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From the Director

SAREP In A New Century

My first ten weeks as Sustainable Agriculture Specialist and Director of the University of California Sustainable Agriculture Research and Education Program have been eventful and busy. In this brief space of time, SAREP has awarded more than \$1.4 million in sustainable agriculture research grants to both University and other applicants (see also in this newsletter *SAREP Funds Methyl Bromide Alternatives; New Production, Public Policy Grants; SAREP Funds Biologically Integrated Farming Systems Grants: Strawberries, Dairy/Forage*), I have met with SAREP's public, technical, and BIFS advisory committees for input on program awards and direction, and have begun statewide discussions with sustainable agriculture stakeholders concerning a five-year program development plan for SAREP. Assuming the leadership of this important and highly visible program is a challenge I take very seriously. I want to thank all my colleagues and friends for their many expressions of support for the program and my appointment. I would like especially to thank former SAREP Director **Bill Liebhardt** and former SAREP Interim Director **Bob Reginato** for their many helpful discussions and introductions to the program staff and structure.

Although sustainable agriculture has existed as a research and advocacy position since the late 1970s, its formal inclusion in the University of California agricultural research and extension system didn't take place until 1986 when the California Legislature requested the formation of SAREP, the first system wide sustainable agriculture program at any land grant institution. Twelve years later, sustainable agriculture is a widespread goal statement of agricultural research and education. Close to 100 land grant and other U.S. colleges and universities now have sustainable agriculture programs. A common definition has emerged of the concept that addresses the present and future economic, ecological and social viability of agriculture and food systems. Although advocates and investigators may weigh the importance of economic, ecological, and social elements differently, a significant number expect the tools of scientific inquiry to support sustainable agriculture. The Division of Agriculture and Natural Resources is committed to a 1997 strategic plan in which "...sustainability of the agricultural system derives from reduced or redirected inputs, more efficient practices, improved cost effectiveness, reduced environmental impacts, ... optimized land and water use...[and] human resource management focused on human and community development, in particular human health and nutrition, community decision-making, and economic development." The SAREP Web site recently recorded over 30,000 external search inquiries in one month. Sustainable agriculture has clearly emerged as a conceptual tool if not a paradigmatic option for addressing the problems of agriculture and food systems in California.

However, observers of the environmental and social conditions of production

agriculture and food systems in California should still be concerned with the sustainability of these systems. High urban population growth rates have led to increased competition for the land, water, and air resources necessary for production agriculture. Consumers are increasingly concerned about food security issues and are demanding roles in shaping sustainable food and agricultural systems. Farmers face increasing restrictions and prohibition of farming practices considered commonplace even five years ago. In the face of these trends, SAREP should, and indeed is required, to lead the search for alternative economic, ecological and community relations which provide sustainable production and food systems models. As SAREP moves into the next century, the values, goals, and scientific statements of sustainable agriculture will be increasingly debated and tested. SAREP must provide resources for credible research-based answers to the questions of sustainability.

How will SAREP lead the sustainability research and education effort into the next millennium? I believe the answer to this question includes support for broad research and education partnerships in region-specific projects. For example, our recent Biologically Integrated Farming Systems awards provide resources to farmers, farm advisors, and agricultural professionals to create these partnerships in specific production agriculture contexts. Our Community Development and Public Policy grants provide resources for food systems research and actions which will lead to greater food security for urban residents and simultaneously forge stronger connections with local growers. The partnerships created by these grants and the generation of successful research and education results and models will be the principle future contributions of SAREP to California agriculture.

I look forward to the challenge of agricultural sustainability in the new millennium and sharing with you future program initiatives to meet this challenge. -Sean L. Swezey, director, University of California Sustainable Agriculture Research and Education Program.

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SAREP Funds Methyl Bromide Alternatives

by Lyra Halprin and Bev Ransom, SAREP

Alternatives to the ozone-depleting agricultural fumigant methyl bromide are the focus of six new grants funded by SAREP.

"We can immediately address one of the most pressing problems of production agriculture with the methyl bromide projects, which will target farming systems where it has been a crucial tool," said **Sean L. Swezey**, SAREP director.

Methyl bromide is often used as a pre-plant fumigant to eliminate nematodes, weeds and pathogens in agricultural systems such as strawberries and orchard crops including almonds, walnuts and stone fruits; it is also commonly used as a post-harvest treatment to control insect pests. Methyl bromide is designated a Class I ozone depleter scheduled for a 100 percent use reduction in the U.S. by 2005.

"Our major concern in this new grants program is to assure funding for researchers and industries interested in biologically based solutions relying on microorganisms, farming rotations that suppress harmful soil-borne pathogens and nematodes, the use of clean nursery material, and resistant root stocks, which we believe we have done," Swezey said.

Projects funded include:

- "Cultural Control and Etiology of Replant Disorder of *Prunus* spp.," **Greg Browne**, USDA-Agricultural Research Service/UC Davis plant pathology department; **Andreas Westphal**, UC Davis plant pathology department; **Tom Trout**, USDA-Agricultural Research Service/Fresno. \$150,638 for three years. This project addresses orchard replacement strategies for almonds, nectarines, peaches, plums, and prunes. The major benefit of methyl bromide fumigation is the control of "replant disorder." Replant disorder delays economic production and can lead to tree death. This project will determine the underlying causes of replant disorder, the level of specificity of replant disorder between two types of crops that may follow each other on large acreage, and the possible contributions of pre-plant fallow periods and cover crops to replant disorder control. An improved understanding of replant disorder etiology may be one of the most important keys to development of methyl bromide alternatives. (530) 754-9351,

gtbrowne@ucdavis.edu

- "Microbiological Improvement of Root Health, Growth, and Yield of Strawberry," **John Duniway**, UC Davis plant pathology department. \$118,780 for three years. The research objective of this project is to find microorganisms to improve root health, growth, and yield of strawberry plants without soil fumigation, which can be integrated with other cultural, biological and chemical treatments. While no individual microorganism or combination of beneficial microorganisms is likely to reproduce the large yield increases obtained by methyl bromide/chloropicrin fumigation of soil, inoculations with specific microorganisms are likely to increase yield significantly. These yield increases are most likely when inoculations are combined with other alternatives to methyl bromide, including fumigants other than methyl bromide, crop rotations, organic amendments of soils, solarization, and/or other cultural practices. The project will use microorganisms recently isolated from strawberry roots growing in fumigated soils in California which have been found to promote growth of strawberry plants in the greenhouse. These microorganisms will be used to inoculate transplants and plants grown for field production. Researchers will look at methods of field application and resulting growth and yield responses will be measured relative to those obtained by normal farming practices with and without fumigation. (530) 752-0324, jmduniway@ucdavis.edu
- "Development of Grape Rootstocks with Multiple Nematode Resistance," **Howard Ferris**, UC Davis nematology department; **Andrew Walker**, UC Davis viticulture and enology department. \$100,744 for three years. The phase-out of methyl bromide will present California grape growers with a critical problem-lack of suitable rootstocks with nematode resistance. This problem will be particularly severe where new vineyards are replanted over a previous vineyard with high levels of grape-damaging nematodes. Currently available rootstocks have either inappropriate horticultural characteristics, including excessive vigor in scions which leads to poor production and quality, or they have insufficient resistance against aggressive nematode strains and species. This resistance breeding project will be integrated into a larger industry-supported grape rootstock breeding program at UC Davis. The project proposes a new approach to broad and durable nematode resistance in grape rootstocks. Researchers will develop, employ, and evaluate new rootstocks with resistance to a broad range of key nematode species as a sustainable alternative to the use of preplant fumigation. (530) 752-8432, hferris@ucdavis.edu
- "Containerized Strawberry Transplants as a Replacement

