

SUSTAINABLE AGRICULTURE

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New Agricultural Sustainability Institute refines strategic plan

by Bev Ransom, ASI/ SAREP

[NOTE: With this issue of Sustainable Agriculture, the focus of the newsletter has expanded to include more information about the new UC Davis Agricultural Sustainability Institute and its affiliates. See "From the Director," page 4, for more information.]

The new UC Davis Agricultural Sustainability Institute's (ASI) strategic planning process began even before its director, **Tom Tomich**, showed up for his first day of work January 2, 2007.

The UC Davis College of Agricultural and Environmental Sciences Agricultural **See AG on p.3**



ASI includes affiliated UC Davis campus and statewide programs, including the UC Davis Children's Garden Program, Student Farm, Sustainable Agriculture Farming Systems (SAFS) project, the Long Term Research on Agricultural Systems (LTRAS) project, and the UC Sustainable Agriculture Research and Education Program (SAREP).



Pictured here are (top) a bed reformer used to cut residue and till existing beds in SAFS plots (photo by Dennis Bryant); (center) ASI's retreat at Tomales Bay last summer (photo by James Cannon); (right) UC Davis Children's Garden-related projects at the University Heights Middle School in Riverside, Calif., and (left) in a culinary class at Petaluma Middle School (photos by Jeri Ohmart).

Notable events

Compiled by Lyra Halprin, ASI/ SAREP

Honor

Mark Van Horn, director of the UC Davis Student Farm, was honored recently by the Organic Farming and Research Foundation (OFRF) for his longtime work in organic agriculture. According to **Bob Scowcroft**, OFRF executive director, Van Horn was the guest of honor at OFRF's 15th Annual Fall Organic Harvest Benefit Reception and Dinner at One Market Restaurant in San Francisco, following the Ferry Plaza Farmers Market. The dinner showcased organic fare in a five-course menu prepared by area chefs.

New Site

The ASI office is now open in the central UC Davis campus at 143 Robbins Hall. That's where you will find **Kathy Smalley**, ASI executive assistant, and ASI/SAREP director **Tom Tomich**. The SAREP office is located in the DANR Building on Hopkins Road in the far west section of campus.

Anniversaries

In addition to ASI, which was established in 2005, and *SAREP*, which was founded in 1986, UC's sustainable agriculture resources include useful and longstanding sustainable agriculture projects. The *UC Davis Student Farm* has been around for 30 years; *UC Davis Long Term Research on Agricultural Systems* project, 14 years; the *Sustainable Agriculture Farming Systems (SAFS)* project, 19 years, and there is a successful program on the Coast that wins the longevity prize—the *UC Santa Cruz Center for Agroecology and Sustainable Food Systems* celebrated its 40th anniversary last summer. Congratulations to all!

Grad Awards

Daniel Geissler and **Molly Ferrell** each received \$2,000 graduate student research awards from the UC Davis Russell Ranch Sustainable Agriculture Facility, home of the UC Davis Sustainable Agriculture Farming Systems (SAFS) project and the Long Term Research on Agricultural Systems (LTRAS) project. Geissler's research project is "Use of extracellular enzyme activity to predict nitrogen mineralization," while Ferrell's is "Finding the best plants for native bees for use in riparian restoration and agriculture," according to SAFS project coordinator **Will Horwath**, who is also a professor of soil biogeochemistry.

Block Grant

The UC Davis Children's Garden Program, part of the ASI, received a Specialty Crop Block Grant for \$100,000 for its project "Supporting California Instructional School Gardens to Increase Awareness, Knowledge and Consumption of Specialty Crops."

A.G. Kawamura, California Department of Food and Agriculture Secretary announced the awards in early October and congratulated **Carol Hillhouse**, UC Davis' Children's Garden Program director and principal investigator on the grant. "The CDFA grant allows us to train other trainers and develop online materials for local school gardens," Hillhouse said. Project collaborators are California Foundation for Agriculture in the Classroom, California Integrated Waste Management Board, UC Cooperative Extension, California Department of Education (CDE), the California School Garden Network (CSGN), Life Lab Science Program, 4-H Center for Youth Development, Western Growers, and the Center for Integrative Nutrition Environments in School Communities. In addition to Hillhouse, garden workshop presenters include **John Fisher** of the UC Santa Cruz Life Lab Science Program, **Jeri Ohmart** of the UC Davis Children's Garden Program and SAREP, and **Katie Hume** of the Children's

Garden Program. For more information, see the Children's Garden Program Web site at <http://childrensgarden.ucdavis.edu/SchoolGardens.htm> or CSGN at csgn.org.

Books

Gail Feenstra, food systems analyst for ASI/SAREP, is the co-author of a chapter in the newly released book *Remaking*. Feenstra's chapter is a summary of the work she and colleagues have done in the last decade on "Local Food Systems in a Globalizing Environment." **Tom Tomich**, ASI/SAREP director, is the lead author and coauthor on two chapters in the new book *Farming with Nature*, edited by **Sara Scherr** and **Jeffrey McNeely**; the chapters are "Research partnerships," and "Watershed management." (See "Resources," page 7.)

Opinion

Gail Feenstra and **Tom Tomich** teamed up to write the main editorial in *California Agriculture*, October-December 2007, "Sustainable food systems link growers to new consumer markets in California."

Speaker

Tom Tomich was a speaker at "California Agroecosystem Services: Assessment, Valuation and Policy Perspectives," in September at UC Davis. ASI, the UC Agricultural Issues Center and Cal Poly, San Luis Obispo's California Institute for the Study of Specialty Crop, sponsored the event, as did CDFA, and the California Resources Agency. The roundtable encouraged open discussion on issues relevant to the supply and demand for agroecosystem services. Tomich spoke about "A Framework for Assessment of California Agroecosystems."

