Turning science into solutions.

UC Agriculture and Natural Resources delivers healthier food systems, healthier environments and healthier Californians.

UNIVERSITY
OF
CALIFORNIA

From farm to fork.

ANR is a vital partner in making California the nation's top agricultural state, leading the way in producing more than 400 crops, including specialty crops consumers depend on such as almonds, grapes and lettuce. California's agricultural industry also grows jobs, employing 800,000 workers on 81,500 farms.

"Funding for specialty crop research is critical to California's $37.5 billion agricultural industry. With these funds, UC scientists are helping California farmers find new ways to remain economically viable, protect their crops from pests and diseases, and provide healthy food for an increasing number of people."

Barbara Allen-Diaz, UC ANR vice president

The University of California's Division of Agriculture and Natural Resources (ANR) is an engine for problem solving. Serving as the bridge between local issues and the power of UC research, ANR's Cooperative Extension specialists and advisors and campus Agricultural Experiment Station faculty bring practical, science-based answers to Californians.

ANR works hand in hand with industry to enhance agricultural markets, help the balance of trade, address environmental concerns, protect plant health, and provide farmers with scientifically tested production techniques and Californians with increased food safety.

ANR turns science into solutions, spanning the state to promote healthy food systems, healthy environments, healthy communities and healthy Californians.

Research and Extension

Agricultural Experiment Station

UC's agricultural research programs include three colleges and one professional school on three campuses, covering nearly 700 academic researchers in 40 departments. Programs are associated with the UC Berkeley College of Natural Resources, UC Davis College of Agricultural and Environmental Sciences, UC Davis School of Veterinary Medicine, and UC Riverside College of Natural and Agricultural Sciences.

Cooperative Extension

ANR's outreach efforts connect Californians with UC research through 200 Cooperative Extension advisors and 130 campus-based Cooperative Extension specialists who conduct research in a statewide network of local offices.

Research and Extension Centers

ANR's nine Research and Extension Centers, located in important California ecosystems, support about 350 research projects and more than 600 educational events each year. Research projects conducted by more than 250 UC academics and 75 graduate sutdents enable the delivery of the highest-quality science to growers, industry and land managers.

Statewide programs

Six statewide programs focus on specific issues that engage ANR academics and UC faculty in integrated teams to work on complex issues that need transdisciplinary approaches: Agricultural Issues Center; Integrated Pest Management; Master Gardeners; Office of Pesticide Information and Coordination; Sustainable Agriculture Research and Education Program; and Youth, Families and Communities.

Economic Impact

California produces nearly half of the nation's fruits, nuts and vegetables.

Cashing in on fruit

Money invested in research yields results, including the Tango mandarin and the Camarosa, Albion and Ventana strawberries. California's $2 billion strawberry industry produces nearly 90 percent of the nation's strawberries, and UC plays a central part in that sweet success. About 65 percent of the strawberries produced in California (and about 40 percent of the world's strawberries) are from UC-developed varieties. In addition to developing flavorful fruit, UC Davis scientists' research and extension work also has made California strawberry growers the most productive in the world—producing an average of 25 tons per acre, up to five times the yield of other regions.

Growing profits

ANR Agricultural Issues Center economists analyzed the benefits of UC agricultural research during the 20th century and found that, on average, every dollar invested in agricultural research and development has provided a benefit of $21 to the state, with another $11 in spillover benefits to other states.

UC is an economic engine

Every $1 the California taxpayer invests in UC, leveraged by revenues from other sources, results in $13.80 in overall economic output. One in 46 jobs in California is supported by UC activities and spending by UC employees.

Healthy Food Systems

Winning wines and vines that thrive

UC Davis trains the state's vintners and certifies more than 95 percent of wine grapevines grown in the state, providing a reliable supply of high-quality vines for California's multibillion-dollar wine industry. Meanwhile, UC research has helped control aggressive pests such as the European grapevine moth and vine mealybug. More than 90 percent of grape nursery stock sold statewide has been certified as free of the vine mealybug after hot-water treatments developed by Cooperative Extension scientists. Since these treatments have been in place, the spread of vine mealybug through nursery stock has been eliminated.

Driving dairy

California is the nation's leading dairy state, housing 1.75 million cattle that produce milk products worth $5.9 billion, more than any other state. UC's research-based practices have helped the dairy industry improve production through breeding, diet and disease prevention. Cooperative Extension advisors and specialists have developed step-by-step instructions for sampling supply wells and subsurface drainage systems and solid and liquid manure that enable dairy operators to comply with water quality regulations.

