

University of California  
Division of Agriculture and  
Natural Resources

## **Biennial Report**

On the UC Sustainable Agriculture Research and  
Education Program  
To the California State Legislature  
In response to SB 872  
(Chapter 1188, Statutes of 1986)

July 2001 – June 2003

**Sustainable Agriculture Research  
and Education Program  
University of California  
Davis, CA 95616  
[www.sarep.ucdavis.edu](http://www.sarep.ucdavis.edu)**



Office (530) 752-7556    FAX (530) 754-8550

University of California  
Office of the President    April 2004

# Table of Contents

Letter from the Director: “Agriculture is California’s most fundamental environmental resource. How will we continue to sustain it?” .....	1
Executive Summary .....	4
Mission and Goals .....	7
Program Overview .....	8
Competitive Grants .....	8
Staff Research and Education Activities .....	10
SAREP Advisory Committees .....	11
Newsletter and Web Site .....	11
Ensuring the Long-term Viability of California	
Agriculture through Research & Education .....	12
Accomplishments .....	12
Organic Farming Initiative .....	13
Other Collaborative Research and Extension Activities .....	16
Competitive Grants Program .....	20
Funded Projects .....	21
Educational Events .....	22
Partnering with Farmers to Implement Biologically Integrated Farming	
Systems (BIFS) .....	25
Accomplishments .....	25
Competitive Grants Program .....	26
Funded Projects .....	26
Collaborative Research and Extension Activities .....	28
Linking Farmers, Consumers and Communities through Sustainable Community	
Development and Public Policy .....	31
Accomplishments .....	31
Competitive Grants Program .....	31
Funded Projects .....	31
Collaborative Research and Extension Activities .....	32
Program Staff .....	35
Advisory Committees .....	36
Financial Information .....	37
Publications List .....	38

# Letter from the Director:

## **SAREP'S FUTURE LINKED TO ENVIRONMENTAL IMPACT OF AGRICULTURE IN CALIFORNIA, LACK OF FUNDING**

The future of SAREP is inextricably linked to the fact that agriculture is California's most fundamental environmental resource. The future sustainability of California agriculture is one of the most important environmental issues of the 21st century. Privately owned working agricultural lands, forests and open space are the key elements of the entrepreneurial stewardship of California's natural resources. While nearly 40 percent of the state is publicly managed in the form of national and state parks, forest, and rangeland (California has more public forest and national park land than any state except Alaska), a similar land area (38 %) of the state is privately owned agricultural and forest land managed for production. Agroecosystems managed for food and fiber crops cover 27.8 million acres, or 28 percent of the nearly 100 million acres of land in the state, compared with 4.5 million acres (4 %) in urban land. While over 30 million Californians crowd nearly 480 cities on this urban land base across the state, a mere handful of the population, 74,000 farmers and ranchers (over 10,000 of them women), manage California farmland on an area nearly seven times as large. Much of California's 9.5 million-acre irrigated agriculture is the highest value farmland in the world. On that valuable acreage, California farmers and ranchers use 80 percent of the developed water resources of the state. Often, managed agroecosystems are familiar to the public as much desired "open space" and "greenbelts" at the edge of many major coastal and valley urban areas.

### *Ag helps ecosystems*

The vast ecosystems services provided to urban residents by this agricultural land (carbon sequestration and climate moderation; infiltration and retention of water; formation, building and retention of soil; cycling of nutrients and organic materials; pollinator and wildlife refuges; open space and view sheds; agri-education and tourism), cannot be appraised in value as easily as the \$27 billion of annual agricultural food and fiber produced and sold. However, ecosystems services in California agriculture alone could be estimated at one hundred billion dollars or more. As California's population increases to 50 million inhabitants by mid-century, these ecosystem services will become increasingly valuable. While much environmental conservation has been successfully advocated and funded on public wild lands, the vast stewardship potential and positive environmental impact to be gained on largely privately held California agroecosystems is unrealized.

The human dimension and economic contribution of California's farmlands to the state's economy are no less important. The state's farmers, only a tiny fraction of a percent of the population, create over 1 million jobs for farmworkers, machinery and input sales personnel, and other local processing employees directly associated with farm production. Eight percent of the total state jobs and seven percent of California's GNP are created initially by just over 74,000 farmers and ranchers. However, many of California's highest agricultural and timber production counties are also associated with

the highest rates of poverty. Sustainability solutions necessarily include human needs in California.

### ***Farm communities suffer***

Despite this remarkable geographic and economic impact, the sustainability of California agriculture is uncertain. California farmers and ranchers confront historically flat and lower real prices for their production in an increasingly globalized and costly operational environment. The cost-price squeeze on the small and mid-size growers (the majority of California farmers) has been particularly pronounced over the past decade, and has led to increased average farm size and net losses in the number of small- to medium-sized farms and their contribution to sales, according to the National Agricultural Statistical Service of the USDA. At the same time as their economic position erodes, California farmers continue to face expanded demands for land and water by a growing urban population, and increased regulations to improve water and air quality, protect wetlands, and conserve other endangered habitats and species. Can these same farmers and ranchers maintain high levels of productivity and efficiency? Or will agriculture be abandoned in California's economic future, because we continue to ask our farmers to produce bulk commodities as cheaply as possible without regard for environmental and social impacts?

It is clear that increasingly unified but diverse partnerships will be required to shape a sustainable future for California's agricultural communities. I believe that farmers and ranchers, in proactive partnership with sustainable agriculture researchers, consultants, industry representatives, public agencies, farmworkers, consumers, and other food system stakeholders, can solve the most serious challenges of environmental quality, loss of open space, economic viability, and quality of life facing our state. That is, these partnerships are "civic" in nature, entailing public objectives of interest to broad groups of citizens. And this civic partnership is growing every day to advance sustainable agriculture in California. Never before have California's consumers been more motivated to act, through market choices, on the issues of sustainability. Increasingly, the public is asking if their food choices are not only healthy, but are the production practices that produce them sustainable? Is the food grown and harvested in ways that do not harm the environment or farmers and workers that produce it? Major market trends suggest sustained growth in organic and direct market fresh food consumption. The number of farmers markets in California increased by nearly 80 percent over the last ten years. More and more, people want to know where and how their food is produced. The promulgation of the Federal Organic Foods Production Act of 1990, and USDA enforcement provisions beginning in late 2002, are emblematic of increasing consumer engagement in farm production practices. Now, more than ever, California consumers are becoming aware of what they eat.

### ***SAREP budget cuts***

In summer 2003, the California Legislature reduced funding for UC Cooperative Extension by 25 percent and the Agricultural Experiment Station absorbed a 10 percent cut for the second year in a row. A decision was made by the Vice President-Agriculture and Natural Resources, in consultation with others leaders in the Division of Agriculture and Natural Resources (ANR), to minimize cuts to county-based Cooperative Extension

and campus-based specialists in taking these extraordinary funding reductions. As a result, statewide administration and statewide special programs and projects, including SAREP, were assigned larger cuts in fall 2003. For SAREP this meant a cut of more than \$210,000, or 33 percent of state general funds.

ANR-sponsored listening sessions took place in January and February around the state to discuss the cuts to Cooperative Extension and the Agricultural Experiment Station. The public sessions also gave stakeholders an opportunity to comment on the Division and its programs and to provide input on priorities and future directions. Many stakeholders called for greater funding, not less, for agricultural sustainability and programs like SAREP, IPM and Small Farm. There is still time to be heard and we urge you to comment on the ANR Web site at <http://groups.ucanr.org/directions/>.

Meanwhile, the 33 percent cut to SAREP is being absorbed through a combination of reduced operating expenses, work time reductions, closure of the competitive grants program for 2003/2004, and increased reliance on extramural funding. I am fortunate to have a dedicated staff working to retain the program while reducing costs. Despite this uncertain fiscal situation, it is important to all Californians that SAREP continue to deliver research-based information and educational programs to support its Biologically Integrated Farming Systems, Organic Initiative, and Community Development and Public Policy programs. In the face of possible additional cuts in state general funds in the future, and as ANR moves forward on its plans, I will be working to keep SAREP intact as a special program assisting the critical public work toward the development of sustainable agriculture and food systems in the state. California's citizens, especially farmers and ranchers under multiple economic, environmental, and social pressures, urgently need and deserve increased support from our public institutions to ensure the future sustainability of agriculture in California. Sustainable agriculture has never been more important as a guide to action. Future generations will commend us for our commitment now. No less than the environmental future of the state is at stake.—*Sean L. Swezey, director, University of California Sustainable Agriculture Research and Education Program.*

# Executive Summary

The University of California established the Sustainable Agriculture Research and Education Program in 1986, at the request of the California State Legislature, to fund, demonstrate, and manage research-based models of sustainable agriculture in California. It was the first program of its kind at a land grant university or college in the nation. Since that time, SAREP has helped to establish the importance of broad and diverse research and extension partnerships in achieving the goals of agricultural sustainability.

SAREP is pleased to report the following major accomplishments during 2001-2003 in forging these partnerships:

- **SAREP's Research and Education grants program.**

(<http://www.sarep.ucdavis.edu/Grants/Funded/2001/research.htm>)

This program awarded \$108,933 to UC investigators to support five production research and demonstration projects focusing residue management and winter flooding as alternative weed control practices, reduced tillage as a means to capture more carbon in agricultural soils (carbon dioxide emitted from fields is a greenhouse gas), organic vegetable production systems effects, reduction of pollution from dairies using waste lagoon water as fertilizer for forage crops, and corral management in a sensitive watershed. All these projects are generating successful resource-conserving and production models and demonstrations.

Four new projects in community development and public policy were awarded \$60,272 on topics ranging from food policy councils to farm-to-school programs, to assessing alternative food initiatives. In the community development arena, SAREP collaborated with four western states on a project connecting farmers to direct marketing niches. SAREP also worked with researchers at two universities to study farmers markets as small business incubators, with three school districts on farm-to-school projects, with the UC Division of Agriculture and Natural Resources (ANR) Food Security Workgroup on community food security, with 18 land grant universities on a study of local food systems in a globalizing environment, and with researchers at two UC campuses to study the experiences of farmworkers in organic agriculture.

SAREP's associate director used weather data to improve management of Botrytis gray mold of strawberries while reducing reliance on fungicides.

- **SAREP's Biologically Integrated Farming Systems (BIFS) grants program.**

(<http://www.sarep.ucdavis.edu/bifs/>)

This program awarded over \$800,000 in new and continuing grants for research and demonstration partnerships. All these projects have reported elimination or reduction of risk in agricultural pollutants and chemical use and increased use of biological sources of pest control and soil fertility. BIFS funding has come from the U.S. Environmental Protection Agency (US-EPA) through the California Department of Pesticide Regulation (DPR) based on one-time California

legislative augmentations (AB 3383, AB 1998). In addition, the California Department of Food and Agriculture (CDFA) “Buy California” Initiative/USDA grant funded the statewide extension of three very successful, high-impact BIFS projects in dried plums (prunes), walnuts and dairy/forage crops.

The SAREP grants manager/assistant BIFS coordinator, in collaboration with UC researchers, conducted four grower surveys to measure BIFS project impacts on farmer practices/attitudes about alternative practices. SAREP coordinated analysis of California state use report data on pesticides compiled by the California Department of Pesticide Regulation (DPR) from 1997-2001, and staff served as technical advisor to DPR’s Statewide Pest Management Alliance in Winegrapes. SAREP staff, funded by US-EPA, assessed farmer innovation to reduce tillage and add field-border biodiversity in field crops.

