STATE OF CALIFORNIA

NONDISCRIMINATION COMPLIANCE STATEMENT

STD. 19 (REV. 3-95) OMC

COMPANY NAME: COMMUNITY ALLIANCE with FAMILY FARMERS

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME

DATE EXECUTED

EXECUTED IN THE COUNTY OF YOLO, CA

PROSPECTIVE CONTRACTOR'S SIGNATURE Judith Redmond

PROSPECTIVE CONTRACTOR'S TITLE Executive Director

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME Community Alliance with Family Farmers

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

Agreement No. _____

Exhibit _____

STANDARD CLAUSES --
SMALL BUSINESS PREFERENCE AND CONTRACTOR IDENTIFICATION NUMBER

NOTICE TO ALL BIDDERS:

Section 14835, et. seq. of the California Government Code requires that a five percent preference be given to bidders who qualify as a small business. The rules and regulations of this law, including the definition of a small business for the delivery of service, are contained in Title 2, California Code of Regulations, Section 1896, et. seq. A copy of the regulations is available upon request. Questions regarding the preference approval process should be directed to the Office of Small and Minority Business at (916) 322-5060. To claim the small business preference, you must submit a copy of your certification approval letter with your bid.

Are you claiming preference as a small business?

_____ Yes* ✓ No

*Attach a copy of your certification approval letter.

APPLICATION FOR FEDERAL ASSISTANCE

OMB Approval No. 0348-0043

2. DATE SUBMITTED: 4/16/99	Applicant Identifier:
3. DATE RECEIVED BY STATE	State Application Identifier
4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier

1. TYPE OF SUBMISSION:

Application: ☐ Construction ☑ Non-Construction

Preapplication: ☐ Construction ☑ Non-Construction

5. APPLICANT INFORMATION

Legal Name: COMMUNITY ALLIANCE with FAMILY FARMERS

Organizational Unit:

Address (give city, county, State, and zip code): P.O. Box 363, DAVIS, CA 95617, YOLO

Name and telephone number of person to be contacted on matters involving this application (give area code): Judith REDMOND, Executive Director (530) 756-8518 ext. 13

6. EMPLOYER IDENTIFICATION NUMBER (EIN): 94-2914745

7. TYPE OF APPLICANT: (enter appropriate letter in box) N

A. State; B. County; C. Municipal; D. Township; E. Interstate; F. Interlocal; G. Special District; H. Independent School Dist.; I. State Controlled Institution of Higher Learning; J. Private University; K. Indian Tribe; L. Individual; M. Profit Organization; N. Other (Specify): Non-profit Org.

8. TYPE OF APPLICATION:

☑ New ☐ Continuation ☐ Revision

If Revision, enter appropriate letter(s) in box(es): ☐ ☐

A. Increase Award; B. Decrease Award; C. Increase Duration; D. Decrease Duration; Other (specify):

9. NAME OF FEDERAL AGENCY: CALFED

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: ☐☐ – ☐☐☐

TITLE:

11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Protecting Water Quality in the Sacramento and San Joaquin River Watershed through Biological Farming Outreach and Education

12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.): Fresno, Madera, Merced, San Joaquin, Solano, Stanislaus, Yolo

13. PROPOSED PROJECT

Start Date: 1/2000 Ending Date: 12/2002

14. CONGRESSIONAL DISTRICTS OF:

a. Applicant: 03 b. Project: 1, 3, 11, 18, 19, 20

15. ESTIMATED FUNDING:

a. Federal	$ .00
b. Applicant	$ .00
c. State	$ .00
d. Local	$ .00
e. Other	$ .00
f. Program Income	$ .00
g. TOTAL	$ 1,614,270 .00

16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?

a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:

DATE _____

b. No. ☑ PROGRAM IS NOT COVERED BY E. O. 12372

☐ OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW

17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?