Symposium

ASI and SAREP were two of the sponsors of the *Symposium on Energy Life Cycle Assessment of Food Systems* at UC Davis in October. Participants included researchers, government officials and food industry representatives from Europe and the U.S. who focused on practical strategies for reducing the greenhouse gases produced while putting food on our plates. "We want a 'farm-to-fork' food



Mike Nicholas shows Tom Tomich (center) and Sonja Brodt the fueling process at the UC Davis Hydrogen Fueling Station during the Energy Life Cycle Assessment symposium. (photo by Gail Feenstra)

and energy analysis program for California,” said **Tom Tomich**, ASI/SAREP director. Other ASI/SAREP collaborators at the conference included food systems analyst **Gail Feenstra**, senior researcher **Sonja Brodt**, and **Daniel Sperling**, director of the UC Davis Institute of Transportation Studies and professor of civil engineering and environmental science, and **Jim Thompson**, UC Cooperative Extension Specialist in the biological and environmental engineering department. Tomich said the gathering will produce a “food and energy white paper” outlining priorities for policy, research, education and outreach. Stay tuned.

Green Speaker

Tom Tomich, ASI/SAREP director, introduced **Katie Hunt** in late October at a UC Davis seminar. Hunt, who spoke on “Green Chemistry,” is president of the American Chemical Society and a distinguished alumna of UC Davis and is “way out in front nationally as a leader in seeking a sustainability transition,” according to Tomich.

AG CONTINUED FROM PAGE 1

Sustainability Implementation Committee provided a broad outline of ASI’s goals, organization, and functions in its September 2004 report. From the beginning, there was great emphasis placed on engaging stakeholders—those involved in California’s extensive agricultural and food system community who represent a wide range of interests. It is no surprise that Tomich spent much of his first six months traveling the state meeting various stakeholders for informal consultations about their concerns and priorities for sustainable agriculture.

During this same period, staff working with the UC units affiliated with ASI—SAREP, UC Davis Student Farm, UC Davis Children’s Garden Program, UC Davis Sustainable Agriculture Farming Systems (SAFS) project, and the Long Term Research on Agricultural Systems (LTRAS) project—began meeting to explore how the individual units can function as a team to help define and act on ASI’s strategic plan. These initial efforts culminated in a two-day planning retreat in August at the Marconi Conference Center near Tomales Bay. About 30 staff, faculty, and graduate students spent time creating a vision and drafting what Tomich calls the “Top half of ASI’s strategic plan”—the ASI mission, vision, core values, and operational principles. UC Cooperative Extension advisor emeritus **Jim Brenner** is guiding the strategic plan process.

ASI’s strategic planning efforts are also based on a literature review of other stakeholder consultation processes. Graduate student researcher **Alida Cantor** identified several priorities that have emerged from similar efforts. Cantor also guided ASI in identifying major stakeholder groups and ways to encourage long-term involvement.

ASI’s second planning retreat took place September 27-28 on the UC Davis campus to facilitate opportunities for participants to attend sessions that identified potential program priorities. Sessions focused on four key programmatic areas:

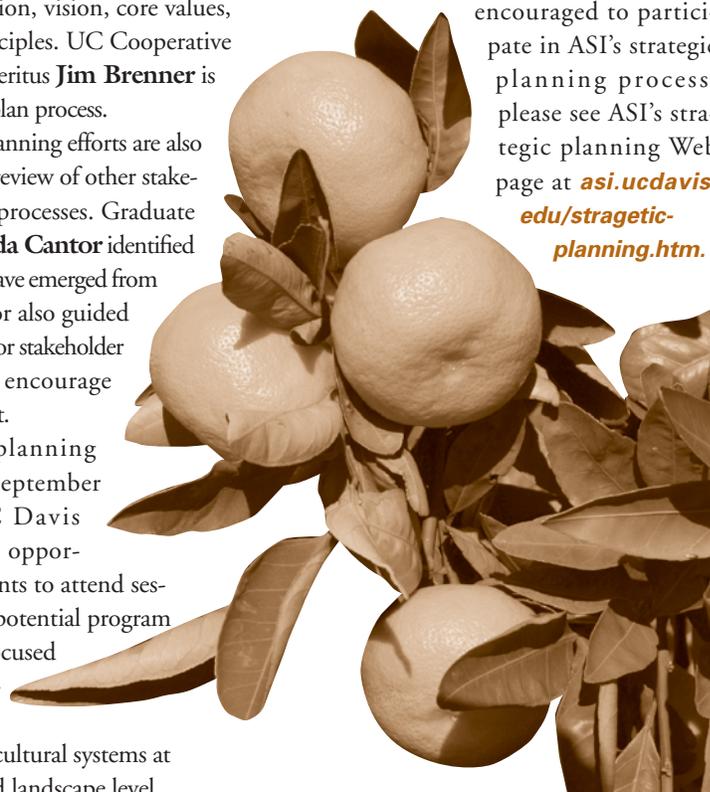
- Integration of agricultural systems at the farm/ranch and landscape level



ABOVE: Students assemble weekly food baskets of produce grown at the UC Davis Student Farm for the campus community supported agriculture (CSA) project. (photo by Damian Parr) BELOW: Food systems researchers at SAREP reported on the big marketing potential for Placer County mandarin growers. (photo by Wayde Carroll for Placer County Ag Marketing Program)

- Integration of the food system, linking producers, distributors and consumers
- Linking sustainability science and policy
- Integrated programs for sustainability education

During fall 2007, Tomich is working with ASI interim deputy director **Howard Ferris** to engage faculty, specialists and others to refine a draft of the strategic plan that will be distributed for internal and external stakeholder review. In addition to other activities, an online survey will be conducted to obtain broad input. All are welcome and encouraged to participate in ASI’s strategic planning process; please see ASI’s strategic planning Web page at asi.ucdavis.edu/strategic-planning.htm.



Looking ahead, with an appreciation

In this issue of Sustainable Agriculture, we are proud to introduce two more new faculty members who have joined the UC Davis Agricultural Sustainability Institute (ASI), and offer a tribute to a friend and collaborator.

Ryan Galt is a new ASI affiliate; he is an assistant professor of sustainability and



society in the Department of Human and Community Development. His professional interests include people-environment geography, cultural and political ecology, agricultural and environmental governance, political economy of sustainable agriculture, and cartographic design. A Modesto native, Ryan was a postdoctoral research associate in the Department of Natural Resources at Cornell University before joining ASI. He received his doctorate and master's degree in geography from the University of Wisconsin at Madison, and his B.A. in geography from UC Berkeley. He enjoys bicycling, hiking, backpacking and photography and is "thrilled to be at UC Davis."