- **SAREP’s Organic Initiative.**

(<http://www.sarep.ucdavis.edu/Organic/index.htm>)

This program funded farm advisor research and extension projects, and coordination of organic activities, in 11 Cooperative Extension county offices: Fresno, Humboldt, Marin, Mendocino, Placer-Nevada, San Diego, San Joaquin, Santa Barbara, Sonoma, Sutter-Yuba, and Ventura. In 2003 organic production events included standing-room-only, two-day short courses on organic strawberries (Salinas) and organic winegrapes (Hopland). SAREP was also a USDA National Organic Program contractor on research projects and reviews concerning organic feed availability and new organic materials petitions. Funding for the county programs comes from the Clarence E. Heller Charitable Foundation, the True North Foundation, and a CDFA “Buy California” Initiative/USDA grant.

- **SAREP’s Alternatives to Methyl Bromide grants program.**

(<http://www.sarep.ucdavis.edu/mebralt/>)

This program continued to fund five projects for \$229,973 in the search for biologically based alternatives to methyl bromide use. Methyl bromide is scheduled to be phased out in 2005. With few exceptions, these projects reported possible non-chemical substitutions in a wide variety of production contexts. The projects reveal that a single substitution solution to methyl bromide use is elusive, and that specific production systems must continue to develop pest management solutions.

- **SAREP-funded Grants for Educational Events program.**

(<http://www.sarep.ucdavis.edu/Events/02-03grants.htm>)

More than 2,500 attendees participated in 24 events that were funded by this program for \$35,220. At the events, production topics as diverse as alternative pest control methods (co-sponsored with the UC IPM program), sustainable crop and livestock systems (dairy, vineyard, cover crops, solar power, small farm methods), organic tree crop production, marketing locally grown produce, enhancing alternative pest control practices in school and community gardens,

local food security, intergeneration farm transfer, and other unique topics of relevance to sustainable agriculture. An additional nine educational events were sponsored to foster connections between farmers and consumer communities on topics ranging from farm-based education, small farm business development, agritourism, farm-to-school lunch and garden education programs, and local product development.

- SAREP worked with the USDA Western Sustainable Agriculture Research and Education (SARE) Program to coordinate the SARE Professional Development Program (PDP) in California. This collaboration has resulted in a variety of educational resources for farm advisors, educators and consultants, including an online course *Ecological Pest Management in Grapes*. With SARE-PDP funds, SAREP also provided small grants to support professional development activities organized by UC personnel. Events funded in 2002 included conservation tillage workshops in Five Points, Davis, and Indio. SARE funds also supported the purchase and distribution of educational materials and resources for advisors, and on-going revisions and updates to the SAREP Web site.
- SAREP was a major co-sponsor of a very successful speaker series on sustainable agriculture, bringing 19 experts from around the world to UC Davis during 2003 to address the multiple issues of sustainability. For video archives of this innovative speaker series, please see our Web site at: <http://www.sarep.ucdavis.edu/seminar/>. The seminars attracted a total of 1,300 attendees, with an additional 1,000 Web-based viewers.
- The UC Division of Agriculture and Natural Resources funded the SAREP-sponsored BIFS and Organic Farming Research Workgroups. These workgroups coordinated and helped the efforts of more than 120 members, including over 20 UC faculty from four campuses, specialists from 12 academic departments, farm advisors from over 20 counties, and nearly 40 external stakeholders in issue-oriented planning meetings and co-sponsored research, demonstration, and extension initiatives.

These activities and research results continue to demonstrate the acceptance and strength of sustainable agriculture goals in our farm and food communities.



# Mission and Goals

The *UC Sustainable Agriculture Research and Education Program (SAREP)* was created through the grass roots efforts of organizations and individuals concerned about the environmental impacts of agriculture, the health of rural communities, and the profitability of family farming operations in California. As a result of a legislative process and with UC leadership, the program was established by the UC Regents with three mandates: to administer competitive grants for research on sustainable agricultural practices and systems, to develop and distribute information through publications and on-farm demonstrations, and to support long-term research in sustainable farming systems on UC lands.

## MISSION STATEMENT

SAREP provides leadership and support for scientific research and education in agricultural and food systems that are sustainable; that is, are economically viable, conserve natural resources and biodiversity, and enhance the quality of life in the state's communities. SAREP serves farmers, farmworkers, ranchers, researchers, educators, regulators, policy makers, industry professionals, consumers, and community organizations across the state. SAREP is a Statewide Special Program within UC Agriculture and Natural Resources (ANR).

**Based on our overall mission and the founding legislation, SAREP has two goals:**

- To assist California farmers and ranchers in developing and implementing sustainable production and marketing systems; and
- To support California's rural and urban communities in understanding the concept and value of sustainable agriculture and participating in sustainable food and agricultural systems.

# Program Overview

In addition to this program overview, which describes SAREP's funding and organization, the UC SAREP 2001-03 Biennial Report includes sections on:

- **Crop and Livestock Production (including organic agriculture),**
- **Biologically Integrated Farming Systems (BIFS) program, and**
- **Sustainable Community Development and Public Policies.**

Each section includes discussion of competitive grants programs and accomplishments and collaborative research and extension activities. Lists of program staff and advisory committees appear at the end of the document, along with financial information and a list of SAREP resources (publications, videotapes).

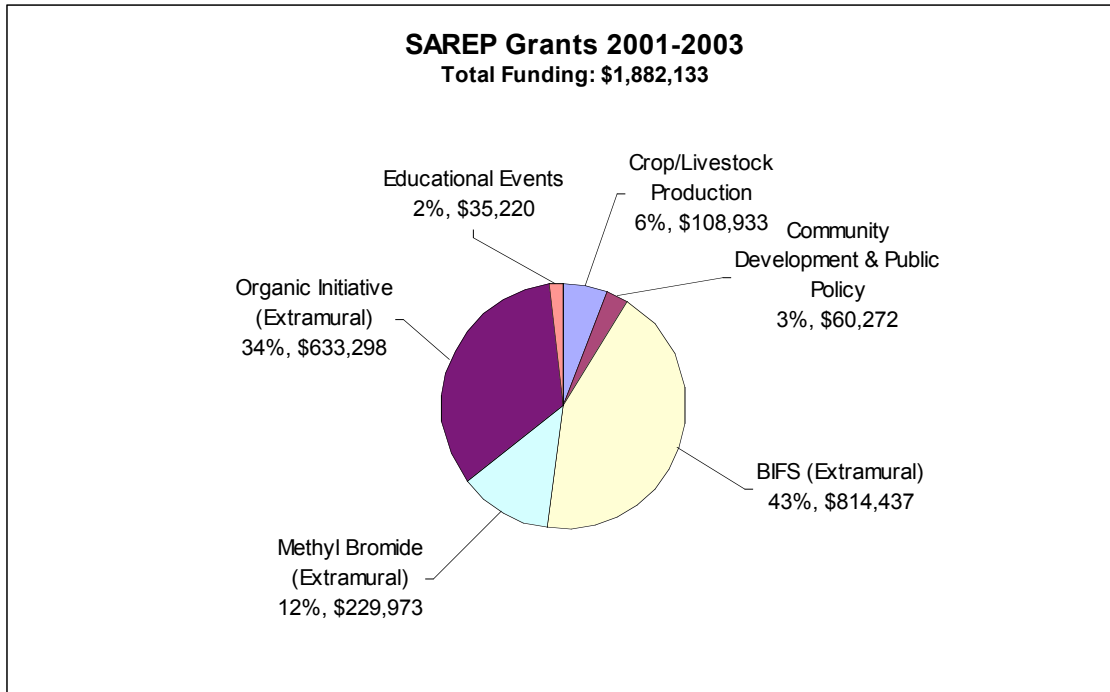
## COMPETITIVE GRANTS

SAREP administers several competitive grants programs for research and education in sustainable agriculture (funding from SAREP general fund and extramural sources). Grant criteria and requests for proposals are available at the SAREP Web site ([www.sarep.ucdavis.edu](http://www.sarep.ucdavis.edu)) or by calling SAREP at (530) 752-7556. During FY 2001-2003, SAREP dedicated \$204,425 to its research and education competitive grants program:

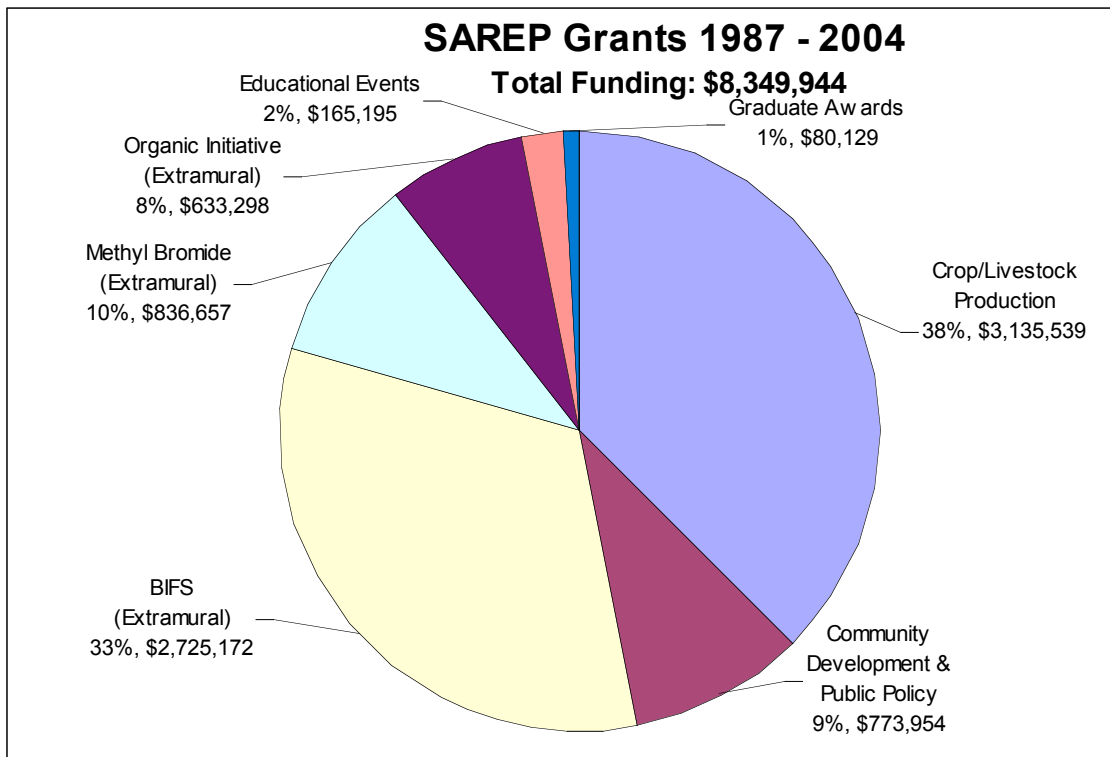
- Nine research and education projects for a total of \$169,205
- Twenty-four educational events in 2001-02 and 2002-03 totaling \$35,220

During FY 2001-2003, SAREP also used extramural funds for new and continuing Biologically Integrated Farming Systems (BIFS) projects (\$814,437) and Alternatives to Methyl Bromide projects (\$229,973).