for Methyl Bromide Soil Fumigation in California Strawberry Nurseries," **Kirk Larson**, UC Davis pomology department; **Curt Gaines**, Lassen Nursery. \$107,969 for three years. California farmers plant 500,000,000 new strawberry transplants each year; annual plantings of pathogen- and pest-free transplants have been the basis for high productivity and successful strawberry IPM programs for decades. Strawberry plant propagation in California consists of at least three field propagation cycles, with preplant soil fumigation used in advance of each cycle. Currently, strawberry nurseries fumigate with mixtures of methyl bromide and chloropicrin to ensure the production of pathogen- and nematode-free transplants. The use of containerized transplants produced in disease-free, soil-less media would eliminate the need for nursery soil fumigation. This project will determine the potential for using containerized strawberry transplants (plugs) to produce pathogen- and pest-free planting stock without the use of methyl bromide soil fumigation. Although strawberry plugs are used in other parts of the U.S., there is little information regarding propagation and use of plugs for strawberry production in California. Project researchers will determine suitable methods for propagating and conditioning strawberry plugs under California conditions, and evaluate plug performance in the state's major strawberry production regions. (949) 857-0136, kdlarson@ucdavis.edu

- "Alternatives to Methyl Bromide for Control of Soil-borne Fungi, Bacteria and Weeds in Coastal Ornamental Crops," **James MacDonald**, UC Davis plant pathology department; **Clyde Elmore**, UC Davis vegetable crops/weed science department, **Steve Tjosvold**, UC Cooperative Extension, Watsonville. \$76,228 for three years. This project studies non-chemical alternatives to methyl bromide for coastal field-grown ornamentals (cut flowers, bulbs and greens). This is a highly productive and valued component of California's ornamental industry, and is seriously threatened by the pending loss of methyl bromide. Since solarization does not create enough soil heating to be useful by itself in the coastal regions, researchers will combine solarization with the addition of organic amendments to stimulate the phenomenon of bio fumigation. This project will focus on controlling the soil-borne fungus *Fusarium oxysporum*, the soil-borne bacterium *Erwinia carotovora* and several weed species. Microplot experiments will be conducted in several locations; in-field experiments will be carried out using two different bulb crops, Dutch iris and Calla. (530)752-6897, jdmacdonald@ucdavis.edu
- "Acetaldehyde and Carbon Dioxide Fumigation for Postharvest Control of Insects on Strawberry Fruit," **Elizabeth Mitcham**, UC Davis pomology department.

\$75,986 for two years. The export market for strawberry fruit to Japan and Australia is valued at approximately \$20 million annually. Fumigation with methyl bromide is used prior to export to these countries. Previous studies have shown that fumigation with acetaldehyde and carbon dioxide(CO₂) is promising as an alternative to methyl bromide for postharvest insect and mite control. This project will determine the efficacy of acetaldehyde fumigation alone and in combination with carbon dioxide to kill western flower thrips and two-spotted spider mites. Researchers will then determine the affect of acetaldehyde and CO₂ fumigation on fruit quality and postharvest life. They will also demonstrate the commercial feasibility of this treatment within existing methyl bromide fumigation facilities. (530)752-7512, ejmitcham@ucdavis.edu

The remainder of the funds will be used to support a Monterey Bay region on-farm demonstration project addressing bio-intensive alternatives to methyl bromide in strawberries. The project is called "BASIS - Biological Agriculture Systems in Strawberries: A bio-intensive production methods innovators group in the Monterey Bay region," **Carolee Bull**, USDA-Agricultural Research Service/Salinas.\$180,000 for three years.

"There was a tremendous amount of interest from many different commodities for developing alternatives to methyl bromide," according to **Jenny Broome**, SAREP associate director and lead scientist on the methyl bromide alternatives grants program. "We received 20 full proposals requesting a total of more than \$3 million; unfortunately, we could not fund all the worthwhile proposals submitted."

Last fall SAREP was allocated \$1 million from the state legislature via the Department of Pesticide Regulation specifically to support a new grants program to develop and extend alternatives to methyl bromide. Most of the funds will go directly to researchers, however, a proportion is used to administer and implement the grants program. The grants program grew out of negotiations on Assembly Bill 1998 which expanded SAREP's Biologically Integrated Farming Systems grant program.

Assemblymember **Helen Thomson**(D-Yolo County), the author of AB 1998, said she is "pleased by the large number of project proposals generated by this state funding to develop alternatives to methyl bromide so California agriculture can remain competitive in the world market while improving environmental safeguards."

The bill was supported by a wide range of agricultural organizations and institutions including the Community Alliance with Family Farmers, Farm Bureau, and the University of California.

SAREP Funds Biologically Integrated Farming Systems Grants: Strawberries, Dairy/Forage

by Lyra Halprin and Bev Ransom, SAREP

Strawberries, one of California's highest value and most input-intensive specialty crops, and dairies, which through manure disposal can contribute significantly to ground and surface water pollution, will be the focus of the latest biologically integrated farming systems (BIFS) projects funded by UC SAREP.

"We received ten excellent proposals, including an apple project and several new grape projects," said **Sean L. Swezey**, SAREP director. "We regret that we can not fund them all at this time."

The strawberry and dairy projects, along with a citrus project announced earlier, were funded with a \$1 million appropriation related to AB 1998, sponsored last fall by Assembly member **Helen Thomson** (D-Yolo County), who noted she is "pleased to see the state funding being used to start these promising projects. Agriculture is key to California's economy, and the BIFS program can help to maintain our state's competitive edge on the agricultural market."

The bill was supported by a wide range of agricultural organizations and institutions including The Community Alliance with Family Farmers, Farm Bureau, and the University of California.

The strawberry project grant funds a bio intensive production innovators group in the Monterey Bay region called BASIS, for biological agriculture systems in strawberries. The dairy project will integrate forage production with manure management in the San Joaquin Valley.

"A number of key chemical inputs, including methyl bromide, used in conventional strawberry production in California are scheduled to be phased out due to environmental or health concerns, and many are losing their effectiveness due to increasing resistance and cost," said Swezey. "The BASIS work group will address these issues by testing and disseminating innovative ideas in strawberry chemical use reduction."

Carolee Bull, a research plant pathologist at the US Department of Agriculture/Agricultural Research Service office in Salinas and principal investigator of the project, noted that strawberry farmers, pest control advisors, agronomists, UC farm advisors and USDA and UC researchers will collaborate on this outreach program. They will document the BASIS insect, weed, pathogen, fertility and soils management options in strawberries and monitor techniques that can assist farmers to significantly reduce or eliminate agrochemical use.

Strawberries are one of the most important economic crops in the Monterey Bay region, with a value of nearly \$300 million annually. Planted acreage has doubled on the Central Coast in the last 15 years and now totals more than 11,000 acres. As a high-value, highly competitive specialty crop with exacting cosmetic standards, strawberries are one of the most input-intensive crops in California. There are many environmental and food quality issues which could affect the economic viability of strawberry production in the next few years, including regulatory actions related to methyl bromide, the chemicals used for pest arthropod control and fungal diseases, and the soluble nitrogen fertilizers implicated in well contamination in the Pajaro and Salinas valleys.

"All these issues have motivated strawberry growers to use an integrated approach to soil and pest management which enables them to address chemical use and off-farm contamination," said Bull. "Using mentor growers, we will showcase farms which employ innovative bio intensive management strategies. These farms will demonstrate the BASIS template."