Pierre Mérel comes to UC Davis and ASI as an assistant professor in the Department



of Agricultural and Resource Economics, where his specialties are agricultural sustainability, agricultural policy, agro-industrial organization, trade policy, geographical indicators and food quality.

He received his doctorate in agricultural and resource economics at UC Davis, and his master's degree in engineering at École Nationale du Génie Rural, des Eaux et des Forêts, Paris and at École Polytechnique, Paris. Previously he worked in the food safety department in the French Ministry of Agriculture.

In the last issue of Sustainable Agriculture, I talked about how accomplishing our mission to promote science and policy for a transition to a more sustainable agriculture and food system requires the help and collaboration of many talented and inspired individuals both within and outside the Uni-

versity of California. At ASI's first strategic planning retreat this summer, I joined more than 30 of our colleagues from programs associated with ASI in paying tribute to a missing friend and collaborator: **Eric Bradford**. In 2004, Eric led the committee that recommended the establishment of ASI to address the long term sustainability of agriculture. Eric was the principal author of the resulting Agricultural Sustainability Implementation Report which was submitted to the UC Davis College of Agricultural and Environmental Sciences in September 2004. This report provided a solid foundation for the launch of ASI in 2006 and continues to guide our strategic planning. (See "New Agricultural Sustainability Institute refines strategic plan, page 1.")

Eric continued to offer his support and guidance long after the committee's work was completed. Eric passed away in July, just days before he was scheduled to participate in ASI's first strategic planning retreat. We were able to benefit from his wisdom and guidance through a written summary of the Implementation Committee Report that he had prepared for the retreat.

In his final words of guidance to ASI, Eric reminded us to strive for the sustainability of all agriculture, keep our stakeholders involved at all stages, collaborate broadly within and beyond the University of California, and to ensure that the sustainable agriculture curriculum is relevant. The full Implementation Committee Report is available at: asi.ucdavis.edu/strategic-planning.htm

Eric Bradford contributed 50 years of service to UC Davis. Throughout his career as an animal geneticist and professor in the UC Davis Department of Animal Science, he bolstered programs in livestock breeding, animal growth and reproduction, as well as agricultural sustainability. He is survived by his wife of 53 years, Elizabeth Bradford, and their four children, two sisters, and six grandchildren. He will be sorely missed by all of us, but his contributions will continue to guide our efforts.

In January 1988 when the UC Sustainable Agriculture Research and Education Program (SAREP) was in its infancy, the program's Program Advisory Committee recommended the program publish a newsletter to keep people informed about its activities and about research and education developments related to sustainability. Our public information officer **Lyra Halprin** was hired that month, and a major part of her job involved the creation of the program's newsletter. The first issue was published in October of 1988; it was a quarterly publication until 1996 when it shifted to three issues per year. The newsletter's main audience has been farmers, agricultural consultants, and farm advisors, with additional target audiences including commodity groups, consumers, policy makers, University administrators, state and federal agency personnel, and researchers. This year, with my arrival as director of both ASI and SAREP, the focus of the newsletter has expanded, with the inclusion of more information about ASI-affiliated programs and projects, including the UC Davis Student Farm, the UC Davis Sustainable Agriculture Farming Systems (SAFS) project, and the Long Term Research on Agricultural Systems (LTRAS) project. We look forward to engaging with a broad range of partners and stakeholders to shape our agenda. We will keep you posted through this newsletter and on the ASI Web site at asi.ucdavis.edu.

—Tom Tomich, director, University of California Sustainable Agriculture Research and Education Program, and director, UC Davis Agricultural Sustainability Institute

Farmers markets benefit local economies

by Lyra Halprin, ASI/ SAREP

Farmers, communities and individual residents are the three beneficiaries of local farmers markets, according to a University of California food systems analyst who reviewed studies of the markets and their growth.

“There was a huge rise in farmers markets in the last 40 years and I wanted to find out why,” said **Gail Feenstra**, food systems analyst at the UC Sustainable Agriculture Research and Education Program (SAREP) and the UC Davis Agricultural Sustainability Institute. In 1970 there were only 340 farmers markets in the United States; by 2006, there were more than 4,385 farmers markets, an increase of approximately 1200 percent. California makes up more than 11 percent or almost 500 markets, half of which are open year-round, she said.

“Farmers benefit from the ability to sell smaller and variable quantities, and learn the skills they need to increase their business,” she said. Her article “The Roles of Farmers Markets in Fueling Local Economies” in the recently released *Food for Thought* issue of the journal *Gastronomic Sciences*, reported that direct marketing venues such as farmers markets helped farmers sell their products in local communities for higher prices than they could get from wholesalers. **Annie** and **Jeff Main**, two of the founding farmers of the Davis Farmers Market, who Feenstra interviewed, noted how essential the market was to them.

“When they started their organic farm in 1975, they found that wholesale markets were virtually inaccessible to small farmers,” said Feenstra. “The Davis Farmers Market offered them a consistent marketplace where they could sell their organic produce at retail prices. Unlike other marketing outlets, the farmers market tolerated fluctuations in quantity and varieties throughout the season,



ASI/SAREP food systems analyst Gail Feenstra found that farmers markets like this one in Davis help farmers sell their products for higher prices than they could get from wholesalers. (photo by Lyra Halprin)

and became a place where they could learn the skills they needed.”

Feenstra said the total gross receipts farmers receive at farmers markets, although modest by comparison to supermarkets, are still significant. Her 1999 study of California farmers markets estimated total annual sales at approximately \$140 million. She noted that the Davis Farmers Market averaged \$2 million in annual sales in 2006 for its year-round weekly market (eight hours of sales per week).

Communities that support local agricultural production systems and food marketing as part of a diversified economic development plan have greater control over their destinies, Feenstra said. An important way that communities support and benefit from farmers markets is through social interaction.

