CA&ES Outlook

THE SCIENCE BEHIND PUBLIC POLICY

Our research keeps California thinking ahead

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THIS ISSUE

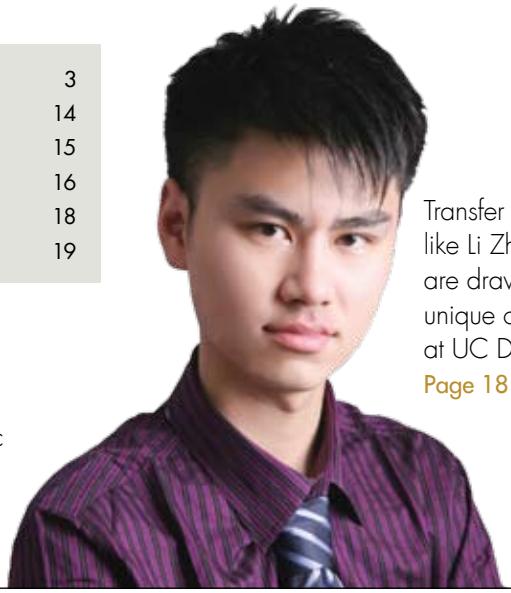
UC Davis researchers Allan Hollander, Stephen Wheeler, Louise Jackson, and Dan Sumner are studying what climate change means for Yolo County agriculture.

ROBIN DERIEUX / UC DAVIS

Cover story: Californians don't trust just anyone with the future of our farms, ranches, and environment. They turn to us for the best information to help make good decisions. Page 4

COVER PHOTO: Professor Louise Jackson is one of many CA&ES faculty members whose scientific contributions help address public policy concerns.

Photo by Robin DeRieux/UC Davis



Transfer students like Li Zhu are drawn to unique offerings at UC Davis. Page 18

MARK YOUR CALENDAR

COLLEGE CELEBRATION

Join us Friday, October 14, 2011, for our 23rd annual College Celebration. The event celebrates accomplishments in the College of Agricultural and Environmental Sciences, and honors a group of friends, alumni, faculty, and staff with Awards of Distinction. The presentation ceremony is followed by a reception of wine, beer, and hors d'oeuvres and a farmers market with fresh produce, nuts, and grains.

See http://collegecelebration.ucdavis.edu for more information.

A RATIONAL APPROACH

Our science gives Californians the tools to develop good policies

AS A SOCIETY WE LOOK TO SCIENCE FOR THE best information to help create public policies that improve our quality of life. The College of Agricultural and Environmental Sciences is a trusted source of information because our researchers are committed to the scientific method, which depends on accurate, verifiable measurement to test ideas and find answers. It's not always a perfect system, but it's a reliable tool for rational decision making.

A primary goal of science is to provide objective information—not to gather evidence in favor of preconceived notions. We rely on independent investigators like animal scientist and air-quality specialist Frank Mitloehner, whose critical analysis and research on livestock emissions has improved the scientific basis upon which to make regulatory decisions.

Nitrogen is essential for crop production. However, excess nitrogen can seep into the water or dissipate into the atmosphere, creating the potential for environmental and health problems. Urban areas release nitrogen into the water through sewage and into the air through fossil fuel use. The Agricultural Sustainability Institute is comprehensively evaluating nitrogen use and disposition in California to create a foundation for better management policies and practices.

"A primary goal of science is to provide objective information—not to gather evidence in favor of preconceived notions."

Climate change is a sensitive topic for many different reasons. But it's something we take very seriously. Professor and soil specialist Louise Jackson is leading a project in Yolo County involving UC Davis scientists, policymakers, and agricultural interests that will help prepare agriculture for a changing climate.

A concept discussed more frequently in research today is "ecosystem services." It's helping economists like environmental sciences and policy professor Jim Sanchirico put value to the functions of nature. Ken Tate is a watershed specialist who has incorporated the ecosystem services approach into his research to help improve management of California rangelands.

JOHN STUMBOS/UC DAVIS

Dean Neal Van Alfen talks with UC Davis alumna Ria de Grassi. Learn how she brings science to public policy discussions through her work with the California Farm Bureau Federation on page 14.

Jim Quinn is a faculty member whose Information Center for the Environment (ICE) includes a vast database that policymakers use to assist in making decisions that efficiently balance environmental goals and public works needs. For instance, the state's road agency, Caltrans, tapped ICE's capabilities when planning roadwork at the environmentally sensitive Elkhorn Slough near Monterey.

These and other stories of our scientists and researchers at work are featured in this issue of our magazine. Science not only is the job-creating engine of innovation here at UC Davis, it also provides decision makers with solid information to develop sound public policy.

NEAL VAN ALFEN, DEAN
COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

Story by JOHN STUMBOS, ROBIN DERIEUX,
and EVE HIGHTOWER

Our research is helping California leaders shape the future of agriculture and the environment.

The Science Behind PUBLIC

Betting the farm on California agriculture

A GROUP LED BY PROFESSOR LOUISE JACKSON is taking on one of the biggest challenges facing California agriculture today—climate change. The UC Davis soil scientist is working with fellow researchers, state and county agencies, farmers, ranchers, and other stakeholders to shape plans that will help support the sustainability of the state's $35 billion agriculture industry in the years ahead.

Jackson, who is also a UC Cooperative Extension specialist, is preparing a case study for the California Energy Commission on agricultural adaptation to climate change in Yolo County. Yolo County was selected for the study as a typical Central Valley region with a mixture of urban, suburban, and agricultural landscapes. The research project explores crop changes, economic outcomes, hydrology, soil and wetland issues, grower attitudes, and urbanization projections.

One goal of the two-phase study is to identify how crop production practices could adapt under climate change scenarios that vary based on predictions for global greenhouse gas (GHG) emission levels, energy use, and local population growth. Another is to help the state's agricultural sector meet targets for reduced GHG emissions, mandated by the 2006 Global Warming Solutions Act (AB 32).