Showcase dairies will be one of the demonstration tools of the dairy manure project, noted **Stuart Pettygrove**, UC Cooperative Extension soils specialist in the Department of Land, Air and Water Resources at UC Davis, and one of the principal investigators. Participating dairy farmers will tour cooperating dairy facilities to see demonstration fields where application of liquid manure is

metered and timed to coincide with crop nutrient demands, and which use fewer applications of commercial nitrogen, phosphorus and potassium.

Pettygrove's co-principal investigators are UC Davis Cooperative Extension specialists **Deanne Meyer**, livestock waste management, and **Dan Putnam**, forage production.

"California leads the nation in milk production, and more than sixty percent (800,000) of the state's dairy cows are located in the San Joaquin Valley," said Meyer. "Each year each cow can contribute 50 to 100 pounds of nitrogen into a cropping system."

Dairy manure is stored in either liquid or solid form. A large percentage of the nutrients can be collected in a liquid storage system, depending on the design and management of cattle housing, Meyer said. Dairy operators pump the dilute, nutrient-containing water from settling basins and retention ponds through their irrigation systems to adjoining cropland, most commonly used for forage, which is hayed or green chopped and used as feed in the same dairy.

"In principle, this is an integrated system," Pettygrove said. "Unfortunately, the reality is that although the nutrients and organic matter are returned to forage crops, the nutrients are not typically incorporated into fertilizer-related management decisions."

Pettygrove said the enforcement of existing federal and state regulations and the likely introduction of additional manure management regulations will have significant impact on the long-term economic viability of dairy production in the San Joaquin Valley.

"Forage cropping systems designed explicitly to recycle dairy manure must be developed, demonstrated and adopted," Putnam said. "This must be coupled with improved manure nutrient monitoring and irrigation techniques to create a more sustainable dairy manure management system."

Farmers involved in the BIFS projects are integrating biological and cultural control of pests into their production systems; providing on-farm habitats for beneficial insects, mites and spiders; and emphasizing soil-building practices such as the use of cover crops or organic forms of nutrients including dairy manure to provide all or part of the nitrogen needed by crops. The intended result, according to SAREP Associate Director and BIFS coordinator **Jenny Broome**, is that biologically integrated farming systems will enable farmers to maintain yields and quality yet protect natural and human resources by reducing their reliance on agricultural chemicals, including pesticides and synthetic fertilizers.

Previously funded BIFS projects include walnuts, prunes, rice, citrus, winegrapes and cotton/vegetables. The strawberry and dairy manure BIFS project are funded for one year. Contingent upon demonstrated progress, the projects will be eligible for renewed funding for two additional years. Additional funds for the new BIFS projects have been obtained by SAREP from federal sources including the U.S. Environmental Protection Agency and state funds through the UC Division of Agriculture and Natural Resources.

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Apprenticeship in Ecological Horticulture at UC Santa Cruz

The Center for Agro ecology and Sustainable Food Systems (CASFS) at UC Santa Cruz offers a six-month training course in organic gardening and farming called the Apprenticeship in Ecological Horticulture. The course, based at the UCSC Farm and Garden, emphasizes hands-on learning, working side-by-side with instructors, and classes in organic horticultural methods. Cultural requirements for vegetable, herb, flower and fruit cultivars are covered, including the specifics of soil preparation, composting, sowing, cultivation, propagation, irrigation, and pest and disease control. Marketing efforts include an on-site community supported agriculture (CSA) project. This is a full-time program involving strenuous field and garden work five days a week.

Tuition for the program is \$3,000 with additional costs for books, tools, and food. There are several full and partial tuition waivers available for minorities and for economically disadvantaged individuals.

Dates for the program are April 10, 2000 - October 13, 2000. Application deadlines are: November 1, 1999 (US and Canadian citizens), September 1, 1999(international applicants). For an informational brochure and application contact CASFS, UC Santa Cruz, 1156 High St., Santa Cruz, CA 95064; Tel:(831) 459-2321; Fax: (831) 459-2799; Web: <http://zzyx.ucsc.edu/casfs>

SAREP Awards New Production, Public Policy Grants

by Lyra Halprin and Bev Ransom, SAREP

Twelve production and community development/public policy projects have been granted a total of \$243,911 by UC SAREP, according to **Sean L. Swezey**, SAREP director. These awards are being granted over two fiscal years: FY 1998-99 and FY 1999-00. The 1998-99 SAREP grants for educational events and graduate student awards were announced in *Sustainable Agriculture* Vol. 11, No. 1. Additionally, five continuing projects received \$130,000, bringing SAREP's total research and education grant funding for 1998-99 to \$323,950, plus an additional \$62,954 from FY 1999-00 funds. Brief descriptions of the new grants, principal investigators, contact information and amounts awarded follow. Titles of continuing projects are listed at the end.

Almost \$80,000 of these grant funds was made available as a result of Assembly Bill 1998 (**Helen Thomson**, D-Yolo County) which provided funding for production research projects that are related to biologically integrated farming systems. The bill was supported by a wide range of agricultural organizations and institutions including The Community Alliance with Family Farmers, Farm Bureau, and the University of California.

Production Projects

- **Thomas Harter**, Assistant Cooperative Extension Specialist for Groundwater Hydrology, UC Kearney Agricultural Center, Parlier, "Impact of Dairy Waste and Crop Nutrient Management on Shallow Groundwater Quality": \$14,500 for this year, \$15,000 for next year. (Previously funded by SAREP for \$14,500 in 1997-98.) This project is related to the Mathews project summarized below. California is the largest dairy production state in the U.S. Environmentally sustainable management of these dairies is critical to the economic health of California's agricultural community. Data recently collected on dairies in the San Joaquin Valley near fields where lagoon water is applied show elevated levels of nitrates even on well-managed operations. The objectives of this project are to provide an improved understanding of the underground nitrate pathways from various locations in dairy operations (corrals, ponds, spills, manure application to fields) and to discover how these contribute to the degradation of groundwater quality. This will be achieved by using and expanding an existing groundwater monitoring network on five dairies in Stanislaus and Merced counties. The project will also provide baseline data on groundwater quality

which can be used to determine future improvements due to improved nutrient management and dairy operations practices on selected dairies. Additionally, at selected field sites the project will demonstrate and evaluate changes in groundwater quality at shallow depths related to improved nutrient management within the dairy operation. It will also educate dairy personnel and communities in Stanislaus and Merced counties and regulatory and water management agencies about the impact of nutrient management alternatives on groundwater quality, and cooperatively develop sustainable solutions to protect groundwater under dairies from excessive salt and nutrient load. (559) 646-6569; tharter@ucdavis.edu