“The social benefit that farmers markets bring to communities can’t be overestimated,” she said. In her interviews with market patrons, she found farmers markets to be a major source of interaction, both between farmers and their customers, and among the market visitors. Feenstra cited research that shows farmers markets not only encourage economic transactions on their premises, but also bring customers into town where they make purchases at other businesses.

Individuals said they benefit from patronizing farmers markets by their ability to purchase fresh fruits, vegetables, eggs, and meat, and value-added items including baked goods, olive oil, jam and salad dressing. Customers Feenstra interviewed expressed positive feelings about buying food they believe to be clean and safe from farmers they know.

Low-income and elderly community residents receive particular benefits from

farmers markets, Feenstra said, where they are more likely to find healthful, affordable, nutritious food or ethnically appropriate foods than at retail food outlets. Many markets accept food stamps or vouchers from the Farmers Market Nutrition Program or the Senior Farmers Market Nutrition Program. Feenstra noted that farmers markets have become the foundation of local food systems for low-income clientele and some ethnic groups in many regions of California.

“At this point in history when we see cracks in the health of our environment, economic and social systems and declining natural resources, concerns about the future of long-term energy, and rising obesity rates, creating and sustaining local food economies with farmers markets as an important component, may be both an admirable goal and a necessity,” Feenstra said. “The markets are important exchange networks that offer farmers, consumers and communities opportunities to participate in and strengthen the local food economies in unique places.”

The journal article is available in Italian and English at <http://www.unisgjournal.it/>.

Feenstra has written extensively on farm-to-school programs and farmers markets throughout the United States. Her article on farmers markets in *Gastronomic Sciences* is available online at http://www.unisgjournal.it/index_eng.htm.

Her research on farm-to-school salad bars is available as a free download at <http://www.sarep.ucdavis.edu/cdpp/farmto-school/index.htm>. Her work on regional marketing is also available at http://www.sarep.ucdavis.edu/cdpp/foodsystems/MarketingReportFinal_5_10.pdf.



Participants at the 2007 SAFS field day gathered at a sunflower field at Muller and Sons Farm in Woodland. (photo by Kent Brittan)

Growers, researchers collaborate at sustainable ag field day

by Lyra Halprin, ASI/ SAREP

One hundred researchers, farmers, representatives from local, state and federal government agencies and non-profit organizations gathered in a Yolo County grower's sunflower and tomato fields to see the implementation of sustainable agricultural farming practices championed by University of California researchers.

The UC Davis Sustainable Agriculture Farming Systems (SAFS) project's 19th annual field day took place June 22, 2007 at Muller and Sons Farm in Woodland. Members of the Muller family have been cooperators with the SAFS project for many years, according to **Will Horwath**, SAFS project leader and a soil biogeochemist in UC Davis's land, air and water resources (LAWR) department.

Horwath said many of the SAFS project's reduced tillage, buried drip, cover crop and 19-year comparison of conventional, low-input and organic farming systems take place at UC Davis' Russell Ranch, which provides a living laboratory for students and the campus' Agricultural Sustainability Institute (ASI). The ASI was launched

in 2005 with a \$1.5 million endowment from the Kellogg Foundation to expand research and teaching of environmentally sustainable farming practices, including organic farming.

Horwath noted that more than 10 growers have been active participants in the SAFS project over the years, both on their own fields and in consultation about campus-based experiments. More than 50 faculty, Cooperative Extension researchers and students have participated in experiments at SAFS experiments since its inception in 1988. The SAFS project has collaborated on outreach to growers, policy makers and scientists with UC's statewide Sustainable Agriculture Research and Education Program (SAREP).

"To satisfy our various audiences, it's useful to vary the venue of the field day," said Horwath. "Field day evaluations indicate that some farmers prefer the Russell Ranch events to observe our research results, while agency officials, university researchers and non-profit organization representatives tend to prefer seeing our farming practice experiments underway in farmers' fields."

The 2007 field day included research updates on how to lessen environmental impacts while maintaining yields, as well as observations and research results from farm advisors and grower **Frank Muller** about different management practices on the Muller fields.

Farmer panel

As in previous years, one of the most popular features of the field day was the grower panel. This year, the focus was on energy and water; area farmers talked about promising methods they have tried including drip irrigation, reduced tillage and the use of cover crops.

Jim Durst, who farms at Hungry Hollow near Esparto, talked about his family's goal of using 10 percent less fuel this year. Durst produces fresh market produce, rotated with alfalfa.

"We're trying to do that by questioning ev-

ery trip we make anywhere with any vehicle—cars, trucks or tractors. We ask ourselves, ‘do we really need to make a second pass over the field, do we need to pump to irrigate this field or can I use gravity flow? Do I need to go to town right now, or can I wait until tomorrow and consolidate trips?’ he said. “I try to look at it as if I only had 10 gallons of fuel left, so I’ll wait until something is really important to use it.”

Durst says his farm uses around 20,000 gallons of off-road diesel each year at \$2.50/gal. At the end of the year he will compare records to see if they have saved fuel.

“If we save 10 percent, that’s \$5,000,” he said. “If everyone used 10 percent less fuel, it would make a big impact. If we can do it on a small farm, the hope is that others can replicate it.”

Durst said he has retired a few of the farm pickups in favor of energy-efficient Kabota all-terrain vehicles that get 40-50 mpg.

“ATVs work for us because all our fields are contiguous. If people are farming throughout the county, across roads, that might not work,” he said.

Ben Carter of Colusa, who farms diversified field crops, row crops, orchards, and livestock, noted that he looks to the university for solutions to problems farmers have identified in their fields.

Carter said other growers are his best resource, especially for organic farming practices.

“That’s why this kind of field day is so valuable—it gives us growers a chance to network,” he said. “On the organic side, the university is a little bit behind the curve on research, but is responsive about picking up ideas growers suggest and testing the veracity of these ideas that we’re all using empirically. Unfortunately, the university doesn’t have the answers yet in organic like they do in conventional agriculture.

“So the growers are trying a lot of things—weed control, pest control,” he said. “And I find that the growers are on the leading edge. And that’s ok.”

Carter said he investigated the idea of using solar energy to power a 50 hp well, but the capital cost was too high.