☐ Yes If "Yes," attach an explanation. ☑ No

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.

a. Type Name of Authorized Representative: Judith REDMOND	b. Title: Executive Director	c. Telephone Number: (530) 756 8518
d. Signature of Authorized Representative: Judith Redmond		e. Date Signed: 4/15/99

Previous Edition Usable
Authorized for Local Reproduction

Standard Form 424 (Rev. 7-97)
Prescribed by OMB Circular A-102

OMB Approval No. 0348-0040

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).

14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.

16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	TITLE
Judith Ramos	Executive Director
APPLICANT ORGANIZATION	DATE SUBMITTED
Community Alliance with Family Farmers (CAFF)	April 16, 1999

CAFF

COMMUNITY ALLIANCE
WITH FAMILY FARMERS

P.O. Box 363
Davis, CA
95617-0363

Phone:
530.756.8518

Fax:
530.756.7857

E-mail:
caff@caff.org

Web site:
www.caff.org

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Terry Harrison

Joi Mitchell

Robert Rautkis

Sunny Shine

David Vieliet

April 16, 1999

CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento CA 95814

To CALFED Bay-Delta Program,

I am writing to disclose that I am currently serving as the Interim Executive Director of CAFF, and as a member of the Bay Delta Advisory Council (BDAC). Under conflict of interest rules (California Government Code Section 1090 and 1091), my interest appears to be "remote."

When I am present at BDAC meetings during which Ecosystem Restoration funding is under discussion, I have not only disclosed my potential interest, but have also left the room so as not to be present during the discussion.

I am serving temporarily as Interim Executive Director. CAFF is conducting a nationwide search for a new Director and we expect that the search will be completed before the end of 1999. Obviously, I do not expect to receive any windfall payments if this grant were funded, and in fact may no longer be on staff at the time that the work begins.

Sincerely,

Judith Redmond
Interim Executive Director

CAFF

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WITH FAMILY FARMERS

P.O. Box 363
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Robert Rastkis

Sunny Shine

David Visher

April 7, 1999

Fresno County Board of Supervisors
2281 Tulare Street, Room 301
Fresno, CA 93721

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

We are excited about expanding our efforts through the project. If you have any questions regarding the specifics of the proposal, please contact our Program Director, Jill Klein, at (530) 756-8518, extension 11.

Sincerely,

Judith Redmond

Judith Redmond
Executive Director

CAFF

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Robert Rauikis

Sunny Skine

David Visher

April 7, 1999

Madera County Board of Supervisors
209 W. Yosemite Avenue
Madera, CA 93637

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

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Executive Director

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Joe Mitchell

Robert Routkis

Sunny Shine

David Visher

April 7, 1999

Merced County Board of Supervisors
2222 M Street
Merced, CA 95340

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

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Sincerely,

Judith Redmond

Judith Redmond
Executive Director

CAFF

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Terry Harrison

Joe Mitchell

Robert Raulkis

Sunny Shine

David Visher

April 7, 1999

San Joaquin County Board of Supervisors
222 N. San Joaquin, Room 700
Stockton, CA 95202

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

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Joe Mitchell

Robert Rautkis

Sunny Shine

David Visher

April 7, 1999

Solano County Board of Supervisors
580 Texas Street
Fairfield, CA 94533

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

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Sincerely,

Judith Redmond

Judith Redmond
Executive Director

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Lisa Brennais

Terry Harrison

Joe Mitchell

Robert Rankis

Sunny Shine

David Visher

April 7, 1999

Stanislaus County Board of Supervisors
1100 H Street, Second Floor
Modesto, CA 95354

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

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Sincerely,

Judith Redmond

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Treasurer

Lisa Brenneis

Terry Harrison

Joe Mitchell

Robert Raulkie

Sunny Shire

David Visher

April 7, 1999

Yolo County Board of Supervisors
625 Court Street, Room 204
Woodland, CA 95695

Dear Chairperson and Persons of the Board,

I am writing on behalf of the Board of Directors of the Community Alliance with Family Farmers (CAFF) to inform you that CAFF is applying for funding from the CALFED Ecosystem Restoration Program for a project in your county.