According to the California Energy Commission,

JOHN STUMBOS/UC DAVIS

agriculture accounts for 6 percent of total greenhouse gas emissions in the state, while transportation contributes nearly 40 percent of emissions. Greenhouse gas emissions per acre from urbanized land are substantially higher than those from irrigated cropland or rangeland.

"Agriculture needs to reduce its greenhouse gas emissions; all sectors have to be involved in that," said Jackson. "But if we don't think about adaptation of agriculture to higher temperatures, to drought, to earlier snowmelt, to new pests and diseases, then people who are farming now may have no alternative but to sell their land for urban development. In the long run, we can help reduce greenhouse gas emissions by keeping California agriculture viable and sustainable."

"It's a two-way street, and it's been a very dynamic discourse."

The first phase of the adaptation and mitigation study coincided with public policy discussion and debate on the Yolo County Climate Action Plan, a blueprint mandated by climate change legislation for how the county will reduce greenhouse gas emissions to 1990 levels by 2020. Using the local case study as a springboard, Jackson also heads a team working on a statewide analysis of agricultural adaptation to climate change for the Energy Commission.

"It's not just science informing policymakers," said Jackson, holder of the John B. Orr Endowed Chair in Environmental Plant Sciences. "It's a two-way street, and it's been a very dynamic discourse." — RD

GABRIELA LOPEZ-VELASCO/UC DAVIS

Trevor Suslow (left) and researcher Adrian Sbodio conduct field studies in Salinas.

UC Davis delivers the science to improve food safety

Although the food supply in the United States is very safe, well-publicized contamination outbreaks have increased consumer concerns about food safety in leafy greens, tomatoes, melons, nuts, and other commodities. UC Davis researchers are helping provide the science necessary to determine food safety protocols that keep consumers safe while protecting environmental goals.

Over the past 20 years, the scientific tools needed to trace the causes of foodborne illnesses have become more sophisticated, leading to the detection of outbreaks that might previously have remained unidentified. At the same time, American consumers seeking the nutritional benefits of fresh produce have incorporated more uncooked fruits, vegetables, and nuts into their diets.

"I don't want in any way to trivialize or dismiss the impact of foodborne illness on individuals and their families, but the food supply in the United States is remarkably safe," said plant pathologist Trevor Suslow, a Cooperative Extension specialist in the UC Davis Department of Plant Sciences. "Americans consume more than six billion servings of uncooked fresh fruits and vegetables every year, versus a very small number of illnesses that are clearly linked to foodborne pathogens. UC Davis is working hard with growers, suppliers, and regulators to get the number of cases of microbial foodborne illness as close to zero as possible."

"We want to have a safe food supply, but we also want to protect the environment and encourage proper water quality management."

The food supply chain is complex—from growing, irrigation, application of fertilizer or other inputs, harvest, postharvest handling, shipping, and retail distribution to the final handling of food at home or in a restaurant. Food can become contaminated by a breakdown in any link of the chain, and trace contamination can be amplified.

UC Davis food safety experts work with researchers in a variety of disciplines that impact the food supply chain—plant science, food science,

hydrology, soil science, wildlife biology, and animal science. They also work closely with industry and government regulators to ensure the relevance of their research investigations to practices in the field.

"Food safety issues are extremely complicated," said food scientist Linda Harris. "You're talking about 300 different fruits and vegetables in the produce section of a grocery store. All of these grow in different regions using a variety of production systems, so it can be challenging to come up with general microbial safety guidelines that are economical, practical, and scientifically sound."

As a Cooperative Extension specialist, food safety expert Suslow travels extensively throughout the state to inform growers big and small about the latest research. When a grower calls to report a contamination event in the field, Suslow and his team are on site as quickly as possible in order to capture data on the natural decline of the pathogen in a commercial setting. Suslow compares this to information collected in controlled research trials to help fill data gaps on the risk to public health.

"We want to have a safe food supply, but we also want to protect the environment and encourage proper water quality management," said Suslow. "We're trying to find a way that these goals can be accomplished compatibly." — RD

The nuts and bolts of safe almonds

When raw almonds were identified as a source of international outbreaks of salmonellosis foodborne illness in 2001 and again in 2004, the almond industry in California embraced new rules to ensure food safety.

UC Davis microbiologist Linda Harris was one of the key experts who stepped up to help the almond industry determine what level of regulation was needed to protect consumer safety. "California produces virtually all of the almonds consumed in the United States and about 80 percent of those consumed around the world, so the industry had to get it right," said Harris, a Cooperative Extension specialist in the Department of Food Science and Technology. "The almond industry has been very devoted to getting food safety right."

Microbiological studies in the Harris laboratory and a risk assessment using these data helped determine where to set the pasteurization standard for almonds, and also validated that oil roasting, blanching, and other postharvest processes typically used to treat almonds satisfied the new regulation. — RD

Almonds: a healthy product of the partnership between growers and scientist Linda Harris.

ROBIN DERIEUX/UC DAVIS

THE CENTER FOR PRODUCE SAFETY

Research funded by the Center for Produce Safety (CPS) helps provide science-based solutions to food safety concerns in fresh fruits and vegetables. The center was established in 2007 at UC Davis through a public and private partnership. "Translating food safety research for use in industry is core to the Center for Produce Safety," said Bonnie Fernandez-Fenaroli, CPS executive director.

Creation of the center as a research clearinghouse was one of the first steps taken by industry and regulators to restore public confidence in lettuce and leafy greens after a widespread 2006 outbreak of *E. coli* 0157:H7 in fresh baby spinach was traced to coastal farms in Central California.

CPS maintains a global research database accessible to industry and others that can be searched by commodity or pathogen. The center facilitates interaction between scientists and the produce industry to identify gaps in knowledge about specific growing or production practices and their impact on microbial contamination. To date, CPS (cps.ucdavis.edu) has funded $6.8 million in applied research projects and disseminated findings throughout the food supply chain.

JOHN STUMBOS/UC DAVIS

Frank Mitloehner conducts research in covered corrals at UC Davis.

Clearing the air on livestock emissions

Frank Mitloehner wants to clear the air about a popular misconception: that livestock production is a bigger threat to the earth's climate than the internal combustion engine.