“It was going to be about a million dollars for 150 acres,” he said. “It didn’t pencil at all. Instead, to save energy for ag well applications, we are doing pump tests to make sure they’re efficient, and converting some of the

diesel pumps to electric because the cost of diesel is so high. We also save money by using ‘time of use’ irrigation – off-peak electricity for irrigation.”

Carter said he has three water recirculation systems that are very energy efficient.

“We can get the same yield of water with much lower energy use with the recirculation systems,” he said. “It’s not for everyone, but given the layout of our land, it makes a lot of sense for us. I’m looking at developing one more. The USDA can help people set up a recirculation system through the NRCS.”

Tony Turkovitch, partner in Button and Turkovitch Ranch in Winters, said that his farming operation is using more drip irrigation.

“Overall, it’s more water-efficient, but we do use a little more energy to pressurize the drip system compared to an open discharger or a gravity flow system in furrows,” he said. “In general, we’ve conserved a lot of energy by going to minimum tillage on most of our land, where we retain the same beds all the time. By using the GPS system, and maintaining the same furrows, we’ve really minimized our trips across the field compared to what we used to do conventionally.”

First-generation farmer **Scott Park** of Meridian said improved soil structure is the most important factor in reducing energy use on his land.

“I’m cutting fuel consumption by improving the soil,” he said. “Cover crops are responsible for our greatly improved soil structure. I need less horsepower to loosen the soil because it has become more friable—crumbly—over time.”

Park said he has been using cover crops for more than 16 years.

“Cover crops diminish water use because we’re holding a lot more water on the fields in the winter,” he said. “The soil has improved and I don’t have to irrigate as often. Friable soil holds more water, and for sure we have less water runoff.”

Grower Frank Muller, who hosted the field day with his brothers Louie and Tom, noted that farmers must be flexible in the way they approach their farming operations.

“It’s a moving target, what we’re doing out here,” he said. “What people expect from farms is not the same as 20 years ago. Water and energy use are bottom-line related, but are also environmentally related now, too. And what we do today is not going to be the same in 20 years.”

Richard Cushman, a Dixon farmer, calls himself an anomaly in a heavily irrigated region.

“No one farms the way I do, but I guess I’m an example of what can be done for rain-fed production,” he said. Cushman farms 143 acres in Dixon, using only a no-till drill and a sprayer to raise cereals.

“My farm is entirely rainfed,” he said. “I don’t irrigate, till or export water.” In the last year, when only nine inches of rain fell, he harvested 45 sacks/acre of triticale.

Field site presentations

Soil food web, weed management in conservation tillage, and water management and runoff were among the field site presentations.

Howard Ferris, a UC Davis Nematology professor and interim deputy director of ASI, discussed the importance of a healthy soil food web.

SAFS research manager **Z. Kabir**, Hor-



Yolo County farm advisor and SAFS team member Gene Miyao (center) moderates the grower panel at the annual SAFS field day. Grower participants included (left to right) Frank Muller, Scott Park, Tony Turkovitch, Jim Durst, [Miyao], Ben Carter and Richard Cushman.

wath and **Stephanie Ma**, SAFS project technician, demonstrated water management and runoff techniques at a Muller sunflower field.

Tom Lanini, UC Davis Cooperative Extension weed ecologist, talked about weed control and conservation tillage (CT). He noted that in the Midwest, where many farmers have adopted CT, they've replaced tillage with herbicides to control weeds.

"In California, we're trying to avoid the use of herbicides as a substitute," he said. "Subsurface drip irrigation gives us an alternative by only wetting the part of the bed where the plant is, thereby preventing the growth of many weeds."

When a farmer noted that subsurface drip irrigation doesn't allow cover crops to be fully utilized because they only break down in the wetted zone, Lanini suggested using two drip lines per bed.

"Two drips lines could help wet more of the soil profile, and therefore allow more of the nutrients to be taken up from the cover crop," he said.

At two Muller farm fields, Yolo County farm advisors **Kent Brittan** and **Gene Miyao** presented a production overview for the county.

Standing amidst hybrid sunflowers grown for seed, Brittan noted the popularity of the crop.

"Wheat acreage in the county is up slightly, but the real demand for land here is for hybrid sunflower seed, alfalfa and tomatoes," he said. "The price of corn has put pressure on row cropping choices for many counties, but Yolo County acreage hasn't changed much. Safflower acreage would increase if more of the crop could be crushed locally. Most of the local crop must be transported to Corcoran for crushing, which adds to the cost."

Miyao added that almonds are one of the permanent crops that have increased throughout Yolo County.

He told field day attendees that the Muller farm represents a very diversified operation.

"Their crop mix ranges from wine grapes and olives to sunflowers, alfalfa, tomatoes and bell peppers along with at least a half-dozen other crops," he said. "While the Muller brothers are bottom-line oriented, they are keenly interested in natural resource management that is sustainable. They are serious business people who have demonstrated that economic success

can include concern for the environment."

Louise Jackson, a professor in UC Davis' LAWR department and Cooperative Extension specialist, talked about expanding from farmscape to landscape levels. She described recent projects in Yolo County that are examining the role of hedgerows, tailwater pond management, and restoration of waterway vegetation on nutrient cycling, water quality and carbon sequestration. These projects are focusing on how biodiversity of plants and soil organisms affect the diverse set of ecosystem services in an agricultural landscape.

Johan Six, a UC Davis plant sciences assistant professor, discussed greenhouse gas (GHG) mitigation in alternative agricultural systems, including reduced tillage, organic, cover cropping systems. Six worked with the ecosystem model DayCent calibrated for California conditions, which showed that reduced tillage does not lead to significant mitigation except if it is integrated with cover cropping.

"Management options leading to increased carbon input, such as cover cropping and organic practices, are the most effective in reducing greenhouse gas," Six said. "It is evident that increasing carbon inputs in agroecosystems is key."

Horwath said preliminary data suggest that subsurface drip reduce both carbon dioxide and nitrous oxides emission compared to furrow irrigation.

Karen Klonsky, UC Cooperative Extension specialist in the UC Davis agricultural and resource economics department, discussed the economic performance of the alternative farming systems experiments at the UC Davis Russell Ranch facility.