The project we are proposing will provide public outreach and technical assistance to farmers seeking to reduce their use of water contaminating pesticides and fertilizers. CAFF's Biologically Integrated Orchard Systems (BIOS) and Lighthouse Farm Network programs are already active in your county and have demonstrated effectiveness at helping farmers reduce their reliance on toxic farm chemicals without sacrificing their yields.

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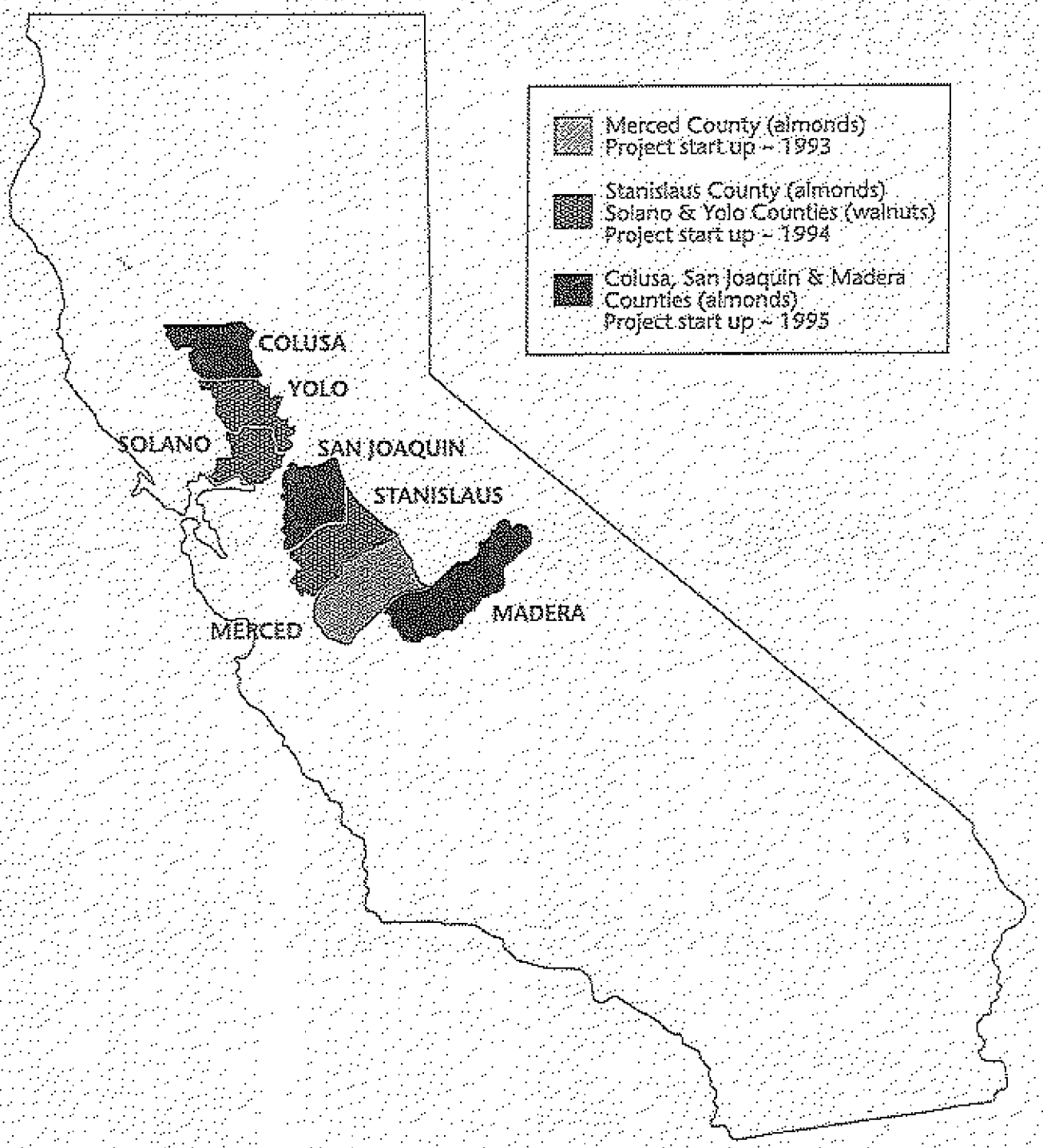
Sincerely,