"More greenhouse gases than all trucks, trains, planes, and ships in the world combined?" asks Mitloehner, a UC Davis animal science professor and air quality specialist in Cooperative Extension. "Whenever I hear those claims, I look a little deeper into it, and every time I find some large problems."

A report by the United Nations Food and Agriculture Organization in 2006 claimed that worldwide livestock production was responsible for 18 percent of global greenhouse gases. The report, "Livestock's Long Shadow," generated this global average from 200 countries but, as Mitloehner explains, it's a figure that has limited utility because sources of greenhouse gases vary widely among different countries.

A country like Paraguay, for instance, has few industries and little transportation or energy use, yet twice as many cattle as people. Expressed as a percentage, its "carbon footprint," shorthand for greenhouse gas emissions, is comparatively high—50 percent. In the United States—with an abundance of freeways, factories, and energy plants—it's a different story.

> "People should be concerned about climate change, but they should think about things that really contribute to greenhouse gases—transportation choices and whether or not they insulate their homes."

According to the U.S. Environmental Protection Agency, 26 percent of this country's greenhouse gas emissions are associated with transportation, 31 percent with energy production and use, and 3.4 percent with all livestock production. Nonetheless, the 18 percent figure has been widely quoted in the media, spurring jokes by comedians, shaping public opinion, and leading to practices such as "Meatless Mondays." Mitloehner has delivered more than 70 invited talks to scientific and professional societies on the subject to set the record straight.

When he was hired by UC Davis in 2002, media outlets were running stories about cows rivaling cars as smog producers. This was of particular concern in the San Joaquin Valley, with the worst air quality in the country and a high concentration of dairies.

Mitloehner discovered a mistaken estimate of smog-forming gases by air-quality regulators was responsible for the mischaracterization. Subsequent research in large, domed corrals at UC Davis demonstrated that cows produce half the air pollution previously believed and sheds new light on the role of the cow's digestive gases—via belching—in the production of volatile organic compounds associated with smog. This information helped focus research on more relevant factors, such as animal feeding and silage management.

"People should be concerned about climate change, but they should think about things that really contribute to greenhouse gases—transportation choices and whether or not they insulate their homes," he says. "These things really make a difference and put us on a better path for solutions." — JS

Where controversy is just a fact of life

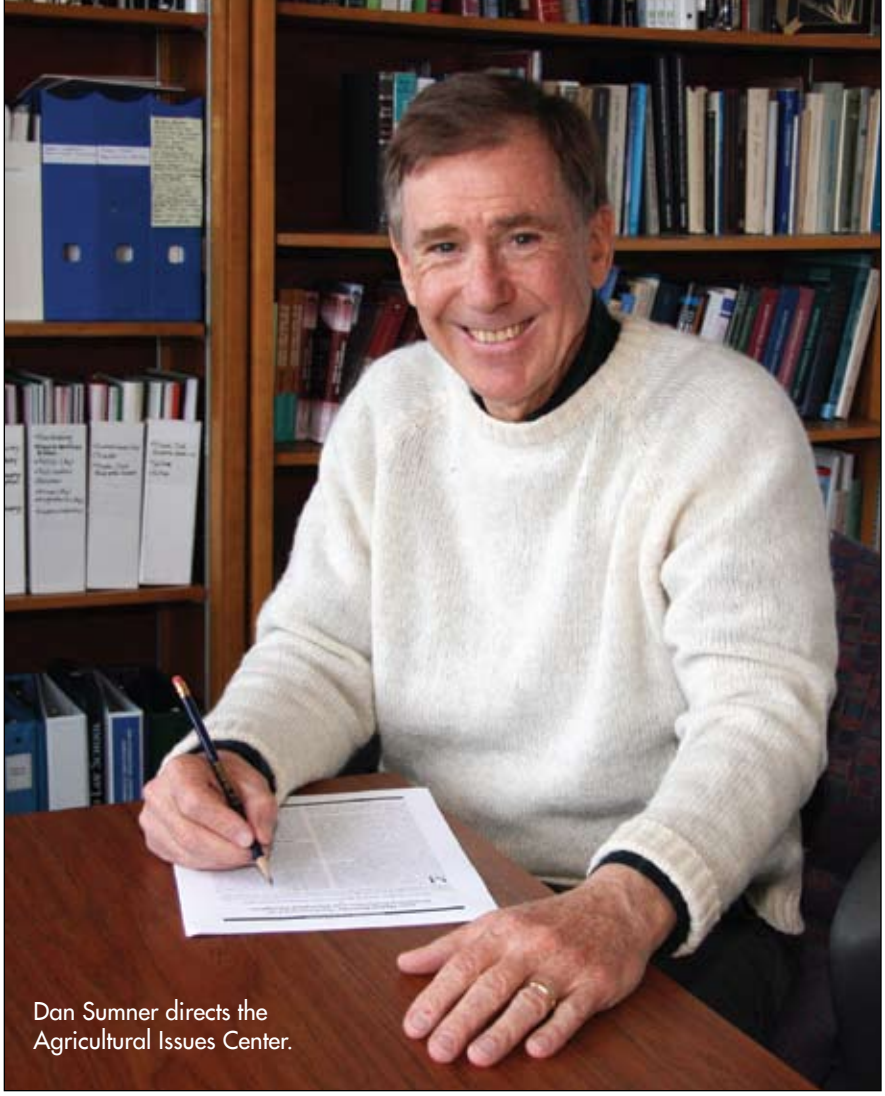
In its recent quest to develop a strategic plan for California food and agriculture, the state sought the assistance of the Agricultural Issues Center (AIC), a Davis-based UC think tank that has been a trusted source of information for a quarter century.

"We help people understand the issues and the effects of alternative policies and regulations," says Daniel Sumner, AIC director and a UC Davis professor of agricultural and resource economics.

The California State Board of Food and Agriculture, which is appointed by the governor, began work more than two years ago on its strategic plan—"California Agricultural Vision"—and turned to the AIC to provide background information. Sumner, AIC staff, and faculty colleagues developed a series of 15 AIC white papers on important issues facing California agriculture—from regulations and water supplies to urbanization and climate change.