- **Chuck Ingels**, Sacramento County Viticulture/Pomology Farm Advisor, "Effects of Cover Crops on a Vineyard Ecosystem in the Northern San Joaquin Valley": \$6,030 each year for two years. (Previously funded by SAREP for \$6,212 in 1997-98.) Although used in farming for many years, new species and management systems have been developed recently for cover crops, which are currently very popular in vineyards. Several growers in the Northern San Joaquin Valley now prefer, for example, to sow California native perennial grasses because they provide excellent wheel traction and are dormant in the summer. These grasses are also used to remove excess water in the spring to provide moderate moisture stress in early spring, thus possibly improving wine quality. These species, however, have not been formally tested in vineyards, nor have the most commonly used mixes been compared in their effects on vines and production. In this trial, four sown cover crop mixes and resident vegetation are being compared in a young Sacramento County Merlot wine grape vineyard to determine the effects on production and fruit quality, vine moisture stress and nutrient status, weeds, and the economics of cover cropping. The project includes grower meetings, a journal article and the use of the site as a tour stop for the UC Cover Crops Workgroup meeting in 1999. (916)875-6913; caingels@ucdavis.edu
- **Rachael Long**, Yolo/Solano County Farm Advisor, "Quantifying Pest and Beneficial Insects Associated with Insectary Hedgerow Plantings": \$7,000 for one year. (Funds for this grant were made available by a special donor-directed fund established through a grant from the International Tree Crops Institute USA, Inc.) California farmers are planting hedgerows of insectary plants around their farms to attract beneficial insects for better biocontrol of pests in adjacent crops. Little information, however, is available on the types of insects attracted to hedgerow plants, including both pests and beneficial insects. This project will quantify the diversity, abundance, and distribution of pest and beneficial insects in hedgerow plantings by conducting bi-weekly monitoring of four

stands of hedgerows in Yolo County. (530) 666-8734;
rflong@ucdavis.edu

- **Marsha Campbell Mathews**, Stanislaus County Field Crops Farm Advisor, "Use of Dairy Lagoon Water in Production of Forage Crops": \$19,760 for this year, \$10,950 for next year. (Previously funded by SAREP for \$15,500 in 1997-98.) Despite the rich nutrient content of dairy lagoon water, many Northern San Joaquin Valley corn silage growers have been reluctant to rely on it as the primary source of nitrogen for their crops due to perceived reductions in yields when they have done so. This project, which began in the spring of 1998, was aimed at developing methods of measuring and metering dairy lagoon water nitrogen in order to use it as a nutrient source for corn without over-application. Last season, practical methods were developed for measuring flow and concentration of dairy lagoon water and used to grow an outstanding corn silage crop. In response to this success, the dairy cooperator is installing \$200,000 in improvements to the waste handling system on the dairy to facilitate use of lagoon water nutrients over the entire acreage. This project will evaluate the system design, conduct further development and validation of nutrient application methodologies, and confirm the sustainability of yields when dairy lagoon water is used as the primary nutrient source for the crops. Improvements in groundwater quality will be assessed under the joint project "Impact of Dairy Waste and Crop Nutrient Management on Shallow Groundwater Quality" (summarized on page 6). (209) 525-6654; mcmathews@ucdavis.edu
- **Jeff Mitchell**, Extension Vegetable Crops Specialist, Kearney Agricultural Center, "Conservation Tillage Systems for the San Joaquin Valley's West Side (An evaluation of the potential of conservation tillage production systems to reduce production costs, enhance soil and water conservation and maintain profitability in common rotations for the San Joaquin Valley's West Side) Ó: \$12,774 each year for three years. Currently preplant tillage operations account for 18 to 24 percent of production costs for annual crops grown in the West Side region of the San Joaquin Valley. Averages of ten tillage-related passes through fields are routinely done during the fall-spring period just to prepare the soil for summer cropping. These passes represent not only considerable energy, equipment and labor costs, but recent research indicates that tillage reduces soil organic matter (SOM) as well. Because SOM is an important attribute of good soil quality and long-term productivity, interest has grown in developing alternative production systems that reduce costs while improving the soil through greater accumulation of organic carbon. Conservation tillage systems may maintain and increase soil organic levels while reducing production costs. This

project will compare conservation tillage and conventional tillage practices in crop rotations common to the West Side for productivity, key soil properties, pest and crop management requirements, and production costs, and will widely disseminate study results. (559) 646-6565; mitchell@uckac.edu

Community Development and Public Policy Projects

- **Adrienne Alvord**, Public Affairs Coordinator, Community Alliance with Family Farmers, "Farm Community Responses to Water Marketing: Two Case Studies": \$10,000 for one year. This project will contribute to the understanding of water markets. The principal investigator will conduct an in-depth examination of two water marketing transactions that took place in different parts of California, one of which was viewed as beneficial for all parties, and one of which was more controversial. The purpose will be to assess characteristics that make water marketing transactions successful or unsuccessful for a community, as well as to assess impacts on economic and environmental sustainability. In addition, this study will briefly survey communities where water marketing proposals are being considered to assess how the presentation of a water marketing proposal can affect its outcome. It will also include a survey of relevant academic and policy publications to provide a context for the case studies. (530) 756-8518 ext. 24; policy@caff.org
- **Andrew Fisher**, Executive Director, Community Food Security Coalition, "Healthy Farms, Healthy Kids": \$16,918 for this year. As part of a Community Food Security Coalition national campaign to improve the quality of school meals and increase connections between schools, agriculture and agricultural learning, this project will prepare a major policy and practices study. The goal of this report and on-going educational efforts is to expand the number of school districts which purchase directly from farmers and use fresh foods in their meal planning. This report will focus on school meals programs purchasing directly from farmers. An advisory team of school food service officials, farmers, and advocates has been assembled to help guide the research. (310) 822-5410; asfisher@aol.com
- **Andrew Fisher**, Executive Director, Community Food Security Coalition, "Community Food System Assessment Guidebook" :\$15,301 for this year. Considerable interest has been generated by the concept of community food security. Few communities, however, have conducted any rigorous assessments of their food systems, primarily because of a lack of expertise or guidelines on how to conduct such an assessment. The objective of this project

is to develop a guidebook which will provide practical information on how to conduct comprehensive community food system assessments, as well as follow-up activities, including coalition building, gaining media coverage, and food policy action. It will be tailored for community-based organizations, Cooperative Extension agents, and academics engaged in community action and analysis. The guidebook will provide users with information about methods and approaches for all levels of food system assessments and will be followed by a series of training workshops, and mentoring with community groups in California. (310) 822-5410; asfisher@aol.com

- **Yolanda Huang**, Coordinator, Willard Greening Project, "The Willard Greening Project": \$28,600 for this year. (Previously funded by SAREP for \$18,225 in 1996-97 and \$19,482 in 1997-98.) This project continues the Willard Greening Project in the Berkeley Unified School District, which encourages school children to eat more fresh fruits and vegetables through hands-on learning in school gardens. Goals of this phase of the project include increasing the number of Berkeley public schools serving fresh organic fruits and vegetables from school gardens, increasing the number of local schools growing organic greens for lunch salad, and increasing the number of school gardens. Additionally, the project is working to provide financial support for the gardens by encouraging the local school district's food service to purchase vegetables and fruit from school gardens. The project will work to develop an overall food security policy for the city of Berkeley, and will develop links between the Berkeley Unified School District's Food Services and local agriculture while it continues to develop creative curriculum linking core science and math with school gardens. (510) 644-6330 (Willard Middle School); yogreening@aol.com
- **Jeff Kositsky**, Community Services Coordinator, Rural California Housing Corp., Sacramento, and "Park Village Farm Project": \$20,000 for this year. (Previously funded by SAREP for \$10,000 in 1997-98.) This project is designed to create economic opportunities for residents of Park Village Apartments while improving the food security of low-income Cambodian families in Stockton, Calif. The 1997-98 grant from SAREP funded a feasibility study for the project. As a result, USDA awarded the project a grant to cover the start-up costs for Park Village Farms, which will be operated on 27 acres leased nearby. Residents will grow produce for the local Southeast Asian community and develop a community supported agriculture (CSA) project, or subscription farming system, that links producers directly with consumers (a minimum of 200 low-income families). New SAREP funding will be used to enhance the food security component of the farm project by developing the CSA, educating participants and the local community

about community supported agriculture, and developing other techniques for linking low-income consumers with producers. The Rural California Housing Corporation, a nonprofit community development organization, co-owns Park Village with the residents. Findings will be published in a report describing the techniques used to increase food security while promoting economic self-sufficiency and community supported agriculture. (916) 442-4731 ext. 3320; jkositsky@aol.com

