Community Garden Team designed the garden and led volunteers in assessing and improving the soil. CFHL, UC sourced the soil while UC Master Gardeners contributed seedlings and hosted a "Gardening Basics" workshop for residents. Together, residents, UC Master Gardeners, and CFHL, UC restored the garden, planting 19 varieties of fruit, vegetables, and herbs. Many residents and staff shared that spending time in the garden helped reduce stress and provided a peaceful retreat. One resident reported, "The garden relaxes me from stress. I love the garden." Residents enjoyed fresh produce and the facility's chef incorporated them into meals, making it a meaningful and sustainable source of nourishment for the community. (Max Fairbee, Tuline Baykal, and Alexa Erickson)

Evett Kilmartin for UC ANR

Protecting California's Natural Resources

Improved management and use of land

UCCE collaboration informs sustainable land management policy

In Humboldt County, a team of UCCE Advisors, Specialists, and Informatics and Geographic Information Systems (IGIS) staff researched landscape-scale water use of Douglas-fir encroachment in oak woodlands. IGIS supports UC ANR academics with spatial data and analysis, which can be used to monitor landscape changes and study environmental impacts. Findings from the UCCE-IGIS collaboration supported a better understanding of the environmental and economic cost of conifer encroachment at the landscape scale and the passage of Assembly Bill 2276 (Wood) in 2024. This bill increases the allowable tree size of Douglas-firs that can be removed in certain oak woodland restoration projects, supports oak resiliency, and provides flexibility to oak woodland restoration planners and operators. In addition, the change makes restoration projects more economically feasible for private landowners and increases potential revenues from the sale of lumber from these projects. (Jeffery Stackhouse and IGIS)

Protection and conservation of soil quality

UCCE tool improves decision making

UCCE's Soil Taxonomy Explorer tool, an app that allows users to map all of the hierarchical levels of Soil Taxonomy, is being used by the USDA Natural Resources Conservation Services, including soil survey staff who use this information for soil survey updates and to plan the concepts of their new soil survey legends. As such, UCCE helps people make informed decisions about land use, regional patterns in soil variability, and natural resource management. (Anthony O'Geen)

Improved air quality

UC ANR innovations cut fumigation emissions

California, which produces more than 80% of U.S. strawberries, has historically relied on the use of soil fumigants to manage diseases and pathogens that impact the crop. However, fumigants are a significant contributor of volatile organic compound emissions, which react with other chemicals to create ozone, a major air pollutant. UC ANR academics in both UCCE and AES are finding innovative ways to reduce fumigation use in strawberry production.

One way is to build resistance to pathogens and diseases directly into the plants. AES faculty affiliated with the Strawberry Breeding and Research Program at UC Davis released five cultivars with Fusarium wilt resistance. The cultivars also have some resistance to Verticillium wilt, Phytophthora crown rot, and Macrophomina root rot. (Steven Knapp)

By using multispectral imagery, a UCCE Advisor, a UCCE Specialist at UC Riverside, growers, and other collaborators in San Luis Obispo, Santa Barbara, and Ventura Counties were able to map plant mortality due to charcoal rot disease in strawberrie. This allowed fumigation rates to be reduced by up to 20% in the following season in areas of strawberry fields where disease risk was lowest. In reduced fumigation areas, there was no observed increase in disease and yields were not significantly different than in areas that received a full rate of fumigant. (Christopher Greer, Oleg Daugovish, Andre Biscaro, Alex Putnam)

By adopting AES cultivars and UCCE recommendations, the strawberry industry can continue high levels of production while reducing the costs and environmental impacts of fumigant use.

Date growers conserved annual water usage 15% by adopting UCCE recommendations

18,000+ acres of the weed western juniper removed in Lassen County

211,000+ acres of San Francisco Bay Area habitat restored

Evett Kilmartin for UC ANR

AES researcher improves air quality through community-driven approach

An AES researcher at UC Davis uses participatory research to evaluate the effectiveness of California's Assembly Bill (AB) 617, a policy designed to improve air quality in communities disproportionately affected by air pollution using a community-driven approach. Residents, community organizations, and public agencies in those communities were recruited to help design, implement, document, and disseminate a comprehensive assessment of AB 617. This process provided policy leaders with a unique and detailed view of stakeholder perceptions of the policy to help improve it over time. The findings will help government agencies refine their approach to community engagement, fostering more respectful and empowering partnerships, as well as more effective policy. Ultimately, this work supports cleaner air, better public health, and more effective environmental policies in California's most overburdened communities. (Jonathan London)

Increased ecological sustainability of agriculture, landscapes, and forestry

AES research leverages AI to speed up roadside weed detection

Weeds are a constant and costly pest in California agricultural and natural areas. Being able to identify them is critical to proper management but can be time-consuming. To address this issue, AES faculty at UC Davis are training artificial intelligence to identify weed species from Google Street View images at a fraction of the cost of traditional surveys. The AI project detected 2,000 locations infested with Johnson grass along 84,000 miles of roads across four states. This innovative approach for scouting weed infestations could allow cost-effective large-scale monitoring and enhance roadside weed management. This technology could be applied to images from other systems, such as drones, and for other species, leading to improved monitoring and better weed management. (Mohsen Mesgaran)

UCCE Specialist prevents pathogens from spreading in restoration nurseries

A UCCE Specialist from UC Davis coordinated and facilitated the Accreditation to Improve Restoration (AIR) program statewide for restoration nurseries to prevent the spread of Phytophthora into native ecosystems. Restoration nurseries grow native plants that are used for ecological restoration projects. As of 2024, ten restoration nurseries were fully accredited, an additional ten are actively participating in the program, and eight more are in consultation to join. Crucially, among AIR-accredited nurseries, no Phytophthora has been detected, indicating the effectiveness of the proposed management practices at reducing the risk of introducing these pathogens into restoration sites. (Johanna Del Castillo Múnera)