The white papers describe the important factual circumstances, policies, and economic relationships surrounding each issue. Importantly, they don't advocate a position. "The issues we work on are always controversial," Sumner says, "but AIC doesn't make policy recommendations."

The center was created in 1985 at UC Davis with an appropriation from the state of California to the UC Division of Agriculture and Natural Resources. Leaders from agriculture and rural communities serve on the Agricultural Issues Center advisory board and help guide the choice of study topics. The center's website—aic.ucdavis.edu—provides access to issue briefs, economic analyses, multidisciplinary policy studies, conference proceedings, and links to publications, cost studies, and other resources.



JOHN STUMBOS/UC DAVIS

Dan Sumner directs the Agricultural Issues Center.

"We help people understand the issues and the effects of alternative policies and regulations."

In 2008, the Agricultural Issues Center investigated potential impacts of Proposition 2, the initiative mandating California egg producers modify or eliminate hen cages. The AIC analysis predicted at least 20 percent higher costs of production if the proposition passed. "Our results indicated that most egg production would leave California," Sumner said. The cage-free mandate for California producers was supplemented in 2009 by legislation that requires eggs shipped into California to meet Proposition 2 standards when implemented in 2015—levelling the field for California producers.

In a series of related projects, AIC-affiliated staff and faculty are now investigating many agricultural implications of AB 32, the California Global Warming Solutions Act of 2006. Sumner doesn't anticipate regulations directly on California farms or ranches, at least in the short run. However, wineries, tomato canneries, cheese makers, and other food processors will be subject to greenhouse gas emission rules and that likely will affect growers.

"Somebody needs to bear the costs and at least some of those will be borne by the grower," he said.— JS

KARIN HIGGINS/UC DAVIS

Scientists Randy Dahlgren (left) and Ken Tate study California rangeland for improved management and ecosystem health.

A holistic approach to rangeland research

Shortly after he came to work at UC Davis in 1995, Kenneth Tate found himself testifying before the San Francisco Public Utilities Commission about whether cattle grazing near city-owned reservoirs posed a threat to drinking water.

"That issue stimulated a whole body of research in our program on microbial water quality," says Tate, a rangeland watershed specialist in the Department of Plant Sciences. "We now know a lot about microbial water quality and grazing."

Tate and colleagues such as soil science professor Randy Dahlgren, veterinary medicine specialist Robert Atwill, and other faculty members and students conduct research and outreach programs to improve understanding and management of the state's 16 million acres of annual rangeland. The team is known as the California Rangeland Watershed Laboratory.

Tate and Dahlgren hold faculty positions endowed by the late Russell Rustici, a Lake County cattle rancher who believed strongly in advancing science to sustain ranching enterprises and rangeland ecosystems. Lab-affiliated scientists work with ranchers and rangeland managers, UC Cooperative Extension advisors, and natural resources conservation, management, and regulatory organizations in pursuit of solutions that are practical for managers and effective at preserving rangelands.

"Our common research theme focuses on how rangeland watersheds function and the ecosystem services they provide—clean water for drinking, water for irrigation, habitats for sensitive aquatic species, and in particular how range management practices, such as road construction on ranches and grazing management, affect those functions and services," Tate says.

One study just getting under way is a 10-year project analyzing grazing practices of ranchers in California and Wyoming. The project aims to shed light on how cattle rotation, grazing intensity, and grazing timing influence ecosystem measures such as biodiversity, weed suppression, forage production, and water quality. Ultimately, researchers will produce an online decision-support tool to help end users meet their goals.

Rangeland research today reflects a major shift in the policies of a bygone era, which was characterized by some as "more pounds of grass, more pounds of beef." The approach has become more holistic, valuing economic vitality and environmental goals equally. "Where we're at now is working to research and identify integrated management strategies for rangelands that optimize multiple outcomes," Tate says.

Another change is a more cooperative spirit between environmental groups and ranchers, as evidenced in organizations like the California Rangeland Conservation Coalition. "Ten years ago there was almost exclusively conflict over the topic of grazing on rangelands," Tate says. "Now I see a lot of willingness to work together to resolve problems and get to common solutions that work for everybody." — JS

Learn more at rangelandwatersheds.ucdavis.edu

"I see a lot of willingness to work together to resolve problems and get to common solutions that work for everybody."

Taking a good look at nitrogen use

The federal government has spent hundreds of millions of dollars trying to address the impacts of a single chemical—nitrogen—in the Chesapeake Bay, Mississippi River, and Great Lakes region. Excess nitrogen in the environment is a concern because it can adversely affect drinking water, prove hazardous to aquatic life, and damage air quality.

In California, scientists and policymakers have intensified efforts to develop a better understanding of nitrogen. The Agricultural Sustainability Institute (ASI) at UC Davis launched a project in 2009, funded primarily by the David and Lucile Packard Foundation, to critically evaluate and assemble existing information about nitrogen into a more complete picture of its use and impacts in California.

"We want to increase awareness of the importance of balancing the need for nitrogen in rural and urban areas with potential environmental effects," said Professor Tom Tomich, the institute's director. "Our aim is to help policymakers understand the pluses and minuses of nitrogen use."

The objective of the institute's California Nitrogen Assessment (CNA) project is to establish a baseline of knowledge about nitrogen, how urban and agricultural activities affect the fate of nitrogen in the environment, and the policies that shape these practices. Results of the study will be published later this year.

Agricultural *and* urban areas are large sources of nitrogen. According to the California Department of Food and Agriculture, annual nitrogen fertilizer sales varied from 475,000 to 675,000 tons between 2002 and 2006. CNA researchers estimate roughly 270,000 tons of nitrogen is applied annually in manure for crop production. However, not all of the nitrogen applied in fertilizer or manure is assimilated into crops.