- **Adina Merenlender**, Extension Specialist, Environmental Sciences, Policy and Management, UC Berkeley, "Mapping and Forecasting Expanding Vineyards: Integrating Agricultural, Economic, and Environmental Data at a Landscape Scale to Improve Land-Use Decision-Making": \$18,200 for 1999-2000. (SAREP previously funded a related project for \$62,000 in 1996-99.) Due to the popularity of California wine, forested upland areas are being targeted for vineyard development. Vineyard owners are under scrutiny from the environmental community, government agencies and local press interested in protecting natural resources. Overplanting also puts farmers at risk of an economic downturn. To improve vineyard expansion and environmental protection decision-making, this project will integrate economic forecasting with remote sensing and landscape models. The project will expand earlier research by exploring the consequences of county hillside protection ordinances, extending the landscape analysis to farmers, policy makers and interest groups in Sonoma county, expanding the geographic extent of the project analysis to the north coast by using satellite imagery, and improving the forecasting of vineyard expansion by including economics. (707) 744-1270; adina@nature.berkeley.edu
- **Katy Pye**, Executive Director, **Mary Kimball**, Project Coordinator, Yolo County Resource Conservation District, "FARMS(Farming, Agriculture and Resource Management for Sustainability)":\$17,500 for this year. Now in its fifth year, the FARMS program has educated rural, urban and suburban high school students about the relation between sustainable agriculture, science and natural resource conservation. Since 1993, students from Yolo, Sacramento and Marin counties have been part of the pilot program; in 1998 two new sites were added (Sonoma and Orange counties), while Butte County will be starting a program in the fall of 1999. The FARMS program has been very successful in fostering collaboration among many players in California agriculture and education circles, and has connected more than 200 students and teachers to the issues surrounding sustainable agriculture in the 1990s. The addition of two new sites in 1998 and the resulting increase in interest in the program has shown that the FARMS model is transferable to other areas in California

and the U.S. This grant will enable the program to develop a FARMS Program Manual and accompanying recruiting and training video to help spread the program to other regions. (530) 662-2037 ext. 3; topquail@yolorcd.ca.gov; mckimball@ucdavis.edu

Continuing Grants (1998-99)

Brief descriptions of these projects appeared in the Winter 1997 (Vol. 9, No. 1) and Winter/Spring 1998 (Vol. 10, No. 1) issues of Sustainable Agriculture.

- **Patrick Brown**, "Development of a N-Fertilizer Recommendation Model to Improve N-Use Efficiency and to Alleviate Nitrate Pollution to Ground Water from Almond Orchards"; **Melvin George**, "The Contribution of Ranch Roads, Cattle Trails and Bed Load to the Sediment Budget for a Grazed Watershed in the Central Sierra Foothills"; **William R. Horwath**, "Defining Changes in Soil Organic Matter Quality During the Transition from Conventional to Low-Input Organic Systems to Identify Sustainable Farming Practices"; **Adina Merenlender**, "A Spatially Explicit Vineyard Model: Addressing Crop Production, Public Policy, and Environmental Concerns"; **Steven Temple**, "The Transition from Conventional to Low-Input or Organic Farming Systems: Soil Biology, Soil Chemistry, Soil Physics, Energy Utilization, Economics and Risk."

Western SARE Conference on Innovative Farming and Ranching Systems Set for March 2000

Farming and Ranching for Profit, Stewardship, and Community will be the theme of a western region sustainable agriculture conference in Portland, Oregon March 7-9, 2000.

"We aim to bring 500 farmers, ranchers, field advisors, scientists, policy-makers, agribusiness representatives, educators and sustainable agriculture advocates from around the Western U.S. and Pacific Islands to Portland to mark the beginning of a new century by recognizing evolving sustainable agricultural practices," said **John Luna**, conference coordinator and integrated farming systems specialist at Oregon State University.

The conference will showcase innovative ways for producers to be profitable, while they also act as environmental stewards of their lands and help their rural communities thrive," Luna said.

Sponsored by the USDA Western Region Sustainable Agriculture Research and Education (Western SARE) program and several state universities, the conference will highlight the methods and outcomes of diverse research and education projects funded by the SARE effort - including university-based, on-farm and producer-directed work. The role of non-profit organizations and public policy in promoting sustainable agriculture will also be discussed, as well as marketing strategies, and the benefits of involving farmers and ranchers in agricultural research.

"Sustainable agriculture focuses on increasing profits for farmers, reducing agriculture's impact on natural resources such as water quality and wildlife habitat, and raising quality of life for farm families and their communities," national SARE Director **Jill Shore Auburn** said.

"I look forward to this Western event, which will gather experts in the field, provide a venue for sharing research results and help to build momentum for more sustainable agriculture successes in the year 2000 and beyond," Auburn said.

The Portland conference will focus on examples of SARE-supported research and education work. Program topics include irrigated and dry land cropping systems; grazing and livestock operations; marketing strategies, including Eco-labeling; soil quality; tropical agriculture; biological pest control; vegetable, tree fruit, wine grape and other crops. The program will also offer a number of information-sharing opportunities.

For more information about the conference, contact **Gina Hashagen**,

Department of Horticulture, Oregon State University, Corvallis, Oregon, at
(541)737-5477, or **Mary Staben** at 541-737-5437 stabenm@bcc.orst.edu

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Technical review

Sources of Pesticide Use Data in California

Jenny Broome

Editor's Note: This information was compiled for use by the SAREP Biologically Integrated Farming Systems program principal investigators. Special thanks to Larry Wilhoit of the California Department of Pesticide Regulation, James Liebman of the US Environmental Protection Agency, and Don Villarejo of the California Institute for Rural Studies for providing information and/or reviewing earlier drafts.

There has been a growing interest in California in obtaining information on agricultural chemical inputs. These data can be used to evaluate a commodity's extent of reliance on specific agricultural chemicals and thus potential impact of regulatory changes such as the Food Quality Protection Act (FQPA) of 1996. The information can also be used to evaluate over time the impact of recent initiatives to reduce use or reliance on particular agricultural pesticides and fertilizers like the Biologically Integrated Farming Systems (BIFS) program of SAREP. It can also be used to set priorities for research programs by commodity groups interested in taking this approach.

California pesticide use data for all non-animal, production agricultural applications can be obtained through the California Department of Pesticide Regulation (DPR), county agricultural commissioners, and the University of California's Statewide Integrated Pest Management (IPM) Project. In addition, data can be obtained on sales of pesticides through DPR and on estimates of sales through the US Environmental Protection Agency (US-EPA). The US Department of Agriculture also conducts surveys every one to three years to obtain data on pesticide and fertilizer use.

This article presents more detailed information on how to obtain these data.

Since 1990, California has had a full use reporting system for all non-animal, production agricultural applications in the state. Each month a grower who applies the pesticide must file a Pesticide Use Report (PUR) with the county agricultural commissioner (CAC). Licensed pest control operators must file a PUR within seven days of an application. PUR reports include: county; geographic location (section, township, range, base and meridian); field identification; operator ID/permit number; operator name and address; applicator name and address; commodity/crop/site treated; acres or units planted; acres or units treated; date and time of application; application methods (air, ground, other); US-EPA/California pesticide registration number of product; pesticide product name and manufacturer; total amount of

product applied; and the person who prepared the report. The CAC files the data with DPR which then performs some error checking, maintains the statewide data in a searchable database, and releases the data to the public.

