

SUSTAINABLE AGRICULTURE

Sustainable ag field day showcases research, points to Valley growth management



Sustainable ag field day visitors sitting on a hay wagon hear presentation by UC Cooperative Extension Specialist Tom Lanini (center). (photo by Lyra Halprin, SAREP)

Research updates on how to lessen environmental impacts while maintaining yields were presented along with a rousing talk on the importance of managing Central Valley growth at the UC Davis sustainable farming field day June 23, 2005

The field day took place at UCD's Russell Ranch, home to many of the campus' long-term agriculture studies. More than 20 faculty, Cooperative Extension researchers, students, and growers are participating in experiments at the site and working on outreach with UC's statewide Sustainable Agriculture Research and Education Program.

California's enormous growth pressures threaten agriculture and the quality of life in the Great Central Valley but there are many things that can be done to encourage sustainability in the region, according to **Carol Whiteside**, president of the Great Valley Center, and keynote speaker at the UCD field day. Whiteside, a former mayor of Modesto and aide to Governor Pete Wilson, founded the Great Valley Center to focus on the economic, social and environmental health of California's Central Valley.

"We need to build a constituency for sustainability in the Valley," said Whiteside, whose organization is working to develop effective local leadership to help the region deal with the enormous pressures of a growth rate that exceeds the national and state averages, and which may result in 12 million residents in 20-30 years.

Whiteside urged the farm community to work with environmentalists and be part of the agenda to protect and sustain the Valley. To develop the economic, social and environmental well-being of an area,

communities must learn new ways to deal with growth, she said. Growers should take advantage of the expanded market for organic and locally grown produce and be creative rather than allow the "demise of agriculture."

Sustainable farming project leader **William Horwath**, a UC Davis professor and soil biogeochemist in the land, air and water resources (LAWR) department, noted that UC researchers and cooperators are working on ag sustainability issues at the Russell Ranch location and on a 14-acre companion site. Researchers shared results on conservation tillage

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and the use of winter cover crops, and the use of underground drip irrigation to reduce weeds and pests, cut costs and lessen environmental impacts while maintaining yields.

The long-term agriculture studies at the Russell Ranch provide a living laboratory for students and the new Agricultural Sustainability Institute (ASI) at UCD. The ASI was launched recently with a \$1.5 million endowment from the Kellogg Foundation to expand research and teaching of environmentally sustainable farming practices, including organic farming.

Tractor-drawn hay wagons moved the almost 100 participants to four field sites where researchers explained experiments designed to help growers with various rotations of tomatoes, corn, wheat, and cover crops. Each rotation is grown in organic, reduced inputs and conventional plots. Researchers are experimenting with conservation tillage and standard tillage for each method.

Field site presentations

Reduced tillage experiments are of interest to growers and others who are concerned with weed control, the use of herbicides, and water quality issues. Researchers had mixed results to report at the field day.

“We have very few weeds in this field,” said **Dennis Bryant**, associate director of the Long-Term Research in Agricultural Systems (LTRAS) experiment, standing at a tomato plot that received reduced tillage.

According to **Aaron Ristow**, a graduate student researcher in the soils and biogeochemistry group, reduced tillage has not shown expected improvement for runoff water quality. He said this might be due to increased compaction under reduced tillage.

“Over the long term, however, the buildup of organic matter at the surface of reduced-till soil should lead to an increase in water infiltration,” Ristow said. “We need more research to see how different degrees of soil disturbance might minimize runoff. Cover cropping significantly improves water quality and may work well in conservation tillage systems because of the ability of the cover crop to function as a ‘biological plow.’”

Drip irrigation, however, had a positive effect on weed reduction. Researchers

explained that underground drip irrigation sends water directly to each tomato plant’s roots, thereby avoiding unnecessary irrigation.

Horwath explained that under subsurface drip irrigation, there are fewer weeds and less need for herbicides compared to furrow irrigation, where water flows across and wets the soil surface.

“We think there may be less of the potent greenhouse gas nitrous oxide emitted,” he said.