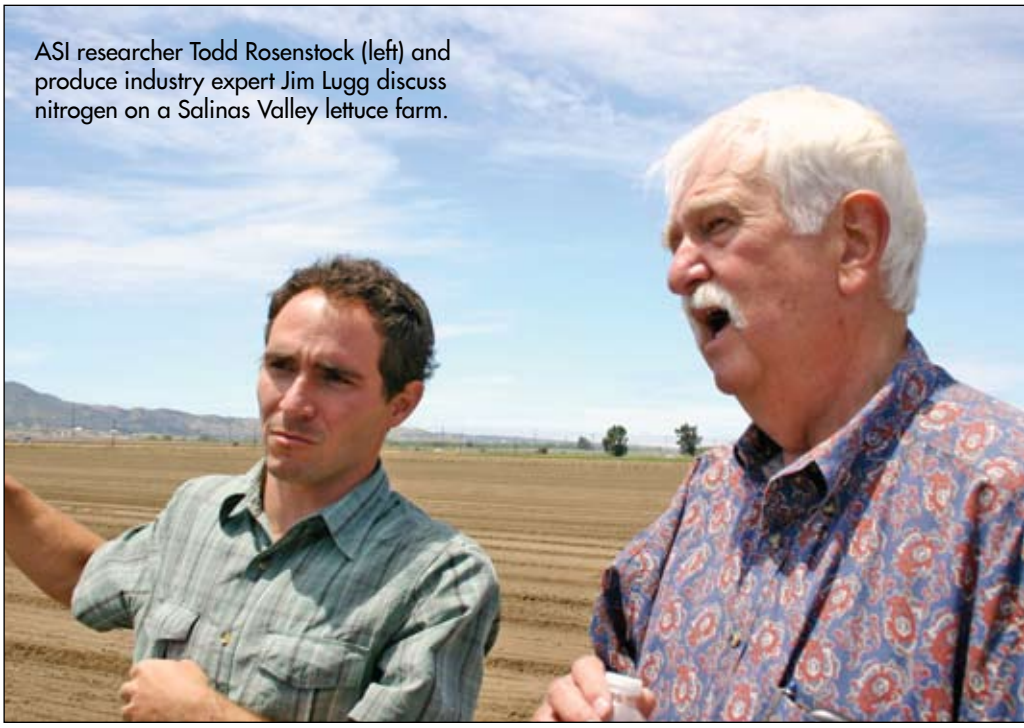
Nitrogen not used by crops can dissipate into the air, percolate into groundwater, or flow into surface water. Variables such as fertilizer type, soil quality, crop rotation, proximity to roots, rate and timing of fertilizer application, and other factors affect the efficiency at which nitrogen is used.

California's urban areas annually produce about 200,000 tons of nitrogen in sewage, according to state regulators. And 400,000 tons of nitrogen are emitted annually in the form of nitrogen oxides from fossil fuel use for transportation and energy production.

ASI is working with farmers and ranchers, policymakers, and environmental and public health advocates as it studies nitrogen in California and considers ways to improve nitrogen management statewide. The final report will integrate scientific findings with stakeholder input to produce information relevant for policy development and improved agricultural practices.

"One thing is clear—a one-size-fits-all policy approach won't work," Tomich said. "Some solutions are problem-specific and locally important, like crop management for groundwater quality."

"Everyone has a stake in the efficient use of nitrogen," Tomich adds. "The safe, effective use of nitrogen is a balancing act. Designing and implementing effective policies will be just as important as what the policy is targeting." — EH



ASI researcher Todd Rosenstock (left) and produce industry expert Jim Lugg discuss nitrogen on a Salinas Valley lettuce farm.

COLIN BISHOP/UC DAVIS

"Our aim is to help policymakers understand the pluses and minuses of nitrogen use."

This salt marsh in the Elkhorn Slough provides habitat for a rich array of wildlife, including this Marbled Godwit.

Protecting the Elkhorn Slough

Californians want reliable roads, but they also value conservation. So when the California Department of Transportation (Caltrans) was planning a series of future transportation improvement projects within the Elkhorn Slough watershed—one of the premier aquatic and avian habitats in North America—the agency asked UC Davis environmental scientists to help coordinate mitigation efforts.

The budget for each state transportation project includes funds for mitigation of damage to natural resources. In the Elkhorn Slough watershed, Caltrans sought to have the greatest possible impact on conservation by pooling its mitigation funds to meet a significant preservation goal, rather than mitigating environmental impacts on a series of small projects.

The Elkhorn Slough is a seven-mile estuary adjacent to Monterey Bay, and the surrounding 45,000-acre watershed is rich in biodiversity. It has marshlands, coastal prairies, and maritime chaparral habitats that support hundreds of species of rare or endemic (native) plants and animals, as well as several threatened or endangered species, including California sea otters, California red-legged frogs, and the Snowy Plover (a coastal and inland lake bird). To determine conservation priorities for the watershed, UC Davis helped Caltrans bring more than a dozen public and private organizations together to develop a plan.

"Our role was to provide the best information available and to facilitate the negotiation process," said James Quinn, UC Davis professor of environmental science and policy. Quinn is director of the UC Davis Information Center for the Environment, which generates mapping analyses using geographical information system (GIS) technology. Maps containing data about animal habitats, vegetation, and land use helped identify rare resources in the area.

Within two years of its 2007 inception, the Elkhorn Slough Early

Mitigation Partnership engineered an agreement to purchase an ecologically key 168-acre parcel of land in the watershed to meet the environmental commitments of Caltrans. The partners also signed an agreement outlining the group's transportation and ecology goals and identifying long-term conservation priorities in the slough for future actions. The multiparty approach pioneered by the Elkhorn Slough partnership has served as a pilot project for applying the advanced mitigation concept to other public works projects in California.

"I believe in an engaged university," said Quinn. "What we can bring is reliable, unbiased technical knowledge that helps people make the best local decisions." — RD

Valuing the services provided by nature

James Sanchirico is a UC Davis environmental science and policy professor at the forefront of an emerging discipline drawing on the knowledge of economists, ecologists, and conservation biologists to do a better job of valuing the services provided by nature. "Ecosystem services" provide society with food, fiber, clean water, nutrient cycling, flood protection, wildlife habitat, and other desirable functions.