In addition to the PUR, each county agricultural commissioner issues Permits for Use of Restricted Materials. All private applicators (farmers) who intend to use only unrestricted materials for commercial purposes within the county are also required to obtain a type of permit known as an Operator Identification Number. All of these permits include detailed crop and location information and, in the case of permits for restricted materials, must also specify what materials are planned for use and what pests they are intended to control. The PUR data and the permit data are public records and anyone can obtain full access to the data without any restriction except a promise not to use the information for litigation purposes.

A complete description of the California pesticide use reporting system is available at the DPR Web site at www.cdpr.ca.gov/docs/pur/purmenu.htm

Department of Pesticide Regulation

Summary Data. *Summary of Pesticide Use Report Data, Indexed by Chemical and by Crop.* Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, Calif. Published annually, 1996 is the most recent available year. These statewide summary data by crop and by chemical are available in printed form or on computer diskette. Contact: Cashier, State of California, Department of Pesticide Regulation, 830 K Street Mall, Sacramento, CA 95814-3510. This summary data is also available from the DPR Web site by chemical and by year (1993 - 1997) at www.cdpr.ca.gov/docs/pur/purmenu.htm

Individual and Summaries of Pesticide Application Records. The full data sets of individual application records of the PUR from 1990 to 1996 (most recent) are also available from DPR. Entire year data sets are available on CD-ROM for \$60 per year for 1995 and 1996. These PUR data can be purchased through the Information Systems Branch, contact: Ada Ann Scott, (916) 445-4110 or Bev Martin, (916) 445-4059. In addition, some PUR data can also be obtained from DPR's Environmental Monitoring and Pest Management Branch as individual application records or in summary tables, contact David Supkoff, at (916) 324-4185.

Pesticide Sales Data. *Annual Reports, Pesticides Sold in California, by Pounds of Active Ingredients.* Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, Calif. Published annually, covers only active ingredients and pounds sold; there are no data on formulated products or on use.

DPR maintains several additional databases on registration and use of pesticides available at www.cdpr.ca.gov/dprdatabase.htm

UC Statewide IPM Project

DPR's PUR data has been checked for errors and made available (years 1990 through 1994) through an on-line database by the University of California Statewide Integrated Pest Management (IPM) Project at www.ipm.ucdavis.edu. Individual application records are available or

summaries by date, county, crop, and active ingredient.

Agricultural Commissioners

The PUR data can also be obtained directly from the CAC in many but not all counties. The most recent data are available from the counties before they are available through DPR. Requests usually must be custom prepared by the county staff. In some of the smaller counties, only the raw, hard copy PUR data are available but most counties can furnish diskettes with the full year's data. In addition to the PUR data, electronic copies of the Permits for Use of Restricted Materials and the permits known as an Operator Identification Numbers are also available in most counties. The counties with very small amounts of agriculture do not make this permit data available via diskettes. PUR data and permit data must be purchased from each county agricultural commissioner. Costs vary from \$25 to several hundred dollars. Prices may vary depending on who is requesting the data, i.e. government agencies versus private for-profit or non-profit corporations.

United States Government Agencies

Information on pesticide use and sales can also be obtained through agencies of the United States Government. Two important sources are listed below.

US Environmental Protection Agency. Aspelin, A.L. 1997. *Pesticides Industry Sales and Usage, 1995 and 1996 Market Estimates*. Office of Pesticide Programs, US Environmental Protection Agency, Washington, DC. This publication

includes estimates of pesticide sales and use. It covers only general categories of pesticides (e.g., fungicides, insecticides, herbicides, other). Available over the Web at www.epa.gov/oppbead1/95pestsales/index.html

US Department of Agriculture. National Agricultural Statistics Service (NASS). *Agricultural Chemical Usage Summary*. US Department of Agriculture, Washington, DC. These volumes are issued every one to three years and cover vegetable crops, field crops, and fruit and nut crops. The data are the results of grower surveys for only selected crops in selected states; for most of the crops covered California is included. Ordering information and some of the data are available at www.ntis.gov/fcpc/ntcallae.htm#Agriculture-Inputs&Technology

Other Useful Publications

There are several other publications that may be useful in analyzing the impact alternative farming practices have on reducing pesticide use and environmental hazards. A brief list of key references follows:

Pesticide Toxicology Lists.

Office of Pesticide Programs (OPP). 1997. *List of Chemicals Evaluated for Carcinogenic Potential*. US Environmental Protection Agency, Washington, DC.

Office of Environmental Health Hazard Assessment (OEHHA). 1996. *Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*. California Environmental Protection Agency, Sacramento, Calif.

Rutz, R. 1997. *History of the listing of pesticides as restricted materials in California*. Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, Calif.

Pesticide Enforcement Branch. 1997. *California Restricted Materials Requirements*. Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, Calif.

Statewide Trends in Pesticide Use.

Liebman, J. 1997. *Rising Toxic Tide: Pesticide Use in California 1991-1995*. Pesticide Action Network and Californians for Pesticide Reform. San Francisco, Calif.

Wilhoit, L. et al, 1998. *An Analysis of Pesticide Use in California 1991-1995*, California Department of Pesticide Regulation, Sacramento, Calif. PM-01. This report, released in December 1998, contains a more detailed look at statewide trends and which pesticides accounted for the increases reported in the Liebman report. The report may be accessed at www.cdpr.ca.gov/docs/dprdocs/puranal.htm

Agricultural Production Statistics.

California Department of Food and Agriculture. 1996. *California Agricultural Resource Directory, including Agricultural Production & Export Statistics for 1995*. California Department of Food and Agriculture, Sacramento, Calif. This Web site also has data on the USDA estimates of pesticide and fertilizer use. Available at www.cdfa.ca.gov/statistics/

For more information: SAREP, One Shields Ave., University of California, Davis, CA 95616. email: sarep@ucdavis.edu

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Resources

Print Publications

Fertilizer Proceedings

Proceedings, California Department of Food and Agriculture Fertilizer Research and Education Program Conference Nov. 17, 1998, 80 pages. The CDFA Fertilizer Research and Education Program (FREP) supports research and outreach projects to advance the environmentally safe and agronomically sound use of fertilizing materials in California. The November 1998 conference topics included foliar urea application in peaches, nitrogen fertilizer recommendation models for almonds, nitrogen management for vegetables produced in the low desert, drip irrigation and fertigation scheduling for celery production, water and fertilizer management for garlic, nitrogen fertilization in sudangrass, agricultural laboratory proficiency testing, turfgrass fertilization programs, agriculture and fertilizer education for K-12, and many others. For a free copy of the proceedings contact FREP at 1220 N St., Sacramento, CA 95418; Tel: (916) 653-5340; Fax: (916) 653-2407; Email: ccady@cdfa.ca.gov. Summaries of completed FREP projects are available on its Web site: www.cdfa.ca.gov/inspection/frep

Local Food Policy

Getting Food on the Table: An Action Guide to Local Food Policy, 75 pages, 1999, **Dawn Biehler, Andy Fisher** et al, Community Food Security Coalition. Provides an overview of U.S. city and county government policies and programs that affect community food security. Profiles nine organizations working in the area, highlighting their efforts and successes. Offers basic organizing information, identifies potential project funders and recommends additional resources. Cost: \$12. Contact Community Food Security Coalition, PO Box 209, Venice, CA 90294; Tel: (310) 822-5410; Web: www.foodsecurity.org

Farmland Protection

Holding Our Ground: Protecting America's Farms and Farmland, 420 pages, 1997, **Tom Daniels** and **Deborah Bowers**. Discusses reasons for protecting farmland as well as methods to advocate for farmland preservation. Analyzes federal, state and local farmland protection efforts and techniques. Explores land protection options such as purchasing development rights and private land trusts. Cost: \$34.95. Contact Island Press, Box 7, Dept. 2AU, Covelo, CA 95428; Tel: (800) 828-1302; Fax: (707)983-6414.