UCCE provides golf courses with new nematode management strategy

Working with the Northern California and United States Golf Associations and 14 golf course superintendents, UCCE Specialists from UC Davis and UC Riverside led collaborative research on sustainable management of nematodes on turfgrass. Four golf courses across Monterey and San Mateo Counties hosted field trials to understand the biology of nematodes on golf course greens and effectiveness of different solutions. As a result, the California Department of Pesticide Regulation registered a new nematicide, DivaNem, for use on turfgrass. (Becky Westerdahl, James Baird, Jörn Ole Becker, Larry Costello, and Ali Harivandi)

Research drives statewide expansion of oak woodland recovery

UCCE's long-term research and systems thinking approach contributed to 3,000 acres of oak restoration on the North Coast. This landscape-level restoration is possible because UCCE provided policymakers and landowners critical information for updating permitting processes. In 2018, when UCCE's research and policy engagement activities

Saoimanu Sope for UC ANR

contributed to the passage of California Assembly Bill (AB) 1958, there were seven permits to restore oak woodlands across the state. Five years later, landowners utilized over 70 permits to restore oak woodlands across the state, and UCCE research with foresters on the permitting system supported an update (AB 2276), which will reduce costs and further increase utility. (Yana Valachovic, Lenya Quinn-Davidson, and Jeff Stackhouse)

Improved water quality

Webtool saves money and protects water quality

The Small Grains Nitrogen Management Webtool, developed by UCCE and UC Davis, supports growers in optimizing nitrogen applications to save money and improve local water quality. UCCE Advisors in the Sacramento Valley deliver training and technical assistance on how to use the tool. Two growers in Colusa County shared that they had such success with reducing nitrogen on the first field that they tried that this year they plan to implement the practice on all of their wheat fields. (Sarah Light and Nick Clark)

Improved water use efficiency

Nurseries in San Diego save water with UCCE recommendations

Improving irrigation efficiency is essential to maintain profitability, especially where surface and groundwater supply is limited. To support the industry, a UCCE Advisor conducted research in San Diego County, including testing 20 different models of sprinklers. Two area nurseries subsequently adopted UCCE-recommended efficient sprinklers. For the 200-acre nursery, the new sprinkler system corresponds to savings of 532 acre-feet of water and $1,330,000 per year. Additionally, less runoff will contaminate surface water resources. (Gerry Spinelli)

Increased water supply security

UCCE exhibit engages communities in rethinking tap water

Two Los Angeles cultural organizations hosted an interactive, science-based exhibit developed by a UCCE Specialist at UC Los Angeles on water challenges that affect the region, including tap water trust and affordability. In total, 2,169 people visited the traveling exhibit and 345 participated in a blind water tasting invoilved sampling three brands of bottled water along with tap water. Participants accurately identified water type approximately 31.8% of the time, indicating that participants struggled to correctly identify the brands despite expressing strong opinions about brand preference. The top brands chosen were tap and Dasani (which is actually bottled municipal tap water), challenging assumptions about tap water's inferiority. Tap was often confused with bottled water brands, suggesting that tap water is not easily distinguishable. This demonstrates how UCCE's strategic partnerships advance understanding about water supply and security, from the household to the regional level. (Edith de Guzman)

Addressing Systematic Inequities

Improved living and working conditions for California's food system and farmworkers

Viticulture Advisor supports job satisfaction and safety

A UCCE Viticulture Advisor contributed to the development of the Agricultural Job Satisfaction Survey, a tool for providing feedback to employers on farm labor conditions. UCCE shared findings with the Agricultural Commissioner in Santa Barbara County, providing an evidence-based understanding of the working life of farmworkers. The information was ultimately used by a task force comprising staff from the California Department of Pesticide Regulation and Office of Environmental Health Hazard to accurately assess risk of pesticide exposure over time. (Monica Cooper)

Informing the federal nutrition assistance program how to better support agricultural workers

An AES Agricultural and Resource Economist at UC Davis studies the federal Supplemental Nutrition Assistance Program (SNAP), which has broad reach and has been shown to improve long-term health outcomes. The research found farmworkers are more likely than non-farmworkers to leave and re-enter SNAP within three months, a process known as churning that is strongest after peak harvest season. Understanding these patterns is crucial for enhancing food security and economic stability in these critical and vulnerable agricultural communities. Findings, which have been shared in policy briefs, suggest opportunities to maintain consistent food assistance through targeted outreach, particularly at agricultural workplaces. Research that leads to increased program efficiency will benefit the large share of Americans who participate. In addition, a recent study shows that encouraging SNAP enrollment among eligible adults may help reduce health care costs in the United States. (Timothy Beatty)

Increased accessibility and cultural competency in California's workplaces

UC 4-H supports youth participation with sensory rooms

The UC 4-H Youth Development Program (UC 4-H) works with youth from all different backgrounds and experiences. UC 4-H academics chaired a committee that, among other efforts, worked to provide inclusive and accessible spaces during conferences. As a result, a youth-led initiative introduced sensory rooms at 4-H state conferences. These rooms provide a space for youth to receive sensory input and regulate their emotions in potentially overstimulating environments, supporting the participation of neurodivergent youth and ensuring these events are accessible to all. (Kaitlyn Murray and Liliana Vega)

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Elena Zhukova

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