Graduate student researcher **Cynthia Kallenbach**, of the soils and biogeochemistry group, said preliminary results of her studies show lower carbon dioxide emissions during the growing season under subsurface drip irrigation. She believes this is because subsurface watering allows the plant roots to expend less energy to access water and nutrients and also provides less moisture to soil microorganisms at the soil surface.

Gene Miyao, a UC Cooperative Extension farm advisor for Yolo, Solano and Sacramento counties, noted, however, that underground drip irrigation might be too costly for some farmers to install. Those who do often find themselves forced to grow only high-paying crops like tomatoes year after year to pay for their investment.

On another plot, researchers have grown wheat without fertilizer or irrigation, leaving the land fallow every other year. Data show, however, that leaving the land fallow reduces the build-up of desirable organic matter but has not yet impacted yield. Substituting fallow with cover crops increases organic matter and promotes soil productivity.

“It [alternating fallow years] was the traditional farming system in California before irrigation,” said **Steve Kaffka**, a UC Cooperative Extension agronomy specialist and LTRAS director. Kaffka talked about the possibility of changing lengths of crop rotations to “tweak” the system.

Kent Brittan, a UC Cooperative Ex-

tension farm advisor for Yolo, Solano and Sacramento counties, said farmers in the Midwest and Eastern states have been using no-till techniques for about 30 years with much success. But they grow only one or two crops, usually wheat and corn, which is not profitable in California where growers are forced to diversify.

“The problem is, California farmers rotate crops and their yield ‘takes a hit’ when they try reduced tillage,” Brittan said. “There’s no easy answer. We’re continuing to experiment with different combinations of methods.”

Tom Lanini, a UC Cooperative Extension specialist in weed ecology, addressed the effect of reduced tillage on weeds.

“Weeds are what’s killing us in conservation tillage,” he said, noting that other methods of weed control become necessary.

In a search for solutions to increased



Carol Whiteside, president of the Great Valley Center, talks to Will Horwath, sustainable farming project leader. (photo by Lyra Halprin, SAREP)

weed populations in reduced tillage fields, Lanini has had some success reducing weeds with clove oil and other non-toxic herbicides.

After the field discussions, **Karen Klonsky**, UC Cooperative Extension specialist in the UCD agricultural and resource economics department, discussed the economic impact of conservation tillage management systems.

“Our analysis demonstrates the potential for conservation tillage to decrease operating costs for both processing tomato and corn,” she said.

She noted, however, that despite these encouraging findings, conservation tillage would not be attractive to growers unless yields are

comparable to those under standard tillage.

“Our challenge in the coming season is to modify the systems to improve yields without compromising the spirit of conservation tillage,” she said.

Farmer panel

A panel discussion featured local farmers talking about promising methods they’ve tried, and their impressions of the usefulness of conservation tillage.

Tony Turkovich, owner of Turkovich Ranch in Winters, said he has tried a diverse range of crop-management techniques. The challenge, he said, is different soil conditions make it impossible to employ the same methods on each field. He’s pleased, though, to see university researchers investigating alternative methods.

“We’re glad to see them pushing the envelope to see what can be done,” Turkovich said.

First-generation farmer **Scott Park** of Meridian, who has been using cover crops for 16 years, summarized the grower’s point of view by saying he is interested in sustainability if he can “make the ground better and still make a buck.”

Bruce Rominger, who farms with his family in Winters, echoed the importance of good economics, and said there is a big learning curve working with reduced tillage.

“If I produce less per acre with new methods, I can’t do it,” he said.

Grower **Frank Muller** stressed the importance of weighing new production practices for individual farms and told other farmers to ask, “does it work for you?” He noted that profitability is a key factor for younger farmers, as is the ability to have some time off from the daily grind of farming.

For more information about conservation tillage research, see the Sustainable Agriculture Farming Systems (SAFS) Web site at <http://safs.ucdavis.edu>. Additional information on the LTRAS site is at <http://ltras.ucdavis.edu/>. For more information on the Great Valley Center, see <http://www.greatvalley.org/>.

—By Lyra Halprin and Bev Ransom of SAREP, with reporting by Sharon Stello of the Davis Enterprise.