Organic Farmer Survey

Final Results of the Third Biennial National Organic Farmer's Survey, 126 pages, 1999, Organic Farming Research Foundation. Compilation of survey

findings from 4,638 organic farmers. Prioritizes their perceived needs for organic farming research, ranks usefulness of production resources, ranks products grown, as well as marketing outlets. Gives an overview of organic management strategies used and examines challenges to organic production. Contact: Organic Farming Research Foundation, PO Box 440, Santa Cruz, CA 95061; Tel: (831) 426-6606; Fax: (831) 426-6670; Email: research@ofrf.org

Organic Farming Proceedings

Making the Transition to Organic Farming Conference Proceedings, University of Guelph, January 29-31, 1999, 70 pages. Workshops included weed management, soil fertility, farm certification, permaculture, community supported agriculture. Contact: **Tomas Nimmo**, Box 116, Collingwood, Ontario, Canada L9Y 3Z4; Tel: (705) 444-0923; Fax: (705) 444-0380; Email: organix@georgian.net ; Web: www.gks.com/OrgConf/

Endocrine Disrupter Report

Endocrine Disrupter Screening and Testing Advisory Committee (EDSTAC) Final Report, August 1998. Two volumes. Committee's final recommendations to U.S. Environmental Protection Agency (EPA) on endocrine disrupter screening and testing procedures required by the Food Quality Protection Act and Amendments to the Safe Drinking Water Act. Includes recommendations on conceptual framework, priority setting, screening and testing, and communications and outreach. Free. Contact Environmental Assistance Division (7408), EPA, TSCA Assistance Information Service, 401 M Street SW, Washington DC 20460; fax (202)554-5603; Email: tscashotline@epamail.epa.gov

Videos

Family Farms

Time to Act for Family Farms, 1999, 26 minutes, Center for Rural Affairs. Based on the 1998 report of the USDA National Commission on Small Farms, this video illustrates the value of small farms to the U.S. economy and the challenges they face through the stories of an African-American farmer in Georgia organizing a vegetable marketing cooperative, Minnesota hog farmers using low-cost, environmentally sound methods for raising hogs and fighting for access to fair markets, and a California family marketing vegetables from their diversified organic farm directly to urban consumers. The video details how government policies affect opportunities for these and other farmers. It may be rented for \$5 to use at meetings, workshops and other events. For more information, contact the Center for Rural Affairs, PO Box 406, Walthill, NE 68067, Tel:(402) 846-5428, E-mail: info@cfra.org, or access the Web site at www.cfra.org The USDA Small Farms report may be downloaded from the site.

WebSites

www.epa.gov/pesticides/carlist/table.htm

U.S. Environmental Protection Agency (EPA) Pesticidal Chemicals *Classified as Known, Probable or Possible Human Carcinogens*, 1999. Provides U.S.

EPA Office of Pesticide Programs' most current list of pesticides categorized by carcinogenicity. Lists registration date, use patterns, and regulatory status.

SAREP WEB Information

<http://www.sarep.ucdavis.edu>

In addition to its print publications, UC SAREP offers access to SAREP-funded research and education projects, its newsletter, its latest *Biennial Report*, an interactive calendar, and information databases through its World Wide Web server.

Sample sections include:

- *Requests for Proposals*
<http://www.sarep.ucdavis.edu/grants/request.htm>
- *Competitive grants funded by SAREP*
<http://www.sarep.ucdavis.edu/grants/competitive.htm>
- *Natural Beef: Consumer Acceptability, Market Development and Economics*
<http://www.sarep.ucdavis.edu/grants/Reports/nader/>
- *Earthworm Information*
<http://www.sarep.ucdavis.edu/worms/>
- *Cover Crop Resource Page*
<http://www.sarep.ucdavis.edu/ccrop/>
- *PestCast (link to Statewide IPM Program Web site; collaborative work with Jenny Broome, SAREP):*
http://www.ipm.ucdavis.edu/DISEASE/california_pestcast.html
- *News Releases/Media*
<http://www.sarep.ucdavis/news/PRyear.htm>
- *Soil Quality Information*
<http://www.sarep.ucdavis.edu/soil/>
- *Alternatives to Methyl Bromide*
<http://www.sarep.ucdavis.edu/mebralt/>

Sources of Funding

The USDA Western Sustainable Agriculture Research and Education program (Western SARE) has three competitive grants efforts: SARE research grants, which fund research and education on sustainable farming and ranching practices; the Professional Development Program, which funds efforts to educate agricultural professionals about sustainable agriculture; and, the Farmer/Rancher Research Grant effort, which supports producer-directed research and community development activities. All grant programs operate on an annual cycle and have a competitive selection process.

Calls for proposals are automatically mailed to those on the distribution list at the time the call is released, or sent out individually during the application period. To add your name to the distribution list, or to get an application, contact the Western SARE headquarters office and indicate the grant effort(s) in which you are interested: Western SARE Program, Utah State University Agricultural Science Bldg, Room 322, 4865 Old Main Hill, Logan, UT 84322-4865; Tel: (435) 797-2257 or 797-3376; Email: wsare@mendel.usu.edu

Calls for proposals, as well as research and program accomplishments, are also available on Western SARE's Web site at <http://wsare.usu.edu/>

General timelines for calls for proposals for each grant effort are:

- 1) SARE (research and education): a call for proposals is released in mid-summer; proposals are due in the fall.
- 2) Professional Development Program: a call for proposals is released in tandem with SARE in mid-summer; proposals are due in the fall.
- 3) Farmer/Rancher Research Grants: a call for producer-directed projects is released in mid-fall; deadline for submission is in mid-January. Individual producers are eligible for grants of up to \$5,000. Groups of three or more operators working cooperatively can apply for grants of up to \$10,000.

Youth Gardens

The National Gardening Association will award its 17th Annual Youth Garden grants to 300 schools, neighborhood groups, community centers, and treatment facilities across the nation. Each grant includes an assortment of tools, seeds and garden products valued at more than \$750. Eligible organizations must plan to garden in 2000 with at least 15 children between the ages of 3 and 18 years. Applications are due **November 1, 1999**. For an application contact Youth Garden Grants, National Gardening Association, 180 Flynn Avenue, Burlington, VT 05401, Tel: (802) 863-1308 or (800) 538-7476; Web site: <http://www2.garden.org/nga/EDU/NGA-EDU6.HTM>

Pest Management Funds

The California Department of Pesticide Regulation is planning to release requests for proposals for pest management grants in late July or early August. Proposals for reduced-risk pest management projects will be due in October. For information, contact **Bob Elliott** at (916) 324-4156; Email: belliot@cdpr.ca.gov

Organic Research Grants

The Organic Farming Research Foundation is offering funds for research on organic farming methods, dissemination of research results to organic farmers and growers interested in making the transition to organic production, and consumer education on organic farming issues. Projects should involve farmers in design and execution, and take place on working farms when possible. Proposals of up to \$10,000 are encouraged. Matching funds and/or in-kind contributions are recommended. Proposals are considered twice a year; the next round of proposals must be received by **July 15, 1999**. (The following round will be due January 15, 2000.) To receive copies of grant application procedures and the OFRF Research and Education Priorities describing target areas, contact Grants Program, Organic Farming Research Foundation, PO Box 440, Santa Cruz, CA 95061; Tel: (831) 426-6606; email: research@ofrf.org ; Web site: www.ofrf.org

UC Policy Grants

The UC California Policy Research Center (formerly the California Policy Seminar) has issued its 2000 Call for Proposals to UC faculty or senior research staff to conduct research on significant policy issues facing California. The Center will award approximately \$200,000 through this competition; normally four to six grants receive funding. Investigators who receive grants will report their findings to state government officials and others interested in California policy issues through written reports and public briefings. Proposals are welcomed on all topics that examine current and anticipated state policies, develop policy approaches, and/or evaluate policy implications. Prior to the formal applications process, those interested in applying should submit a two-page letter of intent by **August 3, 1999**. Contact the Center at (510) 642-5514; Email: CRPC@ucop.edu Guidelines are also available on the Internet at www.ucop.edu/cprc

Calendar

*** SAREP WEB CALENDAR**

SAREP offers a regularly updated sustainable agriculture calendar on our World Wide Web site at:<http://www.sarep.ucdavis.edu/> (click on "Courses, Workshops, Events"). Please feel free to add sustainable agriculture events.