"Conservation tillage cut the number of field operations and fuel use in half for both tomato and corn," she said. "The organic systems were the most expensive due to the cover crops and manure use."

Klonsky noted that the organic yield was lower than conventional for both crops and both tillage systems, with the exception of standard tillage tomato. However, the organic systems showed the highest revenue for both crops because the organic price premiums for tomatoes was 45 percent, and for corn 71 percent over the conventional price.

"The bottom line was that standard tillage organic with price premiums was the

most profitable tomato system and conservation tillage conventional the most profitable corn system," she said. "For both crops the standard tillage, winter-legume cover cropped system was the least profitable system."

Keynote speaker **Tom Tomich**, who is the director of both the ASI and the statewide SAREP, described his programs as the hub of UC sustainable agriculture research and education.

Tomich noted that in addition to the new ASI and SAREP, which was founded in 1986, UC sustainable agriculture resources include the UC Davis Student Experimental Farm, which is 30 years old, the UC Davis Long Term Research on Agricultural Systems (LTRAS) project, which has been underway for 14 years, and the SAFS project that began more than 19 years ago.

"At the ASI, we want to link cutting edge campus work to underlying 'big process' connections," he said. "And the way we accomplish this is with interactions with farmers. The SAFS project is an example of the strong collaborations between UC's excellent research staff and the extraordinary farmers of California." Tomich noted that SAFS has produced more research papers than any other USDA-funded project.

Horwath described the original SAFS project, which compared conventional, low-input and organic management systems in traditional Central Valley rotations.

"That project helped us develop a much clearer understanding of the economic opportunities for sustainable management," he said. Some of the most important results from the original SAFS project showed how growers can reduce synthetic fertilizer inputs; how to manage cover crops, crop residue and soil organic matter; and how to manage weeds and pests with fewer pesticides.

"The project now has a different focus," Horwath said. "We're comparing the effects of conservation tillage and cover cropping on the way sediment, nutrients and pesticides are transported off conventional, cover-cropped and organic farming systems. We're also looking at the tradeoff between ecological benefits and economic costs in a sustainable system. It is vital that we share our results with farmers and the broader agricultural community."

Horwath said the project continues to rely

See FIELD DAY on p.9

Campbell Soup gift for UC sustainable ag programs

The UC Davis Agricultural Sustainability Institute has received \$250,000 from Campbell Soup Company to support ASI's sustainable agriculture research, education and outreach. Reducing childhood obesity with school gardens, using subsurface drip irrigation to reduce greenhouse gas emissions, and using nitrogen-rich cover crops to improve soils are among the benefits to Californians of ASI research projects. The contribution from Campbell's, known for its iconic tomato soup can, will help fund a new generation of research on healthy soil, pest management, and water management.

"We are thrilled to receive this donation, and ready to work with Campbell's on education and outreach projects that can address child nutrition issues, as well as research projects on crop rotations, cover crops and nitrogen uptake," said **Tom Tomich**, ASI director and director of the statewide UC Sustainable Agriculture Research and Education Program (SAREP).

"Our programs range from the UC Davis Children's Garden Program to a long-term farming practices project with decades of data on carbon sequestration and nitrogen runoff.

FIELD DAY CONTINUED FROM PAGE 8

on input from growers and farm advisors on the research team. The geographic scope of the project has expanded, with researchers taking measurements at farms in Yolo and Stanislaus counties to identify relationships between management practices and runoff in different areas. CALFED and Water Resource Board grants are funding a major portion of the work, with additional support from the Kearney Foundation of Soil Science, California Department of Food and Agriculture and Unilever-Best Foods.

For more information about the SAFS project, see <http://safs.ucdavis.edu>.



The Campbell Soup gift will support ASI's work including UC Davis Student Farm and Children's Garden Program projects, according to ASI/SAREP director Tom Tomich, photographed here at the Student Farm. (photo by Karin Higgins)

We know Campbell's wants to make a significant contribution to the future of food and farming and the health of future generations in our state and country, which makes it a perfect fit with our own mission and goals."

Campbell Soup Company, which began producing canned tomatoes, vegetables, jellies and soups in 1869, has evolved into a worldwide manufacturer and marketer of food products, many of which include vegetables and fruits. In recognition of its agricultural roots, the company is focusing on the support of sustainable agriculture research, education and outreach with the establishment of an endowed fund at the UC Davis College of Agricultural and Environmental Sciences' ASI.

Carl Johnson, Campbell Soup Company senior vice president and chief strategy officer, said the company has always worked closely with farmers and university researchers to ensure that it was supplied with the highest quality ingredients.

"By expanding our long-standing partnership with UC Davis, we hope to create a healthier environment that produces healthi-

er foods, not only for today's consumers, but for future generations," he said. "Our endowment will promote the preservation of the world's precious farmland and advance the practice of integrated pest management. We are very pleased to make this commitment to further the excellence of agricultural sustainability research and outreach at UC Davis."

Johnson said Campbell's has a long history in the Davis community, where it operates an agricultural research facility that serves as the headquarters for the Campbell Seed Company. The company also operates tomato processing plants in Dixon and Stockton, as well as a major west coast production facility in Sacramento that produces the company's soups, sauces, and beverages.

In addition to ASI, which was established in 2005, and SAREP, which is celebrating its 20th anniversary, UC's sustainable agriculture resources include the UC Davis Student Farm, UC Davis Long Term Research on Agricultural Systems project, and Sustainable Agriculture Farming Systems project. The ASI Web site is asi.ucdavis.edu.

RESOURCES

NEW BOOKS

Farming with Nature, edited by **Sara Scherr** and **Jeffrey McNeely**. Island Press, 472 pages, 2007. ASI/SAREP director **Tom Tomich** is the lead author and coauthor on two chapters, “Research partnerships,” and “Watershed management.” The book is a collaboration among agricultural and ecological scientists, leading field conservationists, and farm and community leaders, and focuses on the state of current knowledge of ecoagriculture. Available at islandpress.org or by calling (800) 621-2736.