SAREP’s future, market forces

We had welcome news on July 6 that the W.K. Kellogg Foundation will provide \$1.5 million to UC Davis for an endowed Professorship in Sustainable Food Systems. This Professor will be the Director of the new UCD Agricultural Sustainability Institute (ASI) and UC SAREP, ANR’s existing statewide program focused on sustainable food and farming systems. The prestige and funding from this endowment will help to recruit an internationally recognized Director for the ASI and SAREP, who will be able to bring new ideas, vitality and leadership to research, education and outreach to sustainable agriculture at UC. Coupled with other resources that the College of Agriculture and Environmental Sciences (CAES) and ANR will provide, the recurring funding that an endowment generates from interest payments will provide a firm foundation for growth in UC efforts for sustainability. This collaboration shows a keen willingness by both the College and ANR to take advantage of the synergy produced by the coordination of their activities in sustainability, while maintaining SAREP’s unique role in statewide research and education.

We still have a long way to go. A recent survey by SAREP (see page 4, “UC organic ag resources match statewide production”) showed that the 2003-04 investment by UC ANR into research and education on organic agriculture was about \$6.7 million or 2% of its total budget (which included

many other worthy activities such as nutrition, forestry and human resources). While UC ANR’s overall investment will pleasantly surprise some people by approximately matching the proportion of all food production in California that is organic, others will argue that the UC should provide even more leadership and investment.

However, the history of integrated pest management (IPM) research and outreach suggests that public sector investment alone is not necessarily enough to achieve sustainable outcomes. Despite the large investments that have been made in IPM over the years (the combination of federal, state and private funds has been estimated at more than \$60 million per year in California alone), reductions in pesticide use have been modest, even if one ignores relatively benign pesticides like sulfur and focuses on the more risky pesticides. The investment has certainly generated a range of alternatives to pesticides, but a key issue is probably the relative lack of incentives for growers to adopt these more sustainable practices. The market seems more inclined to reward low prices than healthy and sustainable production. SAREP continues to focus attention on such social and economic considerations that are critical to improving the sustainability of agriculture.

—Rick Roush, interim director, University of California Sustainable Agriculture Research and Education Program

UC ANR organic ag resources match statewide production

A new University of California survey indicates that about two percent, or \$6.7 million of UC Agriculture and Natural Resources funds go toward personnel and grant projects targeting organic farming research and education. Organically grown farm products represent about two percent of the value of all agriculture statewide.

“Organic farming in California has increased significantly in acreage, number of farms and farm gate value over the last decade,” said **Rick Roush**, interim director of the UC Sustainable Agriculture Research and Education Program (SAREP), which coordinated and partially funded the project. “It is encouraging to see that UC researchers are engaged in organic research and education.”

The survey work was conducted by visiting scholar **Chulgoo Kang** of Korea, SAREP researcher **Janet C. Broome**, SAREP education coordinator **David Chaney**, and former SAREP director **Sean L. Swezey**.

More than 1,000 academic personnel at the University of California (Davis, Riverside, Berkeley and Santa Cruz campuses) as well as county-based farm advisors and members of the UC Organic Farming Research Workgroup received surveys in 2004. Of the 95 people who responded to the survey, 81 reported that they were involved in organic research and extension.

“We conducted an e-mail survey on the present status of organic farming research and extension at the UC to identify current organic expertise, and research and educational activities,” Broome said. “These data can provide a basis for analysis of this work



UC Davis Nematology Professor Howard Ferris (right) compares the soil food web in various plots at a recent UCD sustainable farming field day. He and UC Cooperative Extension Specialist Tom Lanini, left, are among the UC personnel involved in organic research and extension. (photo by Lyra Halprin, SAREP)

within the university, and the results will be useful to the university and others in prioritizing research needs, organizing education programs, and coordinating fundraising.”

Responses to the survey indicate there are the equivalent of 17 full-time employees conducting work relevant to organic agriculture, Broome said. She noted, however, that none of these employees is assigned solely to organic research and extension.