***NATIONAL/INTERNATIONAL CALENDAR**

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

*** MONTHLYMEETINGS**

Lighthouse Farm Network The Community Alliance with Family Farmers Foundation sponsors informal monthly meetings for growers to discuss issues related to pesticide use reduction. Contact: Reggie Knox, CAFF, (831) 457-1007.

JULY

26

Sustainable Agriculture Farming Systems (SAFS) Annual Field Day UC Davis Agronomy Farm, 8 a.m.-noon. Established in 1988 & partially funded by SAREP. 1999 SAFS project field day focus is water-plant relationships & water management to increase agricultural productivity & sustainability. Speaker: John Luna, Oregon State University. Contact: Durga Poudel (ddpoudel@ucdavis.edu), (530)752-2023.

AUGUST

7-12

Ecological Society of America(ESA)-84th Annual Meeting, Spokane, Wash. Joint meeting with International Society for Ecological Modeling. Field trips, workshops, displays. Contact: ESA, 2010 Mass Ave. NW, Suite 400, Washington, D.C.20036; (202) 833-8733; eshq@esa.org ; <http://esa.sdsc.edu>

15-20

International Congress on Ecosystem Health: Managing for Ecosystem Health, Sacramento. Co-organizers: UC Davis, UC Division of Agriculture & Natural Resources, Internat'l Society of Ecosystem Health, Multidisciplinary views of ecosystem health management. Technical sessions, field tours, presentations, forums. Contact:Genetic Resources

SEPTEMBER

21

Food Safety Issues & Small Farms, Watsonville, CA. Sponsor: Community Alliance with Family Farmers (CAFF). Contact: Sam Earnshaw, (831) 471-9915 or Reggie Knox, (831) 457-1007, reggie@cruzio.com

OCTOBER

TBA

Bring Farm Edges Back to Life, 2-hour field workshops, Yolo County. Sponsors: Yolo County Resource Conservation District, Community Alliance with Family Farmers, UC SAREP/International Tree Crops Institute. Contact: Paul Robins, Yolo County Resource Conservation District, (530) 662-2037 ext. 3, rcdnatives@hotmail.com .

1

Horses and Water Quality Protection: Outreach to the San Francisco Bay Area Horse Community, San Mateo County. Sponsors: Foundation for the Advancement of Environmental Education, Council of Bay Area Resource Conservation Districts, UC SAREP. Contact: Lisa Woo Shanks, (707) 794-8692 ext. 123, Lisa. Shanks@ca.usda.gov or Maxine Durney, USDA Natural Resources Conservation Service, (707)762-2983.

2

Horses and Water Quality Protection: Outreach to the San Francisco Bay Area Horse Community, East Bay. See Oct.1.

3

Horses and Water Quality Protection: Outreach to the San Francisco Bay Area Horse Community, Marin County. See Oct.1.

NOVEMBER

TBA

Bring Farm Edges Back to Life, 2-hour field workshops, Yolo County. Sponsors: Yolo County Resource Conservation District, Community Alliance with Family Farmers, SAREP/International Tree Crops Institute. Contact: Paul Robins, Yolo County Resource Conservation District, (530) 662-2037 ext. 3, rcdnatives@hotmail.com .

1-4

International Research Conference on Methyl Bromide Alternatives and Emissions Reductions, San Diego. Sponsors: Methyl Bromide Alternatives Outreach, The Crop Protection Coalition, US-EPA, US Dept. of Agriculture. Topics: alternatives to methyl bromide for preplant, postharvest and structural

uses. Oral or poster presentation submissions due August 6, 1999. Information: www.epa.gov/ozone/mbr/altmet99.html or (559)436-0692; gobenauf@agrc.cnchost.com

7-9

Cultivating the Farm-City Connection: 1999 Small Farm Conference, Berkeley, Calif. Sponsors: UC Santa Cruz Center for Agroecology & Sustainable Food Systems, Center for Urban Education on Sustainable Agriculture, Calif. Fed. of Certified Farmers Markets, Community Alliance with Family Farmers, Golden Gate Farmers Market Assoc., UC Cooperative Extension (Alameda/Contra Costa), USDA Farm Service Agency, Ecology Center of Berkeley. Short courses, tours, tasting. Contact: Kinene Barzin, (510)588-5444; kbarzin@compuserv.com

DECEMBER

TBA *Bring Farm Edges Back to Life*, 2-hour field workshop, Yolo County. See Nov.

MARCH 2000

7-9

Farming and Ranching for Profit, Stewardship and Community, USDA Western Region Sustainable Agriculture Research & Education (SARE) prog. conference, Portland, Oregon. For producers, researchers, Ag extension agents, scientists, policymakers, agribusiness reps, educators. SARE-funded research/education cropping systems, grazing/livestock, biological pest control projects highlights. Contact: Gina Hashagen, Dept. of Horticulture, Oregon State University, Corvallis, OR at (541)737-5477 or Mary Staben, (541) 737-5437, stabenm@bcc.orst.edu

APRIL 2000

10-Oct.13

Apprenticeship in Ecological Horticulture: 6-month Organic Gardening/Farming Training Course, Center for Agroecology & Sustainable Food Systems, UC Santa Cruz. Hands-on learning, classes. Application deadline: Sept. 1 (international applicants), Nov. 1 (US, Canada). Contact: Apprenticeship Info, CASFA, UC Santa Cruz, 1156 High St., Santa Cruz, CA 95064; (831) 459-2321; <http://zzyx.ucsc.edu/casfs>

Summer 1999 (v11n2)

SUSTAINABLE AGRICULTURE is a publication of the UC Sustainable Agriculture Research and Education Program (SAREP). SAREP provides leadership and support for scientific research and education to encourage farmers, farmworkers, and consumers in California to produce, distribute, process and consume food and fiber in a manner that is economically viable, sustains natural resources and biodiversity, and enhances the quality of life in the state's diverse communities for present and future generations.

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Internet: <http://www.sarep.ucdavis.edu> email: sarep@ucdavis.edu
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Managing Editor: Lyra Halprin lhalprin@ucdavis.edu

Technical Reviews Editor:
David Chaney dechaney@ucdavis.edu

BIFS Coordinator/Farming Systems:
Jenny Broome jcbroome@ucdavis.edu

Cover Crops/Restoration Ecology:
Robert Bugg rlbugg@ucdavis.edu

Professional Development Assistant:
Ann Mayse amayse@cati.csufresno.edu

Nutrition/Food Systems: Gail Feenstra gwfeenstra@ucdavis.edu

Grants Manager: Bev Ransom baransom@ucdavis.edu

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