A natural resources economist, Sanchirico has studied and written about coastal forests called mangroves that occur largely throughout the tropics and subtropics. When storms push tides inland, mangroves provide a natural buffer against storm surges. Mangroves serve as nursery habitat for fish that may also inhabit coral reefs and ultimately provide commercial or recreational fishing benefits. Mangroves are also under tremendous development pressure. Traditional cost-benefit studies used to make land-use decisions don't account for these environmental services.

"When we make decisions on whether to clear a particular habitat, we really should be taking into account the full benefits and costs," Sanchirico says. "Bringing in the value of storm protection—or native habitat for pollination services in an agricultural setting—could make the decision to conserve more economically viable. If we don't consider them, we're implicitly putting a zero value on them. Thinking more broadly about the values ecosystems provide us should lead to better decision making."

Ecosystem services programs are cropping up in agencies such as the U.S. Forest Service, U.S. Department of Agriculture, the U.S. Environmental Protection Agency, and the National Oceanic and Atmospheric Administration. One example is the Conservation Reserve Program, which "rents" land from farmers to reduce soil erosion, protect water quality, and provide other benefits such as wildlife habitat, open space, and wetland areas.

Mangroves provide storm protection and nurseries for fish.

"When we make decisions on whether to clear a particular habitat, we really should be taking into account the full benefits and costs."

Better knowledge of ecosystem services would also improve assessments of environmental damage, as the 2010 oil spill in the Gulf of Mexico has shown. In an editorial after the spill, Sanchirico encouraged more work in this area. "We would be remiss to squander the opportunity to advance the science of measuring and valuing ecosystem services, especially because these services are so critical to our nation's prosperity." — JS

HOME-GROWN EXPERIENCE

Ria de Grassi advocates science in agricultural policy development

RIA DE GRASSI'S UC DAVIS education began years before she ever set foot on campus.

Growing up on a farm near Ukiah, she learned about the rhythms of nature while raising livestock and observing wildlife in the surrounding hills and streams. "I grew up in an awesome childhood environment and the older I get the more I value it," she says. "How many kids ever get to witness birds feeding their nested young or the transformation of eggs in a creek to pollywogs and then frogs?"

De Grassi (B.S. '83, agricultural science and management; M.S. '87, animal science) also found inspiration in mentors who knew a thing or two about the campus. Her father, Robert de Grassi, attended UC Davis after World War II. Ria worked in her teens for a veterinarian who took her on farm visits. And several county Cooperative Extension farm advisors guided her in 4-H projects in veterinary science, livestock, and leadership.

"All that exposure to the educational value of the university made UC Davis my logical choice," she said.

Her ambition was to become a farm advisor, but the job market was not encouraging. Fortunately, her scientific training, knowledge of animal agriculture, and engaging personality equipped her perfectly for a career analyzing policy for the California Farm Bureau Federation, the state's largest agricultural organization. She's been in the job for 23 years.

"My education taught me how to analyze and synthesize data, how to find credible sources of information and professional opinion, and why it's important to advocate for

JOHN STUMBOS/UC DAVIS

All roads have led to UC Davis for much of Ria de Grassi's education and career. She represents Farm Bureau, the state's largest farm organization on many important issues.

> "In my public policy work, it's a constant effort trying to get science heard in the conversations and debates and even tougher to have science prevail."

science in relevant decision-making processes," she says. "In my public policy work, it's a constant effort trying to get science heard in the conversations and debates and even tougher to have science prevail."

De Grassi likens her work to the exhaustive literature review she did on her master's thesis, gathering as much information as possible on a topic—whether it's an animal welfare concern, colony collapse disorder in honey bees, or guarding against foreign animal diseases. As a director in Farm Bureau's national affairs and research division, she frequently taps expertise from UC Davis for scientific perspectives to assist the farmers and ranchers on the organization's many advisory committees.

De Grassi is as devoted to her alma mater as she is committed to keeping science front and center in the development of food and agriculture policy. "My most treasured possession is my education," she says. "I believe in giving back through volunteer work and philanthropy to ensure that the wonder of UC Davis is going to be there—not just tomorrow, but for the next generation."

— John Stumbos

THOUGHT LEADERS

New endowed faculty appointments in wine, food, and child studies

DAVID BLOCK

Professor David E. Block is the new Ernest Gallo Endowed Chair in the Department of Viticulture and Enology, established in 1978 by the Ernest Gallo Trust.

"The endowment will provide seed money for trying out new research and technology development ideas in winemaking," Block said. That may include design of new fermentors, effects of filtration on sensory and chemical properties of wine, automated cleaning equipment, and new cleaning chemistries.

A viticulture and enology professor since 1996, Block plans to expand teaching on winery design to include extended demonstrations or labs with major winery equipment. He is a recipient of the Distinguished Teaching Award from the UC Davis Academic Senate. Block holds a B.S.E. from the University of Pennsylvania and a Ph.D. from the University of Minnesota, both in chemical engineering.

ALYSON MITCHELL

Alyson E. Mitchell is the new John E. Kinsella Endowed Chair in the Department of Food Science and Technology, established in 1994 to honor the late CA&ES professor and dean.

"The health benefits associated with fruit and vegetable consumption have been linked to compounds like flavonoids, but we need a more comprehensive chemical portrait of these compounds before we can begin to really understand how a food influences health," Mitchell says. "This appointment will support basic research into bioactive compounds in fresh and processed foods with new analytical mass spectrometry methods."

A UC Davis professor since 2000, Mitchell teaches three food science and technology classes—The Chemical and Physical Analysis of Foods (FST103), Food Toxicology (FST128), and Food Folklore and Health (FST10). She received her B.S. in environmental toxicology and her Ph.D. in pharmacology and toxicology at UC Davis.

JAY BELSKY

Jay Belsky is the first Robert M. and Natalie Reid Dorn Endowed Chair on Infancy, established in 2008 by Dr. Robert Dorn.