Organic agriculture is one of the fastest growing sectors of agriculture, averaging 20 percent growth per year for the last five years or more. Data from the California Depart-

ment of Food and Agriculture’s California Organic Program show registered organic acreage in the state more than doubled since 1998. In 2000, the U.S. market for organic products was over \$6 billion, up from \$78 million in 1980. European Union members spend an estimated \$4.5 billion on organic products and Japanese consumption approaches \$2 billion per year, according to reports.

“The rapid growth in this sector of the economy, provides a strong justification for public-sector investment in organic research to assist organic producers,” said Broome.

The SAREP report’s primary author, Kang, is a visiting scholar from South Korea. He has been an assistant director of the country’s Sustainable Agriculture Division, and head of a provincial office of the Ministry of Agriculture and Forestry, which supervises the certification and registration of

organic farmers and their products. He noted that organic agriculture more than doubled in South Korea between 1999 and 2001.

To read the report, go to <http://www.sarep.ucdavis.edu/organic/organicsurvey04.htm>. SAREP’s Web site (<http://www.sarep.ucdavis.edu/Organic/index.htm>) provides links to the national rules for organic farming, the UC Organic Farming Research Workgroup, publications and other resources, county-based organic agriculture research and extension, and related links.

UC ANR receives \$200,000 for sustainable table grape project

by Lyra Halprin, SAREP

Researchers at UC SAREP will be awarded \$200,000 from the U.S. Environmental Protection Agency to speed the transition to more environmentally sound pest management practices in table grape production. California is the number one producer of fresh grapes in the United States.

"We're thrilled to receive funding to build on efforts growers have already taken to reduce the use of high-risk pesticides in fresh grapes," said **Rick Roush**, SAREP interim director and principal investigator of the project. "Children, in particular, like fresh grapes, and this research will allow us to help growers increase the adoption of alternatives."

Collaborators from the UC Kearney Agricultural Center in Parlier and farm advisors in the Southern San Joaquin Valley will join with UC SAREP researchers to demonstrate biologically integrated farming systems (BIFS) for fresh grapes on farms in the region.

"Since cosmetic appeal is important for fresh grapes, there is low tolerance for pest damage to the fruit," said **Walt Bentley**, UC Integrated Pest Management entomologist based in Parlier and onsite project leader.

"This project will help farmers use lower-risk pesticides that target specific pests without wiping out beneficial insects or their habitats," he said. "Close monitoring will help growers determine the exact dates that insect pests are most vulnerable to pesticides, which prevents unnecessary pesticide applications."

Alternative biological and cultural controls such as vineyard floor and canopy management practices and the use of reduced-risk materials will also be employed, he said.

"Many of the targeted high-risk materials contribute to air and water pollution with



Red seeded table grapes. (Photo by Jennifer Hashim-Buckey, UCCE Kern County)

their volatile organic compounds or through leaching and run-off," Bentley said.

California is ranked first in production of table, wine and raisin grapes in the United States. About 85 percent of California's table grape production is in the Southern San Joaquin Valley region.

By focusing attention on fresh grape growers in Fresno, Tulare and Kern counties, the project will reach most of California's 600 fresh grape growers, according to **Bev Ransom**, BIFS coordinator for SAREP.

"Many fresh grape growers have already begun shifting to a more environmentally sound farming system," she said. "This project will offer opportunities for 'farmer-to-farmer' information sharing and will bring scientists, farmers and consultants together in a collaborative environment that enables farmers to adapt new practices to local conditions."

Funds for the project come from the U.S. Environmental Protection Agency Region 9 Food Quality Protection Act grant program. The Food Quality Protection Act of 1996 was intended to protect public health by reducing exposure to pesticides and encouraging the development and adoption of lower risk, effective crop protection tools for agriculture. The BIFS fresh grape project will take place from October 2005 through September 2007.

Organic farming/ gardening apprenticeships at UC Santa Cruz

Applications for the 2006 six-month organic gardening/farming Apprenticeship in Ecological Horticulture at UC Santa Cruz's Center for Agroecology are due **September 1, 2005** for international applicants and **November 1, 2005** for U.S. and Canadian applicants. The 2006 full-time apprenticeship program is from April 10–October 13, 2006.