In addition, SAREP obtained foundation, state and federal funds to support research and educational projects through its Organic Initiative (\$633,298). In total, SAREP was able to provide almost \$2 million in grant funds during this reporting period.



Since 1987 SAREP has been able to provide over \$8 million in funds to our UC colleagues and others for research and extension information that assists California in developing sustainable food and farming systems.



SAREP is engaged in applied research and extension projects that support the development of sustainable agriculture and community food systems. SAREP staff is partnering with university researchers, Cooperative Extension personnel, community-based organizations throughout California and the nation, and state and federal agencies to support, assess and document food and agriculture systems. Recent collaborative research and extension activities are described throughout this document. SAREP staff and affiliates (visiting international scholars, post-doctoral researchers, post-graduate researchers) and their emphases are listed below. (Current SAREP staff list and contact information is on page 35.)

SAREP:

Sean L. Swezey, director; organic production research, regulatory compliance, entomology.

Janet C. “Jenny” Broome, associate director. BIFS program, plant pathology, alternatives to methyl bromide.

Robert L. Bugg, production systems analyst; cover crops, restoration ecology.

David Chaney, education coordinator.

Gail Feenstra, food systems analyst; community food systems, nutrition.

Jeri Ohmart, food systems program assistant; community food systems, organic systems.

Bev Ransom, BIFS coordinator, grants manager; agricultural partnerships, grower surveys.

Lyra Halprin, public information representative, newsletter editor.

Aimee Schrek, postdoctoral researcher; food systems (funded by UC Institute for Labor and Employment)

Samuel Prentice, postgraduate researcher; organic production research, organic materials (funded by USDA National Organic Program)

USDA-Agricultural Research Service:

Kendra Baumgartner, USDA-ARS pathologist, UC Davis

Xiaomei Cheng, postdoctoral researcher

Lissa Veilleux, postgraduate researcher

Visiting international fellows:

2002 Humphrey Fellow Maung Maung Lwin, Myanmar (formerly Burma); sustainable agriculture, food security issues in rural development.

2003-04 Chulgoo Kang, South Korea; sustainable agriculture, organic farming, marketing issues.

## **STAFF RESEARCH AND EDUCATION ACTIVITIES**

Since 2001, SAREP has received approximately \$1,704,000 in extramural funds (see Financial Information, page 37) for research and education projects. Staff members have participated as program chairs, speakers, moderators, and organizers in numerous workshops, conferences and educational events throughout the state, nation and world, and helped guide graduate students with dissertation fieldwork, thesis review, and literature review. Additionally, staff served as reviewers for academic and policy briefing papers, and helped other researchers with literature review and experiment design. Results of SAREP’s staff work have been published in peer-reviewed articles, books, extension bulletins, and databases. Staff profiles are available on SAREP’s Web site.

## SAREP ADVISORY COMMITTEES

The **Program Advisory Committee** (PAC) reviews grant proposals for relevance to SAREP's mission and assists in long-range program planning. The **Technical Advisory Committee** (TAC) makes recommendations about the scientific merit of grant proposals. The **BIFS Program Advisory Review Board** advises SAREP on the BIFS Program and makes recommendations about the funding of BIFS grant proposals and renewal requests. Lists of the PAC, TAC and BIFS committees are available on SAREP's Web site and on page 36 of this report.

## NEWSLETTER AND WEB SITE ([www.sarep.ucdavis.edu](http://www.sarep.ucdavis.edu))

Three times a year, SAREP publishes its newsletter *Sustainable Agriculture*. The newsletter includes reports on research projects, workshops and meetings funded by SAREP, as well as commentaries, updates on research and extension activities, technical reviews, and funding sources. The newsletter is available at the Web site, via email or by contacting the SAREP office.

The SAREP Web site continues to be revised and updated. It includes an interactive events calendar, the most recent biennial report, past and current issues of the newsletter, and information on topics such as biologically integrated farming systems, organic farming research, local food systems and cover crops, and a searchable database of all research and education projects funded by SAREP.

New to the site is a revised and updated Local Food Systems page, with separate sections on direct marketing, local food systems in a global environment, farm-to-school programs, and other resources. The direct marketing section offers links to farmers market case studies and to recent publications, such as *Organizing a Successful Direct Marketing Workshop* and *Selling Directly to Restaurants and Retailers*. The section on local food systems in a global environment features extensive food system studies for three California counties. The farm-to-school link provides an analysis of a farm-to-school program in Yolo County titled *The Crunch Lunch Manual: A case study of the Davis Joint Unified School District Farmers Market Salad Bar Pilot Project and a Fiscal Analysis Model*.

# Ensuring the Long-Term Viability of California Agriculture through Research & Education--Crop & Livestock Production

California farmers and ranchers face a tremendous challenge as stewards of the state's land resources. As producers of a wide array of high-quality agricultural commodities valued at \$27.6 billion in 2001, California farmers are expected to sustain high productivity with minimal environmental impact. However, observers of the environmental and social conditions of agriculture and food systems in California are concerned with the sustainability of these systems. High urban 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 prohibitions of farming practices considered commonplace even five years ago. At the same time, production costs are rising and many commodity prices continue at low levels.

One of SAREP's major goals is to help the state's farmers and ranchers manage their land and businesses in ways that are profitable *and* protect the environment and human resources. The program does that in two ways: 1) funding research and education projects that address critical needs and problems in our agricultural systems, and 2) developing and extending information on sustainable farming and ranching practices.

## ACCOMPLISHMENTS

Projects competitively funded by SAREP continue to provide growers with key information on many components of sustainable farming. Some current examples include:

- Rice growers, researchers and others involved in rice production have improved their understanding of the impact of residue management and winter flooding on nutrient cycling, weed pressure and pest dynamics based on the results of Chris van Kessel's project, "Rice Straw Management as a Means to Control Weed and Pest Pressure in California Rice Fields."
- Jeff Mitchell's project, "Conservation Tillage Systems for the San Joaquin Valley's West Side," provided a "showcase" experimental site that has been featured in more than 10 field days, scores of farmer visits and more than 120 presentations during the last two years. On this site, cover cropping and conservation tillage resulted in increased soil carbon in the surface 15 cm relative to the standard system with no cover crop. Additionally, overall dust emissions were reduced significantly.
- California dairy farmers are able to improve their efforts to protect groundwater quality based on a system that allows farmers to apply measured amounts of nitrogen

from lagoon water. Preliminary results from Marsha Campbell Mathew's continuing project "Protecting Groundwater Quality on Dairies by Proper Lagoon Nutrient Management," show that proper application of lagoon nutrients is improving groundwater quality on project sites.

## ORGANIC FARMING INITIATIVE

### *Adding Value to County Research and Extension Activities in Organic Farming Systems*

As part of its organic initiative, SAREP is working with the following county UC Cooperative Extension programs to bring organic farming research and information resources to the local level. Funding for these county-based programs comes from the **Charles E. Heller Charitable Foundation**, the **True North Foundation**, and a California Department of Food and Agriculture "**Buy California Initiative**"/USDA grant. For information about specific programs, please contact the individual listed.

#### Funded by Clarence E. Heller Charitable Foundation

- **Humboldt County.** Organic farming research and extension program; coordinated by Annie Eicher, UC Cooperative Extension Humboldt County ([aleicher@ucdavis.edu](mailto:aleicher@ucdavis.edu)). Eicher works on a variety of projects addressing soil management, production techniques, and marketing strategies. For more information see <http://www.sarep.ucdavis.edu/newsltr/v15n1/sa-4.html>
- **Marin County.** Marin County sustainable and organic program and *Grown in Marin* newsletter; coordinated by Steve Quirt, UC Cooperative Extension Marin County ([wsquirt@ucdavis.edu](mailto:wsquirt@ucdavis.edu)). Research and extension activities focus on medicinal herb farming, natural and organic beef, farm diversification, organic strawberry production, organic livestock opportunities, direct marketing, farmstead cheeses, specialty crops, and organic transition and certification. For more information see <http://www.sarep.ucdavis.edu/newsltr/v14n2/sa-3.htm>
- **Ventura County.** Organic vegetable and row crops farming systems program; coordinated by farm advisor Oleg Daugovish, UC Cooperative Extension Ventura County ([odaugovish@ucdavis.edu](mailto:odaugovish@ucdavis.edu)). Research and extension priorities include cover crop evaluation, compost quality, and disease and fertility management in organic systems. For more information see <http://www.sarep.ucdavis.edu/newsltr/v14n3/sa-02.htm>

#### Funded by Clarence E. Heller Charitable Foundation in cooperation with the UC Small Farm Program

- **San Joaquin County.** Field research on how to control annual weeds in organic systems; coordinated by Benny Fouche, UC Cooperative Extension San Joaquin County ([bfouche@ucdavis.edu](mailto:bfouche@ucdavis.edu)). Various products will be evaluated and results reported in publications and at workshops and field days.
- **Fresno County.** Field trials to test the effectiveness of organic insecticides on controlling diabrotica in cucurbits, and evaluate other practices such as reflective

mulches and release of tachinid parasite flies; coordinated by Richard Molinar, UC Cooperative Extension Fresno County ([rhmolinar@ucdavis.edu](mailto:rhmolinar@ucdavis.edu)). The cost effectiveness of each practice will be assessed.

- **Santa Barbara County.** Field trials with farmer-cooperators to determine efficient and cost effective fertilizer systems for organic fruit and vegetables; coordinated by Mark Gaskell, UC Cooperative Extension Santa Barbara/San Luis Obispo counties ([mlgaskell@ucdavis.edu](mailto:mlgaskell@ucdavis.edu)).
- **San Diego County.** Create an Organic Advisory Board for San Diego County, assess markets and marketing challenges faced by local organic growers, and conduct research on organic blueberries, including variety testing and evaluation of soil pH management techniques; coordinated by Ramiro Lobo, UC Cooperative Extension San Diego County ([relobo@ucdavis.edu](mailto:relobo@ucdavis.edu)).

#### Funded by the True North Foundation

- **Sonoma County.** Organic Olive Production Shortcourse and Manual. Field research to evaluate varietal differences in olives, soil management and pest management, including organic approaches to managing olive fruit fly; coordinated by Paul Vossen, UC Cooperative Extension Sonoma County ([pmvossen@ucdavis.edu](mailto:pmvossen@ucdavis.edu)).
- **Mendocino County.** Organic Winegrape Production Shortcourse and Manual. Research on varietal issues and pest management in winegrapes, including cultural control for bunch rots, cover crops and sanitation for mold reduction; coordinated by Glenn McGourty, UC Cooperative Extension Mendocino County ([gtmcgourty@ucdavis.edu](mailto:gtmcgourty@ucdavis.edu)).
- **Sutter-Yuba counties.** Organic field research on stonefruit orchard crops, including temporal nitrogen budgets and N application issues, green manure and compost management, and insect and weed management; coordinated by Janine Hasey, UC Cooperative Extension Sutter-Yuba counties ([jkhasey@ucdavis.edu](mailto:jkhasey@ucdavis.edu)).
- **Placer-Nevada counties.** Research issues related to farm size, certification and marketing. Additional research on cultural pest control, fertility, and management of organic mandarin oranges; coordinated by Cindy Fake, UC Cooperative Extension Placer-Nevada counties ([cefake@ucdavis.edu](mailto:cefake@ucdavis.edu)).