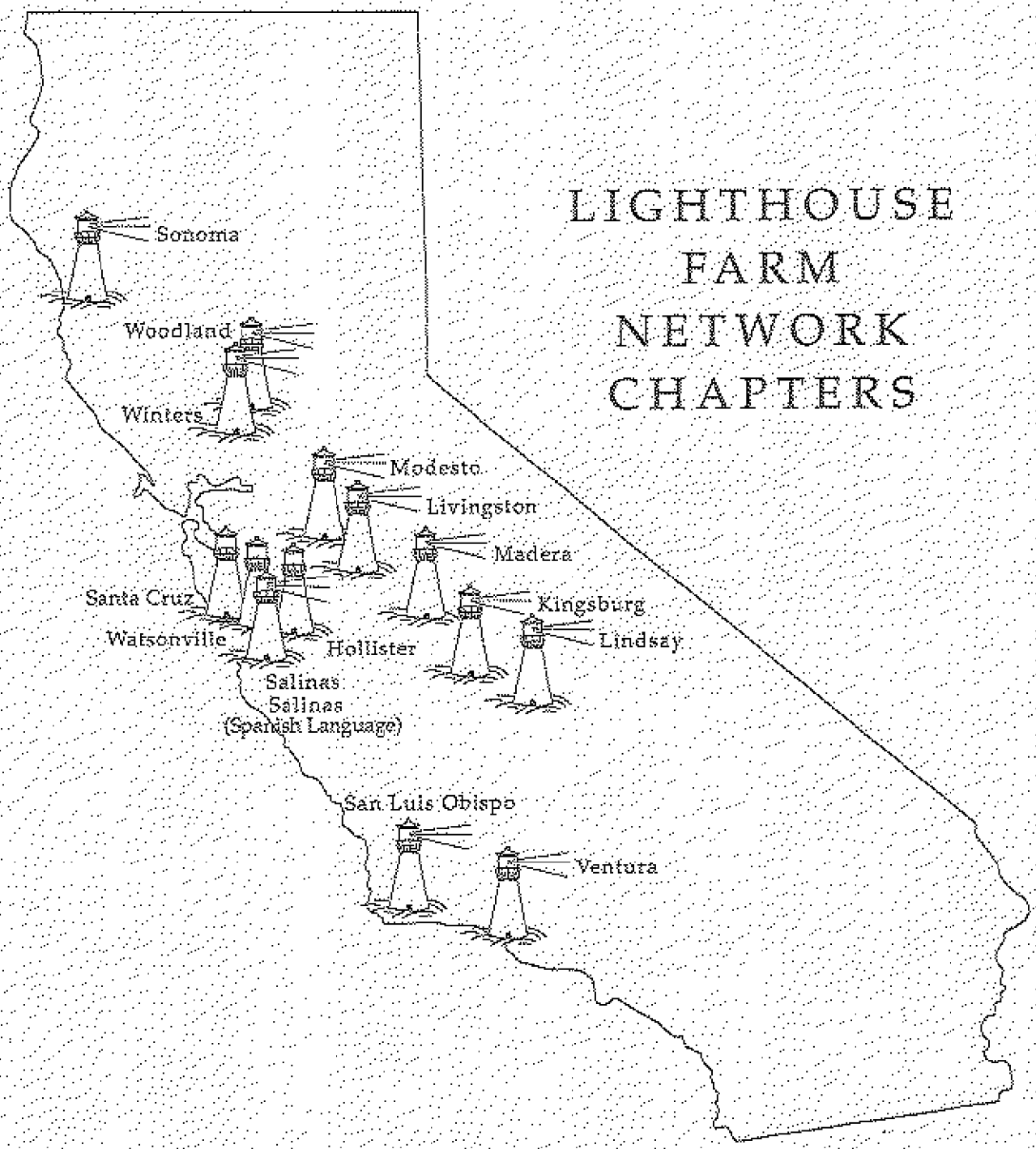
Judith Redmond

Judith Redmond
Executive Director

BIOLOGICALLY INTEGRATED ORCHARD SYSTEMS IN CALIFORNIA



LIGHTHOUSE FARM NETWORK CHAPTERS



Shaping IPM

Two organizations have built a bridge between fringe farmers with a social agenda and conventional farmers that is a model for IPM

BY LEN RICHARDSON

Two organizations, one orchard the other vineyard, are leading the charge in transition to Integrated Pest Management (IPM) while redefining traditional roles and relationships with California agriculture. The organizations are the Biologically Integrated Orchard System (BIOS) in the Merced area and the Biologically Integrated Farming Systems (BIFS) in the Lodi-Woodbridge vineyard district.

Ironically, both organizations owe their birth to perhaps a lesser know but more activist organization know as the Community Alliance with Family Farmers or CAFF. CAFF was originally the California Action Network that helped instigate a successful lawsuit against the University of California demonstrating that UC agriculture research hurt small farmers. This ideological baggage made finding common ground all the more difficult, while making BIOS and BIFS successes more impressive.

This background and an assessment of the BIOS and BIFS projects are part of a report prepared by Robert A. Pence, UC-Davis Department of Human and Community Development. Copies of the 200 page report are available for $15 from the Department at One Shields Ave., Davis, 95616.

BIOS is a demonstration program designed to help almond and walnut growers reduce the use of pesticides and fertilizers through the adoption of a more integrated approach to farming. The program is coordinated by CAFF based in Davis. Since 1993, when the first project started in Merced, 89 farmers have officially enrolled a total of more than 5,000 acres in six projects.