The program provides training in the concepts and practices of organic gardening and small-scale farming and takes place at the Center's 25-acre farm and three-acre Alan Chadwick Garden on the UCSC campus. Topics covered include soil management, composting, pest control, crop planning, irrigation, farm equipment, marketing techniques, and Community Supported Agriculture (CSA) practices.

Run in conjunction with UCSC Extension, the apprenticeship course carries 20 units of Extension credit for the approximately 300 hours of classroom instruction and 700 hours of in-field training and hands-on experience in the greenhouses, gardens, orchards, and fields. Tuition for the six-month course is \$3,250, with some scholarships available.

For more information, see the online application at www.ucsc.edu/casfs or contact Apprenticeship Information, CASFS, UCSC, 1156 High St., Santa Cruz, CA 95064; apprenticeship@ucsc.edu; or 831-459-3240.

Organic olive oil production short course featured tasting, tour

In response to growing demand for organic olive oil and an increasingly competitive market, the University of California Cooperative Extension offered a one-day course in organic oil production May 27, 2005 in Santa Rosa.

“Organic olive oil production could be a significant niche in California’s agriculture industry,” said **Paul Vossen**, UC Cooperative Extension farm advisor in Sonoma and Marin counties, one of the program organizers. “We were pleased to be able to offer this short course



Organic manzanillo de jaen olives. (photo by Jack Kelly Clark, UC IPM)

with presentations by local and statewide experts on all aspects of organic olive oil production, and an opportunity to taste a variety of organic olive oils.”

Laura Mendes, Santa Rosa Junior College’s sustainable agriculture instructor, introduced the short course. **Steve Gliess-**

man, UC Santa Cruz agroecology department professor, discussed the agroecology of an olive orchard, while Vossen presented information on site selection and preparation, varieties and production systems. He also led participants through the organic olive oil tasting.

UC Cooperative Extension farm advisor **Joe Connell**, Butte County, presented information on organic olive oil nutrition, while **Tom Lanini**, UC weed ecology specialist, talked about weed control alternatives. **Bill Krueger**, UCCE farm advisor, Glenn/Tehama counties, discussed prevention and control of common olive insects and diseases using organic methods, while UC research associate **Alexandra Devarenne** of Santa Rosa focused on the olive fruit fly.

Composting olive waste was the topic of **Jeff Creque’s** discussion. He is a land stewardship consultant and supervisor of mill operations at McEvoy Ranch. **Anita Sauber** and **Stacy Carlsen** of the Marin Agricultural Commissioner’s office discussed organic certification requirements.

A field visit to SRJC’s Super-High-Density Olive Orchard ended the day.

Other sponsoring organizations were the UC Sustainable Agriculture and Research and Education Program (SAREP), SRJC, and the California Department of Food and Agriculture’s “Buy California” Initiative.

NEW ORDERING FOR SAN PUBLICATIONS

The Sustainable Agriculture Network (SAN) announces a new system for ordering publications. As the national outreach arm of the USDA-Sustainable Agriculture Research and Education (SARE) program, most SAN publications will continue to be available online. View SAN’s entire catalog online at www.sare.org/publications.

SAN has two categories of publications: bulletins and books. To obtain print copies of these publications, use the following ordering instructions:

For books and mixed orders of books and bulletins, contact:

Sustainable Agriculture Network

PO Box 753

Waldorf, MD 20604-0753

Telephone: (301) 374-9696 Fax: (301) 843-0159

email: sanpubs@sare.org

For bulletins only, please call 301-504-5411, or email

san_assoc@sare.org. SAN bulletins are available in quantity at no cost to agricultural educators when ordered at least three weeks in advance.

Book and bulletin orders through either of the above may be placed by mail, fax, or telephone. Revised order forms are available at <http://www.sare.org/publications/order.htm>. In addition, SAN is launching a new online store, which is expected to be up and running by mid-August. Watch for it at www.sare.org.