Remaking the North American Food System: Strategies for Sustainability, Edited by **C. Clare Hinrichs** and **Thomas A. Lyson**. University of Nebraska Press, 384 pages. Expected availability January 1, 2008. **Gail Feenstra**, food systems analyst for ASI/SAREP, is the co-author of a chapter, “Local Food Systems in a Globalizing Environment.” The book examines the resurgence of interest in rebuilding the links between agricultural production and food consumption as a way to overcome some of the negative implications of industrial and global trends in the food and agricultural system. Written by a diverse group of scholars and practitioners, the chapters describe the many efforts throughout North America to craft and sustain alternative food systems that can improve social, economic, environmental, and health outcomes. Available at <http://www.nebraskapress.unl.edu/product/Remaking-the-North-American-Food-System,673331.aspx>; (800)755-1105 pressmail@unl.edu.

A Growing Movement: A Decade of Farm to School in California. **Anupama Joshi** and **Moira Beery**, Center for Food and Justice, Urban and Environmental Policy Insti-

tute, Occidental College. 2007, 40 pages. The farm-to-school movement began in California more than 10 years ago. This new report details the history and impact on students, farmers and communities. Download free report at : <http://departments.oxy.edu/uepi/cfj/index.htm> (report is listed on right side bar)

SPANISH/ENGLISH CROP MARKET PUBLICATION

Nuevos Mercados para Su Cosecha/New Markets for Your Crops. Community Food Security Coalition and the National Center for Appropriate Technology, 2007, 8 pages. This illustrated publication focuses on how Latino farmers can sell their produce to local institutions including hospitals, colleges, schools, universities, retirement homes and day care centers. Included is a state-by-state listing of organizations that help Latino farmers sell their products to institutions. This publication can be accessed at both the ATTRA Web site: [/http://attra.ncat.org/espanol/pdf/nuevos_mercados.pdf/](http://attra.ncat.org/espanol/pdf/nuevos_mercados.pdf) and the Community Food Security Coalition website at foodsecurity.org/NuevosMercados.pdf. ATTRA can also provide hardcopies free of charge by calling (800) 346-9140.

Esta historieta ilustrada trata de un nuevo mercado para los agricultores de pequeña escala. Explica como pueden vender sus productos a las instituciones locales, tal

como hospitales, colegios de comunidad, universidades,

escuelas, asilos de ancianos,

centros comunitarios para adultos mayores, guarderías infantiles, prisiones, y cárceles. Incluye información sobre

organizaciones que ayudan a agricultores Latinos vender sus productos a instituciones. Esta publicación se encuentra por el Internet al sitio web de ATTRA:

http://attra.ncat.org/espanol/pdf/nuevos_mercados.

pdf y también al sitio web de Community Food Security Coalition at foodsecurity.org/NuevosMercados.pdf. También puede llamar a ATTRA—(800) 346-9140— para recibir números en papel gratis.

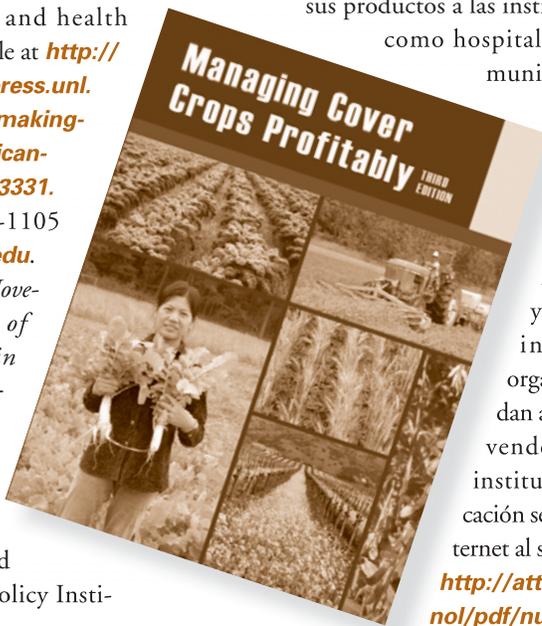
NEW SARE PUBLICATIONS

The USDA SARE’s Sustainable Agriculture Network (SAN) has three new releases that may be downloaded free from its Web site, or ordered as print publications at sare.org/WebStore, by calling (301) 374-9696, or by sending check/money order to Sustainable Agriculture Publications, PO Box 753, Waldorf, MD 20604-0753. Specify title when ordering by mail.

Managing Cover Crops Profitably, 3rd Edition. 2007. This handbook explores how and why cover crops work and provides information to build cover crops into any farming operation. Completely revised and updated, the 3rd edition includes new chapters on brassicas and mustards, six new farm profiles, as well as a comprehensive chapter on the use of cover crops in conservation tillage systems. Updates throughout are based on more than 100 new literature citations and consultations with cover crop researchers and practitioners around the country. 244 pages. Download free at www.sare.org/publications/covercrops.htm, or purchase print copies for \$19.

Marketing Strategies for Farmers and Ranchers. December 2006. Spotlights innovative research into a range of marketing options, including community supported agriculture (CSA), agri-tourism, season extension strategies, value-added, and direct marketing to restaurants and institutions. 20 pages. Download free at <http://www.sare.org/publications/marketing.htm>, or order free hardcopy edition (no shipping charge).

Rangeland Management Strategies. February 2007. This publication features innovative SARE-funded research on creating and sustaining a healthy range. Throughout, researchers and ranchers share goals and successes in winter and multi-species grazing, managing forage and other vegetation and protecting riparian areas. 16 pages. Down-



load free at <http://www.sare.org/publications/ranching.htm>, or order free hardcopy edition (no shipping charge).

Other recent titles from SARE/SAN include:

- *How to Direct Market Your Beef*. March 2006. Describes how a ranching family became a profitable, grass-based beef operation focused on direct-market sales. 96 pages. Download free at www.sare.org/publications/beef.htm, or purchase print copies (\$14.95 plus \$5.95 s/h).
- *Manage Insects on Your Farm: A Guide to Ecological Strategies*. December 2005. Offers help to farmers on effective, affordable and environmentally sound insect pest management strategies. Download it free at www.sare.org/publications/insect.htm, or purchase print copies (\$15.95 plus \$5.95 s/h).