BIFS is a state administered offspring of BIOS. In mandating BIFS, the 1993 California State Assembly Bill 3383 calls for the development and support of pilot demonstration projects. The projects are patterned "to the degree feasible after the successful BIOS programs..." So far, two projects have been funded. The first project builds upon an already established area wide IPM program coordinated by the Lodi-Woodbridge Winegrape Commission. During the first two years, the Commission established programs for 35 vineyards. A second BIFS project is coordinated by a UC Cooperative Extension field specialist and focuses on tomato, cotton and grain crop rotations in the West Side of the Central Valley. Initially, 13 farmers are cooperating in the West Side project.

Almond growers attending a BIOS field day in Stanislaus County learn about IPM programs that can be used in their orchards.

It is clear from the report that measuring the impacts of the two programs is difficult. Do farmers who orchestrate biological balance in their farms have healthier soils, etc.? Do cover crops really keep beneficial insects in an orchard or vineyard? Or, do growers look for a measure of program impacts that mixes together the biological system in hopes of finding clear evidence of pesticide reduction. All of these aspects are difficult to measure. Some can be downright misleading.

A University program director, for example, warned that evidence of pesticide reduction is the "Holy Grail" for these Agriculture Partnership projects. "People are in love with you right now. You are trying to be proactive and change attitudes. That's why I like to be involved down there. But the bottom line is that they will ask for evidence in change of pesticide use," he says.

"We want to see reduction, maintained yields and sustainable economics," responds Katherine Taylor, EPA Senior Associate. "Congress is pushing us, not just us but the other programs as well, for valid quantitative measurement. This is a recurring issue for EPA, how to measure impacts of a program. We are driving for quantitative measures of success," she says.