#### ***California Department of Food and Agriculture (CDFA) “Buy California Initiative”/USDA***

In January 2003, SAREP received a \$100,000 CDFA “Buy California Initiative” grant to 1) support the expansion and redesign of the program’s Web site for organic growers, 2) convene four short courses on organic production practices (in strawberries, winegrapes, olives and vegetable crops, and 3) develop organic production manuals for each of these crops.



The first short course was held in Salinas on organic strawberry production and the second in Mendocino County on organic winegrape growing. Both short courses were well-attended and highly successful. SAREP staff provided technical presentations as well as logistical and planning support for both events, and technical information and editing and compilation support for the manuals that will be published. The organic production manual for strawberries is being circulated for peer review, and papers are being collected for the second manual on organic winegrowing. We anticipate a publication date for these manuals of mid-2005. A Cooperative Extension short course and manual on organic vegetable production are planned for 2004, while a short course and manual for organic olive production is planned for early 2005.

#### ***ANR Organic Farming Research Workgroup***

The purpose of the UC Organic Farming Research Workgroup (<http://www.sarep.ucdavis.edu/Organic/workgroup.htm>) is to enhance communication and interaction among individuals involved in research and extension related to organic farming. Specific objectives are to share resources, prioritize research needs, organize tours and educational programs, and coordinate fundraising efforts. The workgroup is open to both UC and non-UC partners involved in organic farming research and extension activities. Those interested in joining the workgroup are invited to send an email to Sean Swezey, workgroup chair, at [findit@cats.ucsc.edu](mailto:findit@cats.ucsc.edu). The workgroup also sponsors an email listserv ORGANICFARM where members can post questions and discuss topics relevant to the group's mission (see the Web site for instructions on joining the listserv).

SAREP's request for continued funding of the organic farming research workgroup was approved in 2003. Workgroup funds support meetings and workshops, while extramural funds granted to workgroup members support conferences, organic production manuals and support for the growing research needs of the organic farming community. Current membership includes 60 Agriculture and Natural Resources (ANR) and 30 non-ANR representatives.

#### ***Organic Compliance Training Workshops***

SAREP received a grant from the Western Region USDA SARE program in 2002 to educate Cooperative Extension advisors and other agricultural professionals about the new National Organic Program (NOP) that took effect in October 2002. The two-year, multi-state grant funds several organic compliance-training workshops, and the development of a Western states guide to the NOP. A satellite workshop took place in spring 2003; several other on-site workshops are planned for 2004. Cooperators include Washington State University, New Mexico State University and the Organic Materials Review Institute.

### **OTHER COLLABORATIVE RESEARCH AND EXTENSION ACTIVITIES**

SAREP works with a variety of clients and stakeholders both within and outside the University of California to educate producers, extension professionals, public policy makers and others about sustainable farming and ranching practices. SAREP staff has put a high priority on working collaboratively with colleagues in UC ANR as well as with farmers, community organizations, and government agencies to address issues of the sustainability of California's agriculture. These outreach efforts complement and extend SAREP-funded research projects. Activities during the last two years include the following:

#### ***Director's Research and Extension Activities***

The SAREP director allots 20 percent of his effort as an extension specialist in his research program in cooperation with the University of California, Santa Cruz Center for Agroecology and Sustainable Food Systems and the Department of Environmental Studies, where he is adjunct associate professor. He is actively involved in sustainable agriculture research and extension activities in the Central Coast region. These projects are designed to: 1) provide successful reduced-risk and organic farming principles to organic, transitional and conventional farmers considering conversion to sustainable practices and/or production for certified organic markets; and 2) demonstrate the ongoing agronomic and economic feasibility of these new production technologies in an on-farm, whole-systems research approach. Practices demonstrated by the program include: release of insectary-reared natural enemies, conservation of native natural enemies in organic systems; and "farmscaping" for trapping of a key strawberry pest and the support of biological control agents. Program support for organic growers includes the development of information and research on farm-level conversion from conventional to organic production systems (apples, artichokes, and cotton); biological control and non-crop farmscape vegetation (strawberries); codling moth mating disruption (apples); and organic production methods (strawberries).

#### ***National Organic Program Technical Material Review Panel***

The USDA National Organic Program set up a cooperative agreement with SAREP to compile Technical Advisory Panel (TAP) reviews on crop production materials being considered for use in certified organic systems. Compilation of these reviews is necessary for the implementation of the national standards on organic production, which went into effect in October 2002. To determine whether a substance can be used in certified organic systems, the Organic Foods Products Act (OFPA) requires the establishment of a National List of Allowed and Prohibited Substances (National List), overseen by the National Organic Standards Board (NOSB). This list identifies the synthetic substances that may be used, and the non-synthetic substances that cannot be used by organic production and handling operations. Individuals and companies may petition the National Organic Standards Board (NOSB) to evaluate substances for inclusion on or removal from the List. The petitions undergo an independent, scientific TAP review, which the NOSB uses to make a final ruling regarding use of the substance in certified organic systems. SAREP compiled eight TAP reviews of petitioned substances. This information was forwarded to three qualified, anonymous reviewers who provided professional input on the appropriateness of the use of the substances in organic agriculture. The reviewers' input was incorporated into the TAP review, which was then submitted to the NOP for

decision-making. For more information on materials reviewed, see the NOP Web site at [www.ams.usda.gov/nop](http://www.ams.usda.gov/nop).

***SAREP-USDA partnership assists organic feed crop research***

SAREP was asked to by USDA to conduct a survey of organic producers in the western states, in order to evaluate claims concerning the supply and price of certified organic feed crops. SAREP is one of three contractors nationwide who provided the USDA with data on acreage trends, crop type, and pricing of certified organic crops used as feed ingredients. SAREP submitted a final report to USDA on the results of its survey conducted on organic feed grain production over the past two years in the western states. The USDA will use SAREP's report as it makes decisions concerning organic regulations. National organic product sales are currently approaching \$12 billion annually, and sales of organic poultry and beef are one of the fastest growing segments.

***Cooperative Agreement with USDA ARS to support sustainable vineyard floor management research***

In 2002, SAREP established a two-year cooperative agreement with a USDA-ARS plant pathologist based at the UC Davis plant pathology department, to focus on sustainable weed management research. These funds enabled the hiring of a postdoctoral researcher and a postgraduate researcher to work in the pathologist's lab. One objective of this research is to compare the efficacy of chemical, mechanical, and cultural weed management practices and evaluate how these practices affect weed population dynamics over time. The effects of weed management practices on soil chemical and physical properties and on grapevine growth and yields are also being monitored. Cover crop management is often used to modify soil chemical, physical, and biological properties. The extent to which modifications to the soil in the vineyard middles actually impact the soil in the vineyard rows and the grapevines likely depends on the proximity of grapevine roots to the cover crops. A second objective of this research is to study the effects of vineyard cover crops on grapevine fine root distribution, nitrogen availability, soil organic matter, and arbuscular mycorrhizal fungi.

***National Academy of Sciences Committee 2000-2002.***

SAREP's associate director served on a National Academy of Sciences (NAS) committee evaluating the quality, relevance and effectiveness of federally funded agricultural research, particularly agencies within the USDA's Research, Education, and Economics mission (REE) area. She was a member of the subcommittee assessing research on environmental quality and harmonization of natural and agricultural resources. Other areas being evaluated include food and fiber supply; food safety, diet and nutrition; and economic and social development in a global context. The committee released its report in 2003 entitled *Frontiers in Agricultural Research: Food, Health, Environment and Communities*.

***California Organic Products Advisory Committee***

SAREP's director serves as technical representative on this statewide board, which advises California's Secretary of Agriculture A.G. Kawamura on implementation and

enforcement of the federal Organic Foods Products Act (OFPA) and the California Organic Products Act (COPA).

### ***USDA-SARE Professional Development Program***

SAREP works closely with Western Region USDA Sustainable Agriculture Research and Education (SARE) to coordinate the SARE Professional Development Program in California. In this capacity, SAREP has produced a variety of educational resources that Cooperative Extension personnel and other educators and consultants can use in working with their clientele. A major project completed in 2001 was the development of an online course titled *Ecological Pest Management in Grapes*. This self-guided, interactive, Web-based course provides pest control advisers (PCAs) and others a unique opportunity to enhance their skills and earn continuing education credits. With SARE-PDP funds, SAREP also provided several small grants to support professional development activities organized by UC personnel. Events funded in 2002 included conservation tillage workshops in Five Points, Davis, and Indio. SARE funds are also used to purchase and distribute educational materials and resources for Cooperative Extension personnel, and on-going revisions and updates to the SAREP Web site.

### ***Sustainable Management of the UC Davis Vineyard***

The UC Davis Department of Viticulture and Enology manages lands that are located along the Putah Creek Ecological Preserve, which comprises a riparian zone supporting many native plant and wildlife species. Between 1998 and 2003, SAREP assisted the vineyard manager in the planning and implementation of a transition to more sustainable management, and in documenting and presenting information on the progress made on these lands. Practices include a range of cover cropping options, including different perennial and annual grasses, clovers, and other herbs. Sixty of the 140 acres are under some sort of cover cropping regime. During 2003, SAREP worked with a Yolo County Cooperative Extension farm advisor and several local winegrape growers to delineate a Putah Creek winegrape-growing area by identifying the geology, climate, and history of the area, which would enhance the status of wines produced by UC Davis, improve synergy with local growers and aid their adoption of techniques perfected at the UC Davis vineyard. SAREP also worked with the manager of the UCD pomology department lands on a plan to implement sustainable practices, especially cover cropping, on those soils.

### ***Native Pollinator Insects***

SAREP continues to collaborate with researchers at Princeton University on a study to investigate pollination ecology on organic vegetable farms in Yolo County. SAREP also assisted in planning collaborations with the Xerces Society, including work on enhancing pollinators in suburban settings. Data indicate that native solitary bees frequently attend strawberry and watermelon flowers, and that there are positive statistical relationships between crop visitation by solitary bees to the proximity of wild lands and to the vegetational diversity on adjoining field margins. Recently SAREP worked on collecting and interpreting data on the role of native bees in California sunflower seed production, and on the abundance of native bees in remnant versus restored riparian habitat along the Sacramento

River. Data indicate that density of native solitary bees is related to pollination efficiency by the introduced honeybee, and that bumblebee colonies survive longest on organic farms, shortest on conventional farms, and an intermediate span in wild lands in Yolo County.

SAREP continues to collaborate with researchers in the UC Davis environmental horticulture department and associates on evaluating nitrogen dynamics in organic almond orchards and vineyards.

### ***Weather-Driven Plant Disease Risk Models***

With funding from US-EPA Region 9, the SAREP associate director used PestCast weather data to improve the integrated management of Botrytis gray mold of strawberries while reducing reliance on several fungicides under review due to the 1996 Food Quality Protection Act (FQPA). PestCast is a regional weather network that supports the development, validation and implementation of plant disease models. She developed a Botrytis infection model based on the interaction of hours of surface wetness and the average temperature during the wetness event for use on grapes in the 1990s. Starting in 2001, she worked with cooperating growers, UC IPM, and the SAREP director to test the model for two years in three growers' fields on the Central Coast. Preliminary results look promising; using the model, growers can reduce use of fungicides and obtain similar disease control to a calendar-based spray program. Further data analysis from the second season is ongoing.