Cultivating citrus

UC Riverside is rooted in the UC Citrus Experiment Station, which opened in Riverside in 1907. Since then, the campus has played a role in the release of every orange, lemon, tangerine and grapefruit grown in California, spreading its impact from backyard trees to supermarket shelves. UC Riverside and Cooperative Extension researchers have bred more than 40 citrus varieties and helped growers fight pests and diseases such as scale, thrips and now Asian citrus psyllid, which threatens California's $1.1 billion citrus industry. The Lindcove Research and Extension Center maintains the Citrus Clonal Protection Program's foundation budwood orchard for virus-free citrus, available to nurseries and growers at minimal cost.

New rice varieties help feed world's poorest

Research conducted at UC Davis and UC Riverside has helped develop submergence resistant rice varieties that are now being planted—increasing access to food for 70 million of the world poorest people.

> **"The citrus industry has had a very strong and close relationship with the University of California for over 100 years. It's what we consider our competitive edge. It's the constant research work that keeps us ahead of the curve."**
>
> **Ted Batkin, president**
> *California Citrus Research Board*

Healthy Californians

In California, 61 percent of adults are overweight or obese and 35 percent of children are obese.

Encouraging healthy eating

UC's extensive nutrition education efforts include a Cooperative Extension program that reaches more than 220,000 people a year, helping low-income families make healthy food choices, stretch food dollars and increase consumption of California's agricultural products. In the last eight years, UC nutrition educators trained teachers and community leaders to use the award-winning EatFit program which helps people reduce their risk of obesity and chronic diseases. In Los Angeles County, ANR developed the "Eating Smart–Being Active" curriculum to teach families how to buy healthier foods. Meanwhile, in Stanislaus County, community members, nurses, school board members and a Cooperative Extension nutrition advisor developed a summer-long, family-focused program promoting healthy eating and physical activity.

Increasing food safety

UC Davis and Cooperative Extension researchers are participating in a large-scale research effort aimed at preventing potentially fatal illnesses linked to *E. coli* bacteria. The U.S. Department of Agriculture is funding the $25 million, coast-to-coast project, to which UC Davis is providing expertise in livestock health, foodborne disease and consumer food marketing. The project aims to reduce the occurrence of, and public health risks, associated with Shiga toxin-producing *E. coli* by improving beef processing methods and promoting safe food-handling practices.

Healthy Communities

UC certifies more than 14,000 adults to work with youth in its 4-H programs, using the latest research on youth development practices to instill qualities young people need to succeed. California residents volunteer an estimated $60 million of their time yearly to ANR programs.

Preparing for wildfires

California communities continually face danger from wildfires. In San Diego County, Cooperative Extension advisors coordinated and implemented Wildfire Zone, a regional wildfire education and outreach program focused on what to do before, during and after a fire. On a statewide basis, a Cooperative Extension specialist developed the Fire Information Engine Toolkit, an interactive website that helps communities and individual residents assess their risk of wildfire and better understand how to protect homes and neighborhoods.

Climate tools for communities

UC Berkeley, UC Merced, UC San Diego and Cooperative Extension are participating in a groundbreaking information-sharing site developed by the California Energy Commission. Cal-Adapt allows Californians to investigate how our climate is projected to change and help plan for these changes. The site uses cutting-edge technology to provide information on climate data from precipitation to snowpack to wildfires, along with maps, predictive models, raw scientific data and tools for engagement.

The next generation of scientists

The California 4-H Science, Engineering and Technology Initiative seeks to improve science literacy and help address the need for more scientists and engineers, part of a national effort to engage 1 million new young people in science programs. The 4-H initiative is expected to connect learning with real-world situations where youth can apply science to solve problems; and, in the long term, increase the number and diversity of youth pursuing higher education and careers in science, engineering and technology. California's 4-H science focus is showing results: In a recent survey, 59 percent of 4-H members said they would like to have a job related to science when they graduate.

The force behind 4-H

Today's 4-H youth development programs are more than the traditional hands-on science learning that comes from raising animals; they also have a focus on engineering, technology, healthy living and citizenship. Whether encouraging youth to build rockets, raise companion dogs or take part in an ambitious statewide program to fund 1,000 service-learning projects to mark its centennial, 4-H gives young people the skills they need to succeed. Through Operation Military Kids, California 4-H clubs have provided activities for military children at mobilization briefings, during local military family events and in local 4-H programs in nine counties. The projects range from environmental education to animal science to photography.

Healthy Environments

Reducing fertilizer use

UC Cooperative Extension advisors developed a quick test to measure soil nitrate in the field so growers can match fertilizer rates with plant needs. The test has significantly reduced nitrogen-loading rates in lettuce. On-farm demonstration trials have shown that by testing the soil in this way, growers can reduce their fertilizer use by about 30 percent.

Reducing pesticide and nutrient runoff in cities

UC Cooperative Extension is helping cities reduce the urban contribution to water pollution. Landscaping accounts for nearly half of home water use, with its runoff flowing through gutters and storm channels to streams and other surface waters. To evaluate residential runoff and surface-water pollution, UC found that low-cost modifications can reduce this runoff up to 65 percent. The UC Master Gardener program is now educating homeowners on these smart methods of using water.