DVDs

The Future of Food, newly revised special edition two-DVD set. Lily Films, Inc. Includes feature-length documentary; interviews with Michael Hansen, Arpad Pusztai, Michael Pollan; films “The Happy Box,” about Community Supported Agriculture (CSA) by Erica Filanc; “How to Save Seeds from Vegetables,” by Underwood Gardens; “Planting Seeds,” on school farming programs by the City of Santa Monica; GE-free recipes; and excerpts from four other films. The DVD ROM includes the curriculum “Food, Agriculture, Environment and Development,” short versions of the curriculum for teaching within shorter timeframes, active web links, group activities and class assignments, graphics and images to accompany lectures; unlimited public screening rights. Recommended for use at universities and colleges, as well as for the education of upper-level high school students or other interested individuals. For more information, contact Lily Films, Inc. at <https://www.futureoffoodstore.com>, or contact Sarah Gorsline, Lily Films, Inc. PO Box 895, Mill Valley, CA 94942; (415) 383-0553; info@lilyfilms.com.

SARE's 20th anniversary conference *The New American Farm* set for Kansas, March '08

The USDA SARE program national conference is scheduled March 25-27, 2008 in Kansas City, Mo. It will feature sessions on innovative farming and ranching methods, marketing, specialty crops, and energy efficiency. Researchers, extensionists, and state-of-the-art practitioners will share work and experiences.

SARE's conference *The New American Farm: Advancing the frontier of sustainable agriculture*, is open to farmers, ranchers, teachers, researchers, students, advocates – or simply curious consumers interested in the groundbreaking and rapidly expanding field of sustainable agriculture in America, according to **David Chaney**, education coordinator for UC SAREP, and the Western Region SARE representative. Exhibit and sponsorship opportunities are available.

For more information visit the conference Web site sare.org/2008conference or contact **Sean McGovern** at outreach@sare.org for more information.

New Voices competition at SARE national conference

SARE is sponsoring a *New Voices* contest, which will give one “visionary” the chance to share his or her “vision and roadmap” for a sustainable American agriculture, according to **David Chaney**, Western Region SARE representative. In support of SARE's mission to advance sustainable practices and innovations within American agriculture, individuals are invited to submit written, audio and or video entries that articulate new perspectives and illustrate an inspirational and pioneering vision for the advancement of sustainable agriculture over the next 20 years, Chaney said. Submissions should address the entrant's vision of how sustainable production and marketing systems would improve profitability, stewardship of the land and water, and quality of life for farmers, ranchers and their communities. Practical strategies for advancing sustainable agriculture on a wider scale will be a key component of the successful entry, Chaney said.

The winner will be invited to present their entry at the closing plenary session of SARE's 20th anniversary *New American Farm* conference March 25-27, 2008 in Kansas City, Mo. Top finalists will also be invited to participate in leadership sessions at the conference at SARE's expense. Deadline for entries is December 7, 2007; winners will be announced January 15, 2008. For more information contact **Sean McGovern** at outreach@sare.org

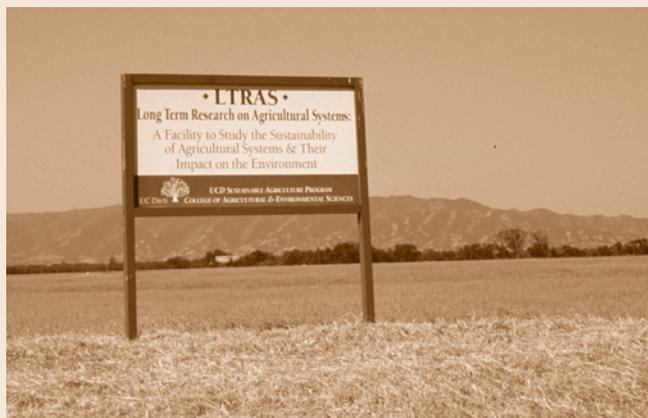
CALENDAR

* SAREP WEB CALENDAR AND ONLINE COURSE

SAREP offers a regularly updated sustainable agriculture calendar on our World Wide Web site at: www.sarep.ucdavis.edu (click "Calendar" on top menu bar). Please feel free to add sustainable agriculture events. In addition, we offer an online course for pest control advisors and others titled Ecological Pest Management. Up to 11 CE credits for California PCAs. See www.sarep.ucdavis.edu/courses/.

* NATIONAL/INTERNATIONAL CALENDAR

The National Agricultural Library maintains a calendar as part of AgNIC at www.agnic.org. It links to more than 1,200 major national and international agricultural conferences.



The Long Term Research on Agricultural Systems (LTRAS) project at the UC Davis Russell Ranch Agricultural Facility is an ASI-affiliated program.

NOVEMBER

27 – 28 *Fresh Approaches to Fertilizing Techniques*, Tulare. Heritage Complex, International Agri-Center. For agricultural supply, service consultants, growers, University Extension, agency personnel. Focus: How groundbreaking fertilizer research can be applied to agricultural practices. Research data, practical applications. PCA/CCA credits. Information: cdfa.ca.gov/is/flders/frep.html or contact FREP at (916) 445-0444.

JANUARY 2008

23 – 26 *28th Annual Ecological Farming Conference*, Root Values: Connecting Ecology, Community, and the Land. Location: Asilomar Conference Grounds, Pacific Grove, CA. More than 50 workshops, innovative farming techniques, organic meals, farm tours, organic wine tasting, and exhibitors. Information: <http://www.eco-farm.org>.

FEBRUARY

24 – 26 *California Small Farm Conference*, Visalia. State's premier gathering of small farmers and those who support them. 3-day educational conference includes on-farm tours, focused workshops, general educational sessions and opportunities for peer networking. Updates, scholarships applications, registration at californiafarmconference.com.

MARCH 2008

25 – 27 20th Anniversary: SARE 2008 National Conference, Kansas City, MO. Focus: forging an agriculture that is profitable, environmentally sound, & good for people & communities. 20 years of advancing a more sustainable agriculture through nationwide competitive grants program, & staying in touch with needs of farmers/ranchers through North Central, Northeast, Southern & Western regional programs. Information at sare.org/2008conference.

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