### ***Assisting UC Davis with Sustainable Agriculture planning and coordination***

The SAREP associate director served on the College of Agricultural and Environmental Sciences Dean's Advisory Committee on Sustainable Agriculture at UC Davis from March 2002 through October 2002. The 18-member committee includes faculty and academic staff from 10 departments and several UC ANR statewide special programs like SAREP based at the campus. It was charged with developing an inventory of all work related to sustainable agriculture at UC Davis, recommending an umbrella organization to coordinate activities, review and provide recommendations on possible undergraduate and graduate curriculum, and facilitate communication and collaboration. The report was released in November 2002 and is available at

<http://www.aes.ucdavis.edu/AcadProg/SustAgCmte.htm>

### ***Science of Sustainable Agriculture series***

SAREP was pleased to help organize the successful multidisciplinary speaker series on sustainable agriculture, *The Science of Sustainable Agriculture: Measuring the Immeasurable*, at UC Davis during the spring and fall of 2003. The series brought 19 experts from around the world to address a wide range of topics covering economics, social and environmental elements of food system sustainability. More than 1300 people attended the talks over the two quarters and almost 1000 additional individuals viewed the online video archives. The series received considerable support and leadership from the UC Davis College of Agricultural and Environmental Sciences Programmatic Initiative, Unilever Bestfoods Corporation, Kearney Foundation of Soil Science, UCD Department of Agronomy and Range Science, UCD Department of Land, Air and Water

Resources, as well as the UCD Center for History, Society, and Culture. For video archives of all the speakers see <http://www.sarep.ucdavis.edu/seminar/>

### ***Science of Sustainable Viticulture meeting***

In 2003, SAREP's associate director served on the planning committee and delivered the opening address at a special all day session of the annual meeting of the American Society of Enology and Viticulture called The "Science of Sustainable Viticulture." More than 300 people attended the session. She presented information on "Sustainable Viticulture Programs around the World." PowerPoint presentations from all the speakers are available at the SAREP Web site at

<http://www.sarep.ucdavis.edu/production/viticulture/asev2003.htm>

### ***International visitors at SAREP***

SAREP has received visits from many international researchers, ministers, and regulators interested in the sustainable and organic agriculture in California during this review period. Additionally, In addition, SAREP hosted two fellows from Asia. The associate director served as a mentor and internship coordinator for visiting Humphrey Fellow from Myanmar (formerly Burma). In addition, a Korean researcher is spending 18 months (2003-04) with SAREP learning about sustainable agriculture and organic farming and marketing issues.

### ***SAREP assists newly created UC Specialty Crops competitive grants program***

With funding from the USDA and CDFA's "Buy California" Initiative, SAREP's director and associate director helped an extension specialist and his staff at the UC Vegetable Research and Information Center develop a Request for Proposals, then reviewed proposals and made recommendations that resulted in the funding of 17 proposals totaling \$1.8+ million. For more information see <http://vric.ucdavis.edu/scrp/ucscrp.htm>

## **COMPETITIVE GRANTS PROGRAM**

SAREP has held closely to its mandate to support research and extension efforts relevant to the state's farmers and ranchers. These projects address issues, problems, and opportunities in a variety of production systems across the state. Major project categories include soil management, pest management, livestock and dairy production, and cropping systems (see SAREP-Funded Projects, page 21). The Biologically Integrated Farming Systems (BIFS) grants program is covered separately in this report.

In 1999, SAREP launched a special grants program targeting alternatives to methyl bromide. (See newsletter articles <http://www.sarep.ucdavis.edu/newsltr/v15n2/sa-1.htm> and Vol. 15, No. 3.) Methyl bromide has been identified as an ozone-depleting substance, and the U.S. Environmental Protection Agency has prohibited the production and importation of methyl bromide starting January 1, 2005. Although several potential chemical and non-chemical alternatives to methyl bromide have been identified, none have been adequately evaluated for their effectiveness within California farming systems. SAREP supported six biologically based projects aimed at filling that information gap and helping producers prepare for the changes ahead. Final reports from the projects

funded through this program are on the SAREP Web site at <http://www.sarep.ucdavis.edu/mebralt/>

In addition to grants for production-oriented research, SAREP also provides grants for educational events. Educational grants are awarded to individuals and organizations to conduct workshops, field days, and other instructional events related to sustainable agriculture. In 2001-02, 17 events were selected for a total of \$19,920. The UC Statewide Integrated Pest Management (IPM) Project and the International Tree Crops Institute provided portions of the 2001-02 funds. In 2002-03 SAREP awarded an additional \$36,500 to support 22 educational programs. SAREP again collaborated with UC IPM to fund six of these grants.

As an indicator of the outreach effectiveness SAREP has achieved through these grants, final reports from this period show that approximately 2,500 individuals participated in the events supported by these grants. Lists of the educational events funded in 2001-02, and 2002-03 are included at the end of this section.

## FUNDED PROJECTS

The latest information on SAREP-funded projects is available on our Web site in the Funded Projects Database: <http://www.sarep.ucdavis.edu/grants/database>. The database includes summaries of progress reports or final reports on all SAREP-funded projects.

### *New Projects Funded 2001-2003*

Four new research and education projects related to crop and livestock production were funded in 2001 for a total of \$96,159. These projects were chosen in the priority topic area: *Optimizing organic and biologically integrated farming systems*. Project title, principal investigators, time period and funding amounts awarded follow.

- Chris van Kessel, professor, UC Davis, agronomy and range sciences, **“Rice Straw Management as a Means to Control Weed and Pest Pressure in California Rice Fields,”** \$37,956 (July 01 - June 03).
- Marsha Campbell Mathews, UC Cooperative Extension farm advisor, Stanislaus County, **“Protecting Groundwater Quality on Dairies by Proper Lagoon Nutrient Management,”** \$21,580 (July 01 - June 03).
- Milton E. McGiffin, Jr., UC Cooperative Extension specialist, UC Riverside, botany and plant sciences, **“The Organic Effect in Desert Vegetable Production,”** \$20,000 (July 01 - June 02).
- David J. Lewis, UC Cooperative Extension watershed management advisor, Sonoma County, **“Management of Corrals and Pastures to Reduce Pollutant Loading to Coastal Watersheds,”** \$16,623 (July 01 - June 02).

### ***Continuing Projects Funded 2001-2003***

- Jeff Mitchell, UC Cooperative Extension Vegetable Crops Specialist, Kearney Agricultural Center, **“Conservation Tillage Systems for the San Joaquin Valley’s West Side,”** \$38,322 (July 99 - June 02).

### ***Continuing Projects - Alternatives to Methyl Bromide:***

- Greg Browne, research plant pathologist, USDA-Agricultural Research Service, UC Davis plant pathology, **“Cultural Control and Etiology of Replant Disorder of *Prunus* spp.,”** \$165,702 (Aug. 99- July 02).
- John Duniway, professor, UC Davis plant pathology, **“Microbiological Improvement of Root Health, Growth, and Yield of Strawberry,”** \$130,658 (July 99 - June 02).
- Howard Ferris, professor, UC Davis nematology, **“Development of Grape Rootstocks with Multiple Nematode Resistance,”** \$110,818 (July 99 - June 02).
- Kirk Larson, UC Cooperative Extension pomologist, South Coast Research and Extension Center, Irvine, **“Containerized Strawberry Transplants as a Replacement for Methyl Bromide Soil Fumigation in California Strawberry Nurseries,”** \$90,836 (July 99 - June 02).
- James MacDonald, professor UC Davis, plant pathology, **“Alternatives to Methyl Bromide for Control of Soil Borne Fungi, Bacteria and Weeds in Coastal Ornamental Crops,”** \$71,558 (July 99 - June 01).
- Elizabeth Mitcham, Postharvest Pomologist, UC Davis, pomology, **“Acetaldehyde and Carbon Dioxide Fumigation for Postharvest Control of Insects on Strawberry Fruit,”** \$83,585 (July 99 - June 01).

## **EDUCATIONAL EVENTS**

### ***2001 Grants for Educational Events***

#### Integrated Pest Management (funding through UC IPM)

- Bruce Badzik, National Park Service, Fort Baker, Marin County. \$1,500. **Urban Rodent Summit.**
- David Chang, Santa Barbara County Agricultural Commissioner’s Office, \$900. **Noxious Weeds Workshop.**
- Emily Chase Bueermann, Mariposa Elementary School PTA, Redlands. \$1,500. **All S.Y.S.T.E.M.S. Go! IPM in School Gardens Workshop.**



Community Development / Community Food Systems (funding through UC SAREP)

- Bob Roan, PlacerGROWN, \$1,500. **PlacerGROWN Farm Conference.**
- Christina Carpenter, \$1,500. Sustainable Sonoma County, **Sonoma County Food System/Farm-to-School Coalition Building 2001.**
- Janine Hasey, UC Cooperative Extension Sutter-Yuba Counties, \$1,280. **Certified Organic Tree Crops: Transition, Growing Practices & Markets.**
- Steve Schwartz, California FarmLink, \$1,500. **Business Planning & Innovative Financing Strategies to Promote Intergenerational Farm Transitions.**
- Jennifer Baumbach, UC Cooperative Extension Solano County, \$1,500. **Solano County Jr. Master Gardener Educator Training.**
- Miguel Altieri, ESPM-Division of Insect Biology, Berkeley, \$1,450. **Community Gardening & Seed Saving Workshop.**

Agroforestry (supported from a special donor-directed fund established through a grant from the International Tree Crops Institute USA Inc.)

- Stephanie Larson, UC Cooperative Extension Sonoma County, \$1,500. **Designing Riparian Buffers for Rangelands to be used for Addressing TMDLs & Water Quality Issues in Sonoma & Marin Counties.**
- Vance Howard, Yolo County Resource Conservation District, \$4,290. **Bringing Farm Edges Back to Life! (2 Field Meetings); Conservation Practices for Sustainable Agriculture & Riparian Buffer Strip Creation/Restoration (2 meetings).**

***2002 Grants for Educational Events***

Integrated Pest Management (funding through UC IPM)

- Nick Frey, Sonoma County Grape Growers Association, \$1,500. **Sonoma County IPM Field Day.**
- Stacy Carlsen, Marin County Dept. of Agriculture, \$6,000. **Landscape IPM for School IPM Coordinators, Maintenance Directors, and Groundkeepers: A Series of Four Workshops.**
- Sor Lo, Butte County Hmong Cultural Center, \$1,500. **Outreach and Education to Hmong Farmers in the North Valley.**
- Linda Desai, Placer Nature Center, \$1,500. **How To Be Weed Free.**
- Maclay Burt, Association of Natural Bio-control Producers, \$1,500. **Building for Balance.**
- Jill Klein, Association of Applied Insect Ecologists, \$3,000. **AAIE Educational Events.**

Sustainable Crop and Livestock Systems (funding through UC SAREP)

- Sarah Potenza, Ecological Farming Association, \$1,300. **Sustainable Dairy Panel Series.**
- Jeff Mitchell, UC Davis Vegetable Crops, Kearney Ag Center, \$2,000. **Conservation Tillage 2002 Workshops.** [Source funds: Western Region SARE Professional Development Program.]