Informing about IPM

UC Integrated Pest Management (IPM) created a new one-stop Web portal for retailers looking for information on pest management and using less toxic pesticides for their customers. Retail stores are a key source of pest management information for many Californians, and UC IPM targets relationships with retail nursery and garden centers to help them pass along UC science-based IPM information to customers.

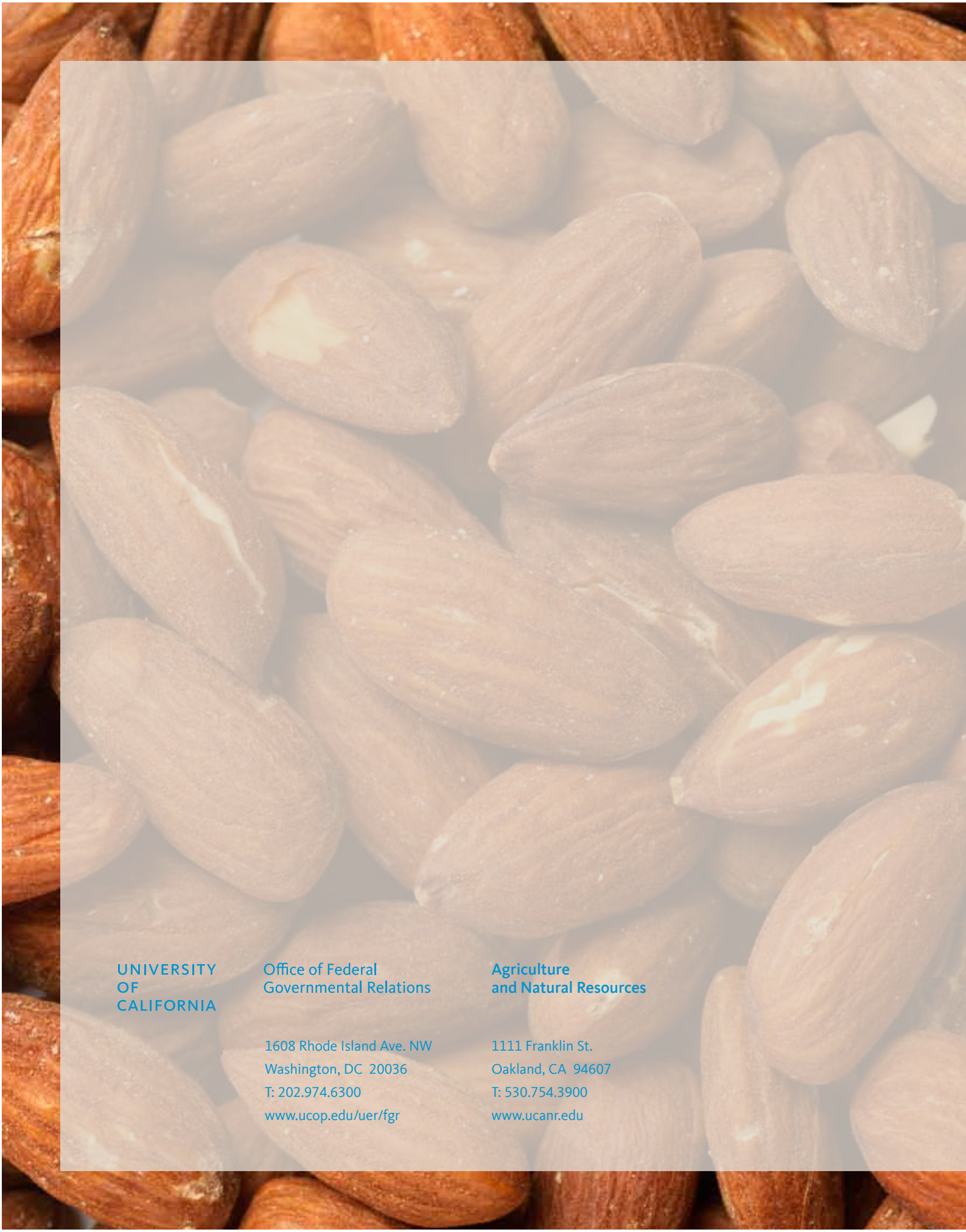
Preserving California's iconic oak woodlands

With 80 percent of California's oak woodlands in private ownership, sustainability of this icon of the California landscape rests largely in the hands of individuals. UC Berkeley and Cooperative Extension researchers joined forces to craft a four-part series of webinars for landowners, range managers, foresters, conservation groups and policymakers to raise awareness and present innovative management strategies. UC research has shown that cattle grazing, oak woodlands and clean water are compatible and often complementary.

Did you know?

5,597 certified UC Master Gardeners contributed 334,507 total volunteer hours in 2011.

The current market value of those volunteer hours is $7.8 million in service to communities throughout California.



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