Belsky joined UC Davis in January 2011 after lengthy faculty appointments at the Pennsylvania State University and Birkbeck University in London. He is an expert on child development and family studies, focusing on parenting, day care, transition to parenthood, and child maltreatment. Belsky conducted major studies on child care and youth development in the U.S. and the United Kingdom.

At UC Davis he will examine how temperamental, physiological, and genetic differences in children affect their susceptibility to parenting and other influences such as day care and poverty. He earned his Ph.D. in Human Development and Family Studies at Cornell University.

"I'm excited about deepening my research on the opening years of life and how they shape early and later human development," Belsky says.

— John Stumbos

SUPPORTING WHAT MATTERS

Emeritus professor Eric Conn helps keep the Arboretum growing

ERIC CONN, AN EMERITUS professor of biochemistry and longtime supporter of the UC Davis Arboretum, established the Louise and Eric Conn Endowment Fund in 2001 as a tribute to his late wife, Louise. The fund helps preserve and enhance the arboretum's gardens and scientific plant collections and supports education programs.

"Louise and I planned our gift in the hope that it might inspire others to consider supporting the UC Davis Arboretum," Conn said. "The arboretum is a tremendous resource for UC Davis and the region, supporting teaching and research, and providing a beautiful, peaceful, green refuge."

A biochemist in the college for many years, Conn is known for his work on the natural production of cyanide in *Acacia* species. He served as president of the Friends of the UC Davis Arboretum from 1980-84 and 1990-92. Upon his retirement in 1992, the Eric E. Conn Acacia Grove was dedicated in his honor.

JOHN STUMBOS/UC DAVIS

Emeritus professor Eric Conn (right) examines acacias in bloom with Dean Neal Van Alfen and arboretum director Kathleen Socolofsky. The acacia grove was dedicated in his honor in 1992.

"Eric has always provided valuable guidance and encouragement," said arboretum director Kathleen Socolofsky. "His continuing support has helped sustain us over the years and allows us to look forward, even in challenging economic times."

— Diane Cary

Karen Medford honors mother with gift for nutrition education

Barbara Van Zandt

Karen Medford

IN 2004, KAREN (VAN ZANDT) MEDFORD honored the memory of her mother, a registered dietician, with a gift that established the Barbara J. Van Zandt Endowment to support the UC Davis Center for Nutrition in Schools (CNS).

"Nutrition education and healthy eating habits were two areas that were of much interest to my mother," Medford says. "She believed that nutrition education at a young age is crucial to establishing healthy lifestyles."

The resources provided through the Van Zandt Endowment have become a critical anchor for center activities, according to UC Davis nutritionist and CNS director Sheri Zidenberg-Cherr. "Karen's support helps us communicate current nutrition principles and the latest research findings to teachers and other school professionals throughout California," she said.

"My mother believed that nutrition education at a young age is crucial to establishing healthy lifestyles."

To continue building this legacy, Medford (B.S. '82, agricultural and managerial economics) makes annual gifts to increase the impact of the endowment, and this past year, her father, Rufus Van Zandt, made a generous contribution to the fund as well.

— Jeffrey Ellis

FOR THE LOVE OF THE LAND

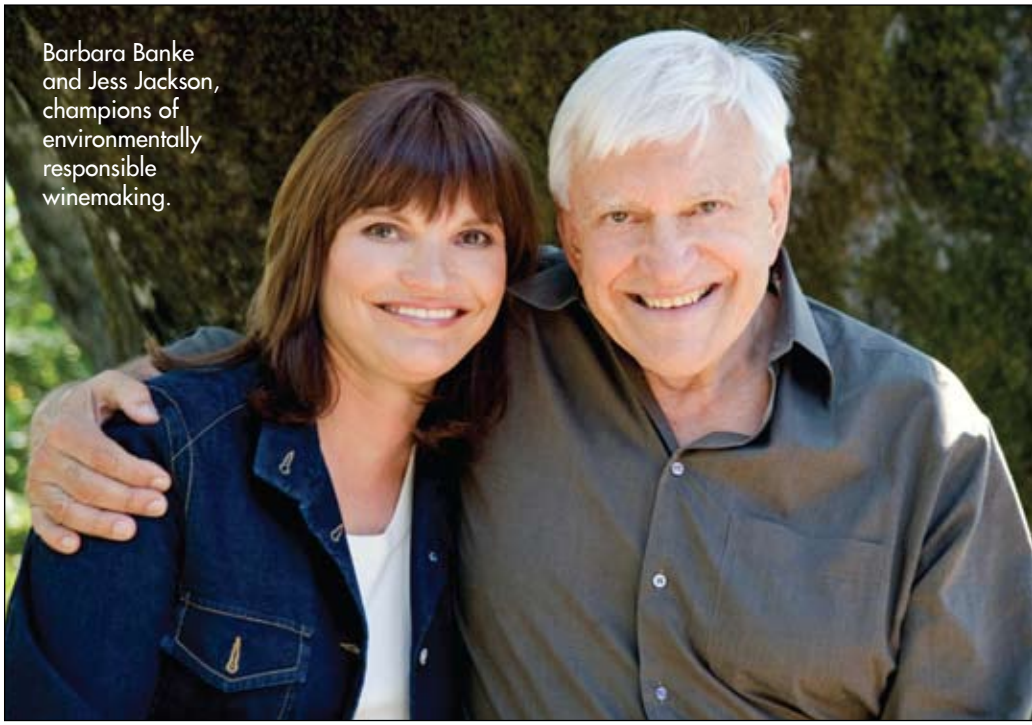
Jackson family donation launches new sustainable winery building

A VERY GENEROUS $3 MILLION donation from Jess Jackson and Barbara Banke, the husband-and-wife proprietors of Jackson Family Wines, will make possible a new campus facility for research and demonstration of sustainable winemaking practices. Sadly, Jackson, 81, passed away in April.

The gift was announced in January during the grand opening of the 34,000-square-foot teaching and research winery, brewery, and food-processing complex, part of the Robert Mondavi Institute for Wine and Food Science at UC Davis. The new facility will be named the Jess S. Jackson Sustainable Winery Building and is expected to be completed in 2013.