FARM STEWARDS PROFILED

The New American Farmer, 2nd edition, editors of the Sustainable Agriculture Network (SAN), 200 pages, 2005. USDA Sustainable Agriculture Research and Education (SARE) program. Profiles of successful producers throughout the U.S. who are both profitable and good stewards of the land. Preview the publication at www.sare.org/publications. To order from SAN (\$16.95 + \$5.95 s/h), call (301) 374-9696 or send check or money order to Sustainable Agriculture Publications, PO Box 753, Waldorf, MD 20604-0753. Add \$2 s/h for each additional book; discounts available for orders of 10 or more titles.

FERTILIZER PUBLICATIONS

Publications, proceedings, videos and brochures from the California Department of Agriculture’s Fertilizer Research and Education Program (FREP) are available by emailing frep@cdfa.ca.gov. The Web site is: www.cdfa.ca.gov/is/frep.

Among the available items are:

Proceedings:

- 2003 FREP Conference Proceedings
- 2004 FREP Conference Proceedings

Videos & Brochures:

- *Nutrient Education for Salespersons in the Nursery/Landscape Industry*
- *Best Management Practices for Nitrogen Fertilizer and Water Use in Irrigated Agriculture*
- *Drip Irrigation and Fertigation Management of Vegetable Crops*
- *Nitrogen Management in Stone Fruit and Almond Production*

WESTERN SARE ANNOUNCES PROJECTS, OFFERS FUNDS

The Western Region USDA Sustainable Agriculture Research and Education program recently announced its selection of grants for 2005. Five projects were funded in California for a total of \$120,805.

Funded projects

One research and education grant was awarded to:

Creek Hull, *Renewable Energy in Sustainable Agriculture*.

Producer and Ag Professional+Producer Grants were also awarded to the following groups and individuals:

Bill Burrows and **Wolfgang Pitroff**, *Goats in the Chaparral: Determining Forage Quality, Location and Seasonal Variation*.

Judith Redmond and **Mario Moratorio**, *Sustaining an Agricultural Region: Capay Valley Grown*.

Douglas Bush and **Fred Conte**, *Evaluation of Abalone Effluent for Reclamation*.

Stephen Pedersen and **Richard Smith**, *Weed Control in Summer Cover Crops on California's Central Coast*.

New WSARE funding available

Western SARE is now accepting proposals for the next round of funding. **December 1, 2005** is the deadline for farmer/rancher and ag professional-producer grants; **November 15, 2005** is the deadline for the Professional Development Program grants. The Calls for Proposals are available on the Web at <http://wsare.usu.edu> or by calling the Western SARE office at Utah State University, (435) 797-2257.

SMALL, MID-SIZE FARM GRANTS

Small and mid-size farms are included in the 2006 USDA Cooperative State Research, Education and Extension Service (CREES) grants for the Small Business Innovation Research (SBIR) program. Grant information is now posted on at http://www.csrees.usda.gov/funding/rfas/sbir_rfa.html. The closing date for submitting Phase I grant applications is **September 1, 2005**. This year the agricultural section of Rural and Community Development has been split off as a new topic area called "Small and Mid-Size Farms," which focuses on new technologies to promote the sustainability and profitability of small and mid-size farms and ranches. Grant proposals must be submitted by for-profit small business firms, but university personnel may participate as consultants or subcontractors. It is expected that there will be a budget of close to \$20 million; approximately 90 projects in all areas of agricultural research will be funded.

FEDERAL GRANT ROUNDUP

The USDA-CREES' Western Integrated Pest Management Center has an updated list of federal calls for proposals at www.wripmc.org/Research/index.html. The Western IPM Center (www.wripmc.org) is one of four centers established to strengthen USDA's connection with production agriculture, research and extension programs, and agricultural stakeholders throughout the U.S. It is housed in the Department of Environmental Toxicology at the University of California, Davis.

ORGANIC RESEARCH GRANTS

The Organic Farming Research Foundation offers research grants of up to \$15,000. Funds have been offered for organic farming research, dissemination of research results to organic farmers and growers interested in making the transition to organic production and for consumer education on organic farming issues. The grants program is currently undergoing an internal evaluation and is expected to resume with a new request for proposals issued in September 2005. For details, please check the OFRF Web site at www.ofrf.org.