- Adina Merenlender, UC Hopland Research and Extension Center, \$1,300. **Vineyards in Hardwood Rangeland Watersheds.**
- Kevin McEnnis, Community Alliance with Family Farmers, \$1,300. **Cover Crops and Soils Educational Events.**
- Morgan Doran, UC Cooperative Extension Solano County, \$1,300. **Solar Power for Improving Water Distribution and Rangeland Utilization**
- Aziz Baameur, UC Cooperative Extension Santa Clara County, \$1,300. **Alternatives in Crop Management Tools & New Crop Opportunities for Small Farms.**
- Deborah Giraud, UC Cooperative Extension Humboldt County, \$1,300. **Soil Fertility Management for Organic Crop Production.**

Connections Between Farmers, Consumers, and Communities in Sustainable Food and Agricultural Systems (funding through UC SAREP)

- Mary Kimball, FARMS Leadership Program, Winters. \$1,300. **The FARMS Leadership Program Field Days.**
- Barbara Reed, UC Cooperative Extension Glenn County, \$1,300. **Artisan Cheese Production Workshop - A Look At Vertical Integration.**
- Steve Schwartz, California FarmLink, \$1,300. **Business Planning and Innovative Financing Strategies to Promote Intergenerational Farm Transitions (Ventura/Santa Barbara).**
- Lydia Schlosser, Farm to School Connection, \$1,300. **Davis Farm to School Connection: Lessons Learned from 2000-2003.**
- Holly George, UC Cooperative Extension Plumas-Sierra counties, \$1,300. **Agritourism and Nature Tourism Workshop.**
- Tina Poles, Sonoma County Farm Bureau, \$1,300. **School Garden and Farm to School Symposium.**
- Sandra Wallenstein, Marin Food Systems Project, \$1,300. **Creating a Vibrant Local Food System in Marin: Linking Educators with Farmers.**
- Ellen Rilla, UC Cooperative Extension Marin County, \$1,300. **Grown in Marin Speaker Series.**

# **Partnering with Farmers to Implement Biologically Integrated Farming Systems (BIFS)**

The BIFS program strives to demonstrate and expand the use of integrated farming systems that have been proven to enhance environmental quality while maintaining yields and profits. BIFS projects use on-farm demonstrations and a collaborative model of outreach and extension involving public-private partnerships. The U.S. Environmental Protection Agency (EPA) Region 9, the California Department of Food and Agriculture (CDFA) “Buy California” Initiative, the California Department of Pesticide Regulation (DPR), and the UC Division of Agriculture and Natural Resources (ANR) have provided funds for this program.

BIFS projects use a systems approach to address pest and soil management, irrigation, waste management, wildlife habitat, and other crop and livestock management concerns in combination.

## **ACCOMPLISHMENTS**

The BIFS program has funded 10 projects in nine different farming systems. The adoption of biologically integrated systems has generated a number of benefits such as improved soil fertility, decreased erosion and nitrogen leaching, and increased populations of beneficial insects, migrant birds, and other wildlife. The BIFS Biennial Report (January 2003) is available on SAREP’s Web site at <http://www.sarep.ucdavis.edu/BIFS/bifs03/>. A few of the reported achievements include:

- BIFS dairy farmers reduced commercial fertilizer use on silage cornfields by an average of 130, 70, and 45 lbs/acre of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O, respectively. This amounted to an estimated savings of \$57/acre. BIFS farmers found that by monitoring manure water applications they could ensure sufficient nutrient supply while reducing nutrient leaching to the groundwater.
- At least 15 percent of the state’s prune growers (over 150) attended the 2003 prune farming short courses to learn about low environmental risk farming practices from the prune BIFS project. Growers were given computer database software to increase the efficiency and ease of the intensive monitoring that is an integral part of biologically integrated farming systems. The database will assist growers with their record keeping of pest monitoring and pesticide use and provides graphical representations of trends over time.
- Four comprehensive regional or statewide grower surveys (rice, walnuts, prunes, and dairy) assessed and improved BIFS projects and the BIFS program. Response rates ranging from 25-51 percent were achieved.

## COMPETITIVE GRANTS PROGRAM

A Request for Proposals (RFP) was released in July 2001 for three-year on-farm demonstration BIFS projects. The 13-member BIFS Program Advisory Review Board reviewed proposals and recommended funding two projects in 2002: a continuation of the Integrated Prune Farming Practices IPFP/BIFS project and a new Central Coast Vineyard Team (CCVT) Winegrape BIFS project, "Using the Positive Points System to Reduce Chemical Reliance in Vineyards." Both projects were funded in 2002 and 2003. Third year funding will be contingent upon progress as evidenced during the annual review.

## FUNDED PROJECTS

More detailed information on each project is available at [www.sarep.ucdavis.edu/BIFS/](http://www.sarep.ucdavis.edu/BIFS/)

### *Currently Funded BIFS Projects*

#### Funded by EPA – Region 9 (On-farm demonstration projects):

- Gary Obenauf, Research Director, California Dried Plum Board, **"Integrated Prune Farming Practices,"** \$457,546 (Jan. 99 - Dec. 04). Alternative reduced-risk farming practices were developed and demonstrated on 33 prune farms in nine counties during the first phase of this project. These practices are now ready for use by growers and pest control advisors, and have the potential to greatly reduce the use of organophosphate insecticides, synthetic fertilizers and excess applications of irrigation water. This project is a commodity-based statewide initiative funded by the Department of Pesticide Regulation, the California Prune Board, and the USDA in addition to BIFS funding. For more information see: <http://www.agresearch.nu/ipfp.htm>
- Kris O'Connor, Executive Director, Central Coast Vineyard Team, **"Using the Positive Points System to Reduce Chemical Reliance in Vineyards,"** \$299,907 (Apr. 02 – Mar. 05). The Positive Point System facilitates an evaluation of the extent of sustainable practices incorporated by a farm manager and is a tool to promote reduced use of agricultural chemicals and reduced off-site movement of soils and water. This project is working in conjunction with a Clean Water Act Section 319(h) grant that enables monitoring and assessment of off-site movement of soil. For more information see: <http://www.vineyardteam.org/bifs.html>

#### Funded by CDFA's "Buy California" Initiative and the USDA (Farmer-to-farmer outreach projects):

- Stuart Pettygrove, UC Cooperative Extension soils specialist in the Department of Land, Air and Water Resources at UC Davis, **"Dairy/Forage Crop Outreach Program,"** \$16,000 (Jan. 03 – Sept. 04). This project is developing a guide on dairy forage production and manure nutrient management practices for California dairies. This publication will provide examples of Central Valley and North Bay dairy farmers who are successfully integrating new and environmentally sound practices and will be an important tool for facilitating further outreach.

- Joseph Grant, UC Cooperative Extension San Joaquin County farm advisor, Kathy Kelley Anderson, UC Cooperative Extension Stanislaus County farm advisor, **“Walnut Outreach Program,”** \$31,200 (Jan. 03 – Sept. 04). This project targets walnut growers, pest control advisers, and other industry professionals in San Joaquin, Stanislaus, and Merced counties to expand the impact of the walnut BIFS project. Under the guidance of a team of BIFS growers, this project is developing grower-friendly outreach materials and planning multiple outreach events to promote cost efficient and environmentally sound practices such as nitrogen fertilizer budgeting, improved orchard floor management, cover cropping, and mitigating adverse effects of orchard operations on air quality.
- Fred Thomas, Cerus Consulting, **“Dried Plum Outreach Program,”** \$31,200 (Jan. 03 – Sept. 04). This project relies on the experience of the prune BIFS management team as well as a group of innovative growers to implement an outreach initiative promoting the use of key components of an integrated farming system (dormant spray decision guide, irrigation based on monitoring tree-water status, rust monitoring, and cover cropping). These events particularly target California prune growers not already reached by the BIFS prune project.

#### ***Other BIFS Projects Funded 2001-2003***

##### Funded by EPA – Region 9 (On-farm demonstration projects):

- Stuart Pettygrove, UC Cooperative Extension soils specialist in the Department of Land, Air and Water Resources at UC Davis, **“Integrating Forage Production with Dairy Manure Management in the San Joaquin Valley,”** \$331,484 (July 99 - Mar. 03). For more information see: <http://www.dairybifs.uckac.edu/>
- Joseph Grant, UC Cooperative Extension San Joaquin County farm advisor, **“Expansion of the Biologically Integrated Orchard Systems Model to Northern San Joaquin Valley Walnut Orchards,”** \$173,642 (Jan. 99 - Dec. 01).
- Janet Caprile, UC Cooperative Extension Contra Costa County farm advisor, **“Integrated Pome Fruit Production in Contra Costa County,”** \$158,910 (Jan. 00 – Mar. 03).
- Thomas Chao, UC Riverside Extension Horticulturalist, **“Citrus Biologically Integrated Farming Systems,”** \$233,423 (Oct. 98 - June 02).
- Randall Mutters, UC Cooperative Extension Butte County farm advisor, **“Biologically Integrated Farming Systems in Rice,”** \$273,700 (Jan. 99 - Dec. 01). For more information see: <http://www.buttecounty.net/bifsnrice/>
- Carolee Bull, Research Plant Pathologist, USDA/Agricultural Research Service, **“Biological Agriculture Systems in Strawberries,”** \$303,500 (Jan. 99 - Mar. 02). For more information see: <http://wsare.usu.edu/sare2000/025.htm>

### ***Funding History***

The California state legislature requested the establishment of the BIFS program with Assembly Bill 3383 (Bornstein, Brown, and Snyder) in 1994. State funding was provided through DPR with matching funds from EPA. Further legislation in 1998 (AB 1998, Thomson) expanded the goals and extended the time frame of the BIFS program. In January 2002, SAREP received a two-year block grant through the CDFA “Buy California” Initiative to support extending the BIFS results and key practices from the BIFS farming systems to additional growers throughout the state in dried plums, walnuts, and dairy/forage crops. SAREP has obtained a total of \$3,379,272 in extramural funds in support of the BIFS program.

### ***Publications***

Nine peer-reviewed publications, eleven abstracts, and several conference proceedings have been published that present results of BIFS projects or related research. Publications have ranged from Andrews et al. 2003, a landmark study in cotton that describes the development of a soil quality index for use by researchers, educators and growers to understand how on-farm practices effect soil quality and yields to a paper by Grant et al. 2003 that describes the pest management practices and achievements of the walnut BIFS project ([http://danr.ucop.edu/calag/0303JAS/pdfs/BIOS\\_walnuts.pdf](http://danr.ucop.edu/calag/0303JAS/pdfs/BIOS_walnuts.pdf)). BIFS projects are also often described in trade magazines and newspapers that are read by growers.

## **COLLABORATIVE RESEARCH AND EXTENSION ACTIVITIES**

In addition to assisting with project outreach efforts and providing natural and social science technical support to BIFS projects, SAREP staff also cooperates in applied research and extension activities with BIFS and BIFS-like projects around the state. Recent projects include:

### ***BIFS Workgroup***

With funding and support from the UC Division of Agriculture and Natural Resources (ANR), SAREP established the BIFS workgroup in 1999. The workgroup brings together University researchers and extensionists as well as other partners in a forum to share ideas, experiences, research, and resources about the dynamics of biologically integrated systems and how they are manifested in on-farm demonstration projects. Workgroup members meet at least annually to discuss these and other emerging priority issues. Under the auspices of this workgroup, SAREP manages an email listserv ([bifs@ucdavis.edu](mailto:bifs@ucdavis.edu)) to facilitate communication among workgroup members. The workgroup currently has 160 listserv members and about 50 active members, 22 of whom are UC ANR staff or faculty or Agricultural Experiment Station faculty. More information about the BIFS workgroup, including archives of listserv communications can be viewed at:

<http://www.sarep.ucdavis.edu/BIFS/workgroup.htm>.