"Our family is pleased that this gift will advance the study of sustainable viticulture and winemaking," Banke said. "Good stewardship and responsible development are the future of this industry and the founding principles at Jackson Family Wines. I am proud to say that Jess was deeply moved that this groundbreaking building will carry his name."

The Jess S. Jackson Sustainable Winery Building will contain the technology needed to maximize the environmental capabilities of the adjacent winery, brewery, and food-processing complex. It will include an automated system to clean barrels, tanks, and fermentors. It will capture spent solutions and reuse 90 percent of the water and cleaning chemistry. The winery also is intended to be exceptionally efficient and self-sustainable in water and energy requirements.



Barbara Banke and Jess Jackson, champions of environmentally responsible winemaking.

The winery, brewery, and food-processing complex—now bustling with faculty and students—was financed entirely with private donations. A previous gift by Jackson and Banke helped lift its green building certification to LEED Platinum, the highest such designation in the United States and the first winery to be LEED Platinum.

> "Jess was deeply moved that this groundbreaking building will carry his name."

Plans also call for the Jess S. Jackson Sustainable Winery Building to sequester carbon dioxide from the winery's fermentation system. It will be the first winery to have a zero carbon footprint by capturing all the carbon dioxide it produces.

Jackson and Banke have long supported sustainability, innovation, and philanthropic causes. Their business blossomed from the highly successful Kendall-Jackson Chardonnay to a portfolio of premier estate wineries in California, France, Italy, Australia, and Chile. "Our family culture is built on the time-honored principles of hard work, integrity, and uncompromising desire for quality and the long-term stewardship of the land," Jackson said.

"Jess and Barbara played a key role in making our new winery a reality," said CA&ES dean Neal Van Alfen. "We are extremely grateful for their support and look forward to working with the family in creating a fitting tribute to this great, visionary leader—the Jess S. Jackson Sustainable Winery Building."

— John Stumbos

A MAJOR DRAW

Scholarships help transfer students lured by college's unique offerings

AMY CHONG, LI ZHU, AND BRIANNA GONZALES, three students on very different career paths, have at least two things in common. All three transferred to UC Davis from another college and all three are recipients of the CA&ES Dean's Circle Scholarship.

The number of transfer students interested in UC Davis is rising dramatically. More than 59,000 students applied for admission in fall 2011, with transfer student applications jumping more than 20 percent over the previous year to 13,554.

Amy Chong describes her major in wildlife fish and conservation biology as "a perfect fit," citing the opportunity for hands-on learning and an excellent reputation in environmental sciences.

Brianna Gonzales, a junior majoring in biotechnology, is interested in innovative diagnostic tools and medicines to help treat patients.

"These students know what they want to do by the time they transfer here," says Diane Ullman, CA&ES associate dean for Undergraduate Academic Programs. "Part of the reason we've seen this increase is the unique majors in our college."

Chong, who aims to become a wildlife biologist, is a senior in the wildlife, fish and conservation biology program. "This major was the perfect fit for me," she says. "I was looking for a program where I could experience hands-on learning and UC Davis met that need with its reputation for experiential education and excellence in the environmental field."

Zhu (photo, page 2), a junior interested in a career in business, said he was drawn to the managerial economics major because it "provides opportunities to develop a comprehensive understanding of the business environment and a practical approach to current affairs."

Gonzales, a junior majoring in biotechnology, wants to pursue a science-related graduate degree and an MBA. "Science has always fascinated me and I knew at a young age that was the field I wanted to work in," she says. "I admire how both academia and the biopharmaceutical industry strive to learn more about diseases and develop innovative diagnostic tools and medicines to help treat patients."

The CA&ES Dean's Circle Scholarship for transfer students is made possible by donors who contribute $1,000 or more of unrestricted funds each year to the college. Dean's Circle donors enable the dean to invest in high-priority areas. The college began allocating funds to this new scholarship because few scholarship opportunities exist for transfer students.

"It was an honor to be awarded the CA&ES Dean's Circle Scholarship," Gonzales said. "It has greatly helped me pay for tuition here at Davis."

"This scholarship has eased the financial burden on my family and has allowed me to concentrate on my academics and participation in the college community," said Chong.

"It is my great honor to be enrolled in UC Davis and to be awarded the CA&ES Dean's Circle Scholarship," Zhu says. "This is changing not only my career but also my life."

— John Stumbos

COURTESY OF
UC DAVIS ARBORETUM

GROWING GREEN

Sustainable tips for gardeners

TWO CAMPUS PROGRAMS ARE HELPING the gardening public go green—the spring and fall plant sales at the UC Davis Arboretum and the "Your Sustainable Backyard" workshops sponsored by the California Center for Urban Horticulture (CCUH) at UC Davis.

The arboretum hosts six plant sales each year, drawing more than 5,400 people last year. One of the big attractions is the "Arboretum All-Stars"—low-water using, low-maintenance plants that add color, fragrance, and texture to a garden. The arboretum website has a searchable database of All-Stars, recommended planting plans, and a list of retail nurseries where they can be purchased.

CCUH created the "Your Sustainable Backyard" program, an ongoing series of workshops on subjects such as roses, fruit trees, and edible landscapes. In April more than 150 people attended the "Landscaping in California" workshop to learn about river-friendly landscaping, Mediterranean plants, native plants, designing with succulents, and sustainable landscaping principles and practices.

Visit arboretum.ucdavis.edu and ccuh.ucdavis.edu to learn more.

CA&ES
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THE CAMPAIGN FOR UC DAVIS

ADVANCING PUBLIC SERVICE

Kathryn Dewey is leading efforts to end malnutrition.

Nutrition professor Kay Dewey is working to end child malnutrition with the help of philanthropic support.

Dewey and a team of UC Davis and international researchers have developed nutritional supplements that are being studied for their impact on malnourished children in Africa. The project is made possible through a $16 million grant from the Bill & Melinda Gates Foundation.

"With just a small catsup-sized packet," Dewey said, "we could potentially make a real difference to millions of children."

THE CAMPAIGN FOR UCDAVIS

caes.ucdavis.edu/giving