INTERNATIONAL FUNDING DATABASE

Community of Science (COS) Funding Opportunities is a comprehensive international database of published grants, scholarships, fellowships and awards with more than 23,000 entries that have been formatted in a searchable database. Other services available are COS Expertise, a worldwide database of profiles of researchers, scholars and other experts, and COS Abstract Management System, a comprehensive Web-based system for managing the submission, review and approval of abstracts. For more information see www.cos.com.

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 advisers and others titled *Ecological Pest Management in Grapes*. Up to 11 CE credits for California PCAs. See www.sarep.ucdavis.edu/courses/grapes/.

* 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.

* MONTHLY MEETINGS

Lighthouse Farm Network The Community Alliance with Family Farmers (CAFF) sponsors informal monthly meetings for growers to discuss issues related to pesticide use reduction. Contact: Molly Johnson, (530) 756-8518, ext. 30, molly@caff.org; or Liv Nevin, (831) 761-8507, buylocal@calcentral.com; www.caff.org.

SEPTEMBER

1 Organic gardening, farming apprenticeship international applications due for 6-month training course at UC Santa Cruz's Center for Agroecology. Application online at www.ucsc.edu/casfs or contact Apprenticeship Information, CASFS, UCSC, 1156 High St., Santa Cruz, CA 95064; apprenticeship@ucsc.edu or 831-459-3240.

24 The Power of Perennials, UC Davis Children's Garden Program Fall 2005 Workshops for School Gardens. **9 a.m.-noon**. Discover how low-maintenance perennial herbs, trees & Calif. native plants can be included in school landscapes/garden areas, used for teaching. The UC Davis Children's Garden Program offers training for parents & educators to support their school garden programs. New & experienced gardeners learn basics through hands-on activities, discussions; take home ideas/materials for garden/classroom; link garden-based learning activities to Calif. academic standards. Information: Call 530-752-7655; email Katie Hume (khume@ucdavis.edu); <http://childrengarden.ucdavis.edu>. \$15. Registration by Sept. 16.

24 Where the Wild Things are: Insects in the Garden, UC Davis Children's Garden Program Fall 2005 Workshops for School Gardens. **12:30 p.m.-3:30 p.m.** How to teach insect roles in garden ecosystems while teaching science, etc. See preceding entry. Register by Sept. 16.

OCTOBER

1-2 Hoes Down Harvest Celebration, Capay Valley (Yolo County). Showcases sustainable agriculture, rural living in fun-filled workshops/events. Educational farm tours, children's area, games, live music, local farm products, organic food. <http://fullbellyfarm.com/hoesdown.html> come or call (800) 791-2110. Proceeds benefit the Ecological Farming Association/other local non-profit organizations.

8 Gardens For Good Nutrition, UC Davis Children's Garden Program Fall 2005 Workshops for School Gardens. **9 a.m.-12:30 p.m.** Learn to teach connections between gardens/nutrition incorporating math, science, language arts, social studies. Lessons from Calif. A Dept of Education's publication, *Kids Cook Farm-Fresh Food*; prepare a meal from fresh garden produce. Register by Sept. 30. See Sept. 24 for contact info.

NOVEMBER

1 Organic gardening, farming apprenticeship U.S./Canadian applications due for 6-month training course at UC Santa Cruz's Center for Agroecology. See Sept. 1 entry.

30 Calif. Dept. of Food & Ag Fertilizer Research & Education Program (FREP) annual conference, Salinas. More information at www.cdffa.ca.gov/is/frep.

JANUARY 2006

25-28 26th Annual Ecological Farming Conference, Asilomar, Pacific Grove, Calif. *Savoring Connections from Seed to Table*. World's foremost sustainable agriculture conference features prominent keynote speakers, 50+ workshops in ag production, marketing, & research, + opportunities to exchange information, renew spirits. Farm tour, seed swap, organic wine tasting, exhibitor marketplace. Contact: Ecological Farming Association, 831-763-2111; www.eco-farm.org.

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Rick Roush

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