In 2002, the BIFS workgroup received additional ANR funding to support a social science research project under the leadership of Margaret Fitzsimmons, UC Santa Cruz, environmental studies department professor, Christy Getz, UC Berkeley Extension Specialist, and Jenny Broome, SAREP associate director. Keith Warner, a graduate

student in Environmental Studies at UC Santa Cruz, has conducted this project as part of his dissertation research, investigating how different forms of grower participation influence the success of agricultural partnerships in California. Warner presented preliminary results of this work at the most recent BIFS workgroup plenary meeting. The PowerPoint presentation can be viewed at:

[http://www.sarep.ucdavis.edu/bifs/warnerppt/warnerppt\\_files/v3\\_document.htm](http://www.sarep.ucdavis.edu/bifs/warnerppt/warnerppt_files/v3_document.htm)

### ***Grower Surveys***

In collaboration with other UC colleagues and researchers, SAREP has conducted four grower surveys to measure the impact of BIFS projects on grower practices and attitudes about alternative practices. The Lodi-Woodbridge Winegrape Commission conducted a similar grower survey at the completion of their BIFS project in 1998. These mail surveys have evaluated participating growers as well as regional or commodity-wide target audiences of growers on their level of adoption of alternative farming systems (See Table 1.) Results from the walnut and prune surveys have indicated that a majority of respondents were willing to use practices that reduce their chemical and fertilizer use even when it takes a little more time or expense. These survey results also identify opportunities for further outreach efforts and inform the direction of current BIFS projects.

Table 1. Grower Survey Response Rates

<b>Project</b>	<b>Year</b>	<b># Sent out</b>	<b>Response rate</b>
Winegrape BIFS	1998	608	47%
Rice BIFS	2001	900	25%
Walnut BIFS	2002	722	51%
Prune BIFS	2003	1127	36%
Dairy BIFS	2003	1563	29%

### ***Pesticide Use Analysis***

SAREP coordinated the analysis of California's Pesticide Use Report (PUR) database by UC Davis researchers to determine use patterns from 1992 to 2001 for several BIFS commodities. Researchers found that two in-season organophosphates targeted for reduction by the walnut BIFS project decreased in use over at least the past five years on walnuts in San Joaquin County. Researchers also found that the dormant season organophosphate, diazinon, known for contaminating California's surface waters, was applied to only 2.5 percent of BIFS prune acres in 2001 compared to 30 percent of Sutter County prune acres during the same period. Use of the PUR data to track pesticide use allows BIFS project leaders, participating growers, and other researchers and extensionists to identify trends and focus project efforts accordingly.

### ***Partnerships with DPR's Pest Management Alliance and Biologically Integrated Orchard Systems (BIOS)***

SAREP collaborates with programs from other organizations that have goals similar to those of the BIFS program including the BIOS projects of the Community Alliance with Family Farmers and DPR's Pest Management Alliance (PMA). This collaboration has been enhanced by the participation of project representatives on each other's advisory

boards and project management teams. These three programs have occasionally maximized their impact by funding and/or cooperating on projects in the same commodity.

SAREP staff served as a technical advisor to DPR's Statewide Pest Management Alliance in Winegrapes. The target of the three-year project was demonstration and outreach related to sustainable sulfur use and reduced-risk weed management. The California Association of Winegrape Growers (CAWG) and regional winegrape organizations also supported this project.

***Reduced Disturbance Agriculture For Field Crops In California***

A grant from the U.S. Environmental Protection Agency Pesticide Environmental Stewardship Program supported SAREP work on this subject from 1998-2002. The work involved farm visits in the Sacramento, San Joaquin, and Salinas valleys to assess farmer innovation to reduce tillage and add non-crop, field-border biodiversity to their operations. SAREP staff prepared and submitted a detailed report that profiled the farmers as well as scientific literature on these and related subjects.



# **Linking Farmers, Consumers and Communities through Sustainable Community Development and Public Policies**

Since 1991, SAREP has provided resources for sustainable community development and public policies that forge creative links between farmers, consumers and communities.

SAREP supports collaborative efforts that shape community food systems and policies in which sustainable food production, processing, distribution and consumption are integrated to enhance the economic, environmental and social health of a particular locale.

Such projects include: direct or local marketing activities; consumer education about local sustainable agriculture; community food security projects; economic development that creates local food and agriculture related enterprises; urban agriculture projects; food policy council development; land, water or pesticide use policy analyses; food- or watershed analyses that involve local residents in decision-making; farm labor analyses; and economic or policy analyses that encourage growers, processors, retailers and others to support a transition to sustainable food and agricultural systems.

## **ACCOMPLISHMENTS**

Community development and public policy projects have benefited farmers, consumers and communities by helping to maintain small- and medium-scale family farm income; bringing fresh fruits and vegetables to urban areas, including low-income neighborhoods; teaching youth about sustainable farming systems and where their food comes from; and providing data on land use options to citizens and policymakers.

## **COMPETITIVE GRANTS PROGRAM**

Research and education grants have been funded for one to three years and range from \$5,000 to \$25,000. SAREP also funds smaller grants for graduate students and educational events in these areas. Requests for Proposals can be downloaded from the Web site at [www.sarep.ucdavis.edu/grants/request.htm](http://www.sarep.ucdavis.edu/grants/request.htm).

## **FUNDED PROJECTS**

The latest information on SAREP-funded projects is available on our Web site in the Funded Projects Database: <http://www.sarep.ucdavis.edu/grants/database>. The database includes summaries of progress reports or final reports on all SAREP-funded projects.

### ***Projects Funded 2001-2003***

Four research and education projects related to community development/public policy were funded in 2001 for a total of \$60,272.

- Patricia Allen, assistant director, UC Santa Cruz Center for Agroecology and Sustainable Food Systems, **“Perspectives and Strategies of Alternative Food Initiatives in California,”** \$19,360 (July 01 - June 02).
- Aaron Shonk, resource manager, Davis Joint Unified School District, Davis, CA, **“Davis Joint Unified School District Farm-to-School Program,”** \$10,000 (July 01 - June 02).
- Toni Martin, food service director, Winters Joint Unified School District, Winters, CA **“Linking Education, Agriculture and Foodservice (LEAF),”** \$15,872 (July 01 - June 02).
- Dana Harvey, director, Environmental Science Institute, Oakland, **“West Oakland Food Security Council Model,”** \$15,040, (July 01 - June 02).

## COLLABORATIVE RESEARCH AND EXTENSION ACTIVITIES

### *Connecting Farmers to Direct Marketing Niches*

SAREP collaborated with four other western states (Idaho, Oregon, Hawaii, and Colorado), to conduct statewide direct marketing workshops, establish marketing networks and develop a resource guide and curriculum. SAREP conducted two workshops in California in 2002, one in conjunction with the well-known California Farm conference. SAREP has developed a database for direct marketing resources and collaborated with the Sustainable Agriculture Network to expand it to a national tool. In collaboration with all project partners, SAREP developed an extension publication, “Organizing a Successful Direct Marketing Workshop.” Additionally, SAREP developed a publication, “Selling to Restaurants and Retailers,” which came out of one of our workshops. Both publications are available on SAREP’s website.

### *Farmers Markets as Small Business Incubators*

With a USDA Fund for Rural America grant, SAREP collaborated with researchers at Cornell University and Iowa State University to study the role of farmers markets in promoting community development and stimulating the growth of small businesses. The three-phased study included surveys of market managers, market vendors and case studies of innovative markets in each state. Six California case studies appear on SAREP’s Web site (Food Systems, Direct Marketing section). Case studies include:

- A Case Study of the Davis Farmers Market: Connecting Farms and Community
- A Case Study of the Laytonville Farmers Market: A Rural Community Market
- A Case Study of the Stockton Farmers Market: An Urban Community Market
- Using E-Commerce to Add Value to Small Farming Businesses in California
- Direct Marketing with Value-Added Products
- Direct Marketing to Schools: A New Opportunity for Family Farmers

An article on the results of the three-state study (“Entrepreneurial outcomes and enterprise size in US retail farmers markets”) was published by Feenstra et al., in the *American Journal of Alternative Agriculture* 18(1): 46-55, 2003.

### ***Farm-to-School projects***

Farm-to-School (sometimes referred to as Farm-to-Institution) is a nationwide movement that connects local farmers who can provide fresh, seasonal produce with school food services for healthier school lunches. Elaborating on the concept of direct marketing, these farm-to-school projects identify school districts and other institutions that will commit to purchasing fresh produce directly from local farmers. Both schools and small farmers benefit from participation in farm-to-school initiatives. Students have access to fresh, nutritious produce, while small farmers acquire new markets. Students visit local sustainable farms and learn from farmers how produce is grown and the role it plays in a healthful diet. Farm-to-school programs typically integrate food services with instructional school gardens, school recycling programs, farm visits, and curriculum development to create a holistic, experientially based learning environment.

### ***Yolo County farm-to-school project***

With funding from the USDA Initiative for Future Agriculture and Food System (IFAFS) and the Kellogg Foundation, SAREP has collaborated with the Davis and Winters Joint Unified School Districts in the Yolo County Farm-to-School project. In its role as program evaluator, SAREP food systems analyst Gail Feenstra and program assistant Jeri Ohmart, have conducted a three-year analysis of the benefits and challenges of these projects. They have identified significant trends in student participation, fruit and vegetable consumption and fiscal viability both for school districts and for local farmers. Feenstra and Ohmart have presented at several statewide and national conventions on these findings, and Feenstra and Ohmart have published *The Crunch Lunch Manual: A case study of the Davis Joint Unified School District Farmers Market Salad Bar Pilot Program and a Fiscal Analysis Model*, available on SAREP's Web site at <http://www.sarep.ucdavis.edu/cdpp/>.

### ***Berkeley Unified School District project***

In 2002, the USDA/California Department of Food and Agriculture "Buy California" Initiative funded California Department of Education (CDE) to establish a competitive grants program for improving student nutrition and physical activity. Titled Linking Education, Activity and Food (LEAF), CDE awarded grants to ten California school districts, among them Berkeley Unified School District. SAREP was asked to collaborate by taking on the program evaluation. Now in its second year, Berkeley Student Nutrition Services has completely restructured its middle school lunch program, offering students more variety and daily fresh fruit and vegetables in a salad bar format. In addition, they have drafted a Berkeley Food and Physical Activity Policy and presented it to the School Board for approval.

### ***Community Food Security***

SAREP is an active partner in the UC Division of Agriculture and Natural Resources (DANR) Food Security Workgroup. Since 1997, SAREP has partnered with the Community Food Security Coalition and the USDA in facilitating training workshops about community food security practices and projects in California and throughout the nation. SAREP is collaborating on an evaluation of another USDA-funded project in West Sacramento, the *Project Field: Promoting Cross-Cultural Community Food*

*Security*, an ethnic school garden project that includes a job training component and small-scale farming opportunities.

### ***Local Food Systems in a Global Environment***

SAREP is part of a national study with 18 other land grant universities to examine local food systems in a global environment. Countywide foodshed studies have been completed in three counties in California—Placer, Stanislaus and Alameda (see SAREP's Web site at <http://www.sarep.ucdavis.edu/cdpp/foodsystems/countystudies.htm> for Placer Foodshed Report, Alameda Foodshed Report and Stanislaus Foodshed Report). Each county study includes an assessment of the current food and agricultural system, an analysis of sustainable food system initiatives and policies, and the selection of sustainable food system benchmarks for measuring progress toward a more sustainable community. A data template has been completed for those in other counties or states interested in gathering similar indicators. In 2003, more focused interviews were conducted in Stanislaus County to assess the most significant barriers farmers face and identify some promising solutions. Five case studies outline innovative marketing strategies used by a variety of growers in Stanislaus County. (See the Web-based publication about Stanislaus County at "Sustaining Local Food Systems," <http://www.sarep.ucdavis.edu/cdpp/foodsystems/sustaining.htm>) This study was funded through USDA Hatch Act funds.

### ***The Experiences of Farmworkers in Organic Agriculture***

SAREP is collaborating with sociologists at UC Berkeley and UC Davis to explore the social implications of organic agriculture in California by identifying and elaborating the central labor issues facing the sector. Although there are theoretical reasons for expecting labor conditions on organic farms to be an improvement over those on conventional ones, there is little empirical evidence to support or challenge this expectation. This study will contribute to a deeper understanding of how the fastest growing sector of the food system is affecting the workers who uphold it.

## SAREP Staff

### ***Director***

Sean L. Swezey 530-752-2379 [findit@cats.ucsc.edu](mailto:findit@cats.ucsc.edu)

### ***Associate Director***

Janet C. “Jenny” Broome 530-754-8547 [jcbroome@ucdavis.edu](mailto:jcbroome@ucdavis.edu)

### ***Production Systems Analyst***

Robert L. Bugg 530-754-8549 [rlbugg@ucdavis.edu](mailto:rlbugg@ucdavis.edu)

### ***Computer Resource Specialist*** *(shared position)*

James Cannon† 530-754-8555 [jhcannon@ucdavis.edu](mailto:jhcannon@ucdavis.edu)

### ***Education Coordinator***

David Chaney 530-754-8551 [dechaney@ucdavis.edu](mailto:dechaney@ucdavis.edu)

### ***Food Systems Analyst***

Gail Feenstra† 530-752-8408 [gwfeenstra@ucdavis.edu](mailto:gwfeenstra@ucdavis.edu)

### ***Office Manager***

Linda Fugitt 530-752-7556 [llfugitt@ucdavis.edu](mailto:llfugitt@ucdavis.edu)

### ***Public Information/Newsletter Editor***

Lyra Halprin† 530-752-8664 [lhalprin@ucdavis.edu](mailto:lhalprin@ucdavis.edu)

### ***Financial Manager***

Joanna Luna† 530-752-8407 [jgluna@ucdavis.edu](mailto:jgluna@ucdavis.edu)

### ***Program Assistant***

Jeri Ohmart\* 530-752-5987 [jlohmart@ucdavis.edu](mailto:jlohmart@ucdavis.edu)

### ***BIFS Coordinator***

Bev Ransom† 530-754-8546 [baransom@ucdavis.edu](mailto:baransom@ucdavis.edu)

\*Grant-funded position

†Part-time position

**2003 Program Advisory Committee**

Dante Benedetti	Clover-Stornetta Farms, Petaluma
Stacie Clary	California Sustainable Agriculture Working Group, Santa Cruz
William Lacy	University Outreach & International Programs, Davis
David Lighthall	California Institute for Rural Studies, Davis
Art Naldoza	La Cooperativa, Sacramento
Karen Ross	California Association of Winegrape Growers, Sacramento

**2003 Technical Advisory Committee**

Ted Bradshaw	Human & Community Development, UC Davis
Holly Brown-Williams	California Policy Research Center (UC systemwide), Berkeley
Kent Daane	Biological Control, Kearney Agricultural Center, Parlier
Maria de la Fuente	UC Cooperative Extension, Santa Clara County
Melanie DuPuis	Sociology, UC Santa Cruz
Lucrecia Farfan-Ramirez	UC Cooperative Extension, Alameda County
William Horwath	Land, Air & Water Resources, UC Davis
Jim Oltjen	Animal Science, UC Davis
John Phillips	Crop Science, Cal Poly, San Luis Obispo
Rachel Mabie Surls	UC Cooperative Extension, Los Angeles County

**2003 BIFS Program Advisory Review Board**

Matt Billings	Sterling Insectary, Delano
Sherman Boone	Almond Grower, Denair
John Carlon	Sacramento River Partners, Chico
Tish Espinosa	USDA-NRCS, Lockeford
Paul Gosselin	California Department of Pesticide Regulation, Sacramento
Stephen Griffin	Misionero Vegetables, Salinas
Joe Grant	UC Cooperative Extension, San Joaquin County
Gregory T. Nelson	Nelson & Sons, Inc., Ukiah
John Steggall	California Department of Food & Agriculture, Sacramento
Patrick Weddle	Pacific Biocontrol Corporation, Placerville
Kathy Taylor	US-EPA Region 9, San Francisco
William Horwath	Land, Air & Water Resources, UC Davis
Dawit Zeleke	The Nature Conservancy, Sacramento River Project, Chico

Alternate Members

Belinda Messenger	California Department of Pesticide Regulation, Sacramento
Paul “Augie” Feder	US-EPA Region 9, San Francisco

## FINANCIAL INFORMATION

	<b>FY01-02</b>	<b>FY02-03</b>
<b>INCOME</b>		
Permanent State and UC Funding	\$638,003	\$649,414
Permanent Budget Cut		\$9,213
Carryforward from previous year	\$2,560	\$92,768
Temporary Allocation*	\$113,964	-\$9,000
<b>Total State/UC Funding</b>	<b>\$754,527</b>	<b>\$723,969</b>
<b>EXPENSES</b>		
Grants	\$120,659	\$51,984
02/03 Grant funds reclaimed by ANR		\$83,304
Information Development and Dissemination**	\$384,853	\$412,599
Program Expenses	\$156,247	\$159,050
Carryforward to next fiscal year***	\$92,768	\$17,033
<b>Total Expenses</b>	<b>\$754,527</b>	<b>\$723,969</b>
<b>EXTRAMURAL FUNDING</b>		
USDA/SARE (Professional Development State Grant)	\$10,000	\$10,000
USDA/SARE (Organic Farming Principles, Practices and Materials)		\$101,907
USDA Agriculture Research Service (Sustainable Weed Management)		\$156,000
USDA Agriculture Research Service (Survey of Organic Grain/Feed in the Western Region)		\$20,000
USDA-CSREES Regional Research	\$16,416	\$16,416
U.S. Environmental Protection Agency (Weather Driven Disease Models)	\$49,737	
U.S. Environmental Protection Agency (FQPA/Regional Initiative)	\$200,000	\$200,000
California Department of Food and Agriculture (Buy California Initiative – BIFS)		\$100,000
California Department of Food and Agriculture (Buy California Initiative – Organic)		\$100,000
Community Alliance with Family Farmers/California Dept. of Food and Agriculture		\$10,000
Clarence E. Heller Charitable Foundation	\$450,000	
Mercy Foundation	\$14,838	
Occidental College/Kellogg		\$39,094
Berkeley Unified School District		\$49,994
University of Vermont/Sustainable Agriculture Network		\$8,700
True North Foundation		\$149,430
Various Donors	\$900	\$100
<b>Total Extramural Funding</b>	<b>\$741,891</b>	<b>\$961,641</b>
<b>OTHER FUNDING</b>		
Sales of Publications and Other Misc Income	\$646	\$1,150
ANR Temporary Funds-Enhancement of Shared Technology Infrastructure (SAREP, Small Farm Center, Genetic Resources Conservation Program)		\$3,000
ANR Workgroup Funds-Biologically Integrated Farming Systems (Research)		\$23,225
ANR Workgroup Funds-Biologically Integrated Farming Systems (Operational)	\$15,600	\$10,830
ANR Workgroup Funds-Organic Farming Research (Operational)	\$11,600	\$10,400
<b>Total Other Funding</b>	<b>\$27,846</b>	<b>\$48,605</b>
<b>TOTAL SAREP INCOME</b>	<b>\$1,524,263</b>	<b>\$1,734,215</b>

\* Includes funds for director support not transferred by ANR for FY 00/01 until FY 01/02, one-time BIFS project augmentation, and stipend for SAREP associate director to serve as interim director of Small Farm Center.

\*\* 01/03 expenses are higher due to SAREP support of a USDA project of approximately \$35,000, for which reimbursement is expected.

\*\*\* 01/02 carryforward intended to fund grants from winter 2003 RFP-02/03 carryforward of \$17,033 to fund continuing grants in FY03/04.

# Publications and Videotapes

## ORDERING INFORMATION

### *Sustainable Agriculture (three-times-per year newsletter)*

To subscribe, send your name, address, and occupation to: [sarep@ucdavis.edu](mailto:sarep@ucdavis.edu)

Also available on SAREP's Web site at <http://www.sarep.ucdavis.edu/>

### *Progress Reports*

Available from SAREP's Web site, <http://www.sarep.ucdavis.edu/pubs/pubs.htm>

- SAREP Biennial Report 1999-2001
- SAREP Biennial Report 1997-1999
- SAREP Biennial Report 1995-1997
- SAREP Biennial Report 1993-1995
- BIFS Biennial Report 2001-2002
- BIFS Biennial Report 1999-2000
- BIFS Biennial Report 1997-1998
- BIFS Biennial Report 1995-1996

### *Other Publications*

Available directly from SAREP [[sarep@ucdavis.edu](mailto:sarep@ucdavis.edu)]

- Proceedings--Partnerships for Sustaining California Agriculture: Profit, Environment and Community (2001)
- Growing a Community Food System (1999)
- Exploring Eco Labeling for California Winegrapes: A Working Conference (1998)
- Soil Quality Topics: A Selection of Resources for Education and Extension (1999)
- Cover Crops: Resources for Education and Extension (1998)
- Sustainable Farming Systems: A Guide to the Transition (1997)
- How to Stabilize Your Farm Work Force (1995)
- A Guide to Spanish Language Sustainable Agriculture Publications (1995)
- What is Sustainable Agriculture? (1997)

### *Available From DANR Communications Services*

Complete publications catalog online at <http://anrcatalog.ucdavis.edu>.

- Organic Apple Production Manual (2000) - #3403
- Entrepreneurial Community Gardens: Growing Food, Skills, Jobs and Communities (1999) - #21587
- Community Food Systems in California: Profiles of 13 Collaborations (1998) - #21547
- Cover Cropping in Vineyards: A Grower's Handbook (1998) - #3338
- How to Find Agricultural Information on the Internet (1997) - #3387
- Protecting Groundwater Quality in Citrus Production (1994) - #21521
- The Dairy Debate: Consequences of Bovine Growth Hormone and Rotational Grazing Technologies (1993) - #SA001
- Organic Soil Amendments and Fertilizers (1992) - #21505



***Available From Other Sources***

- Organic Farming Cost Studies  
[Available on the Web at: [coststudies.ucdavis.edu](http://coststudies.ucdavis.edu)]
- Enhancing Biological Control: Habitat Management to Promote Natural Enemies of Pests (1998)  
[Available from: University of California Press fulfillment service at Tel: (800) 777-4726, Fax: (800) 999-1958 or order it from book stores.]

***Videotapes***

Complete publications catalog online at <http://anrcatalog.ucdavis.edu>

- Creative Cover Cropping in Annual Farming Systems (1993) – V93-W
- Creative Cover Cropping in Perennial Farming Systems (1993) – V93-W
- Cultural Weed Control in Vegetable Crops (1993) – V93-E
- Alive and Well: Sustainable Soil Management (1992) – V92-D