Yet most observers agree, evidence of short-term pesticide reduction linked to a specific educational intervention is nearly impossible to isolate and is often misleading. During a BIFS-Lodi Pest Control Advisor (PCA) meeting, one participant pointed out that pesticide use records from BIFS growers will give a misleading picture because reduction data will be based on growers who were progressive by nature and who had already reduced their pesticide use before joining the program. Other PCAs agreed but noted that the BIFS program required evidence of reduction.

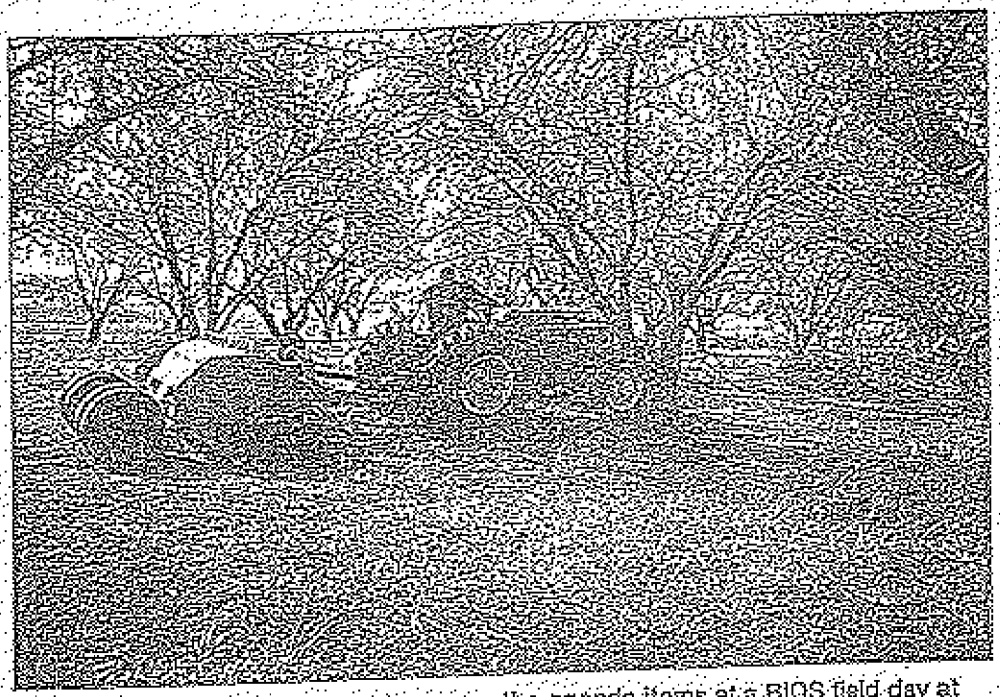
"That's my greatest fear about BIFS," says Randy Lange, a Lodi

continued on page 35

continued from page 34

grower. "The bean counters only want to measure success by chemical reduction. 'The Lange Twins (farm name) bought 10,000 pounds of this and now they only buy 5,000 pounds because of the BIFS program' Well, that doesn't tell you what's going on. The program may be a huge success and I still may have to increase the uses of a given chemical. I tell you reductions may or may not happen, but that doesn't necessarily mean BIFS is or isn't a success."

Upshot: Pesticide use data is one aspect of program evaluation. It is misleading to weigh that data too heavily as criteria of program worth, the report says.



A brush shredder demonstration is among the agenda items at a BIOS field day at the Sherman Boone orchard in Denair.

In other words BIOS and BIFS represent a systems approach to farm management. Most measures of program impact, including short-term pesticide reduction, are based on industrial models that assume linear cause and effect.

Spray Omite and all mites will be eliminated. In contrast, integrated systems models see change as the result of complex interactions in which single causes are difficult to isolate. The right inputs won't necessarily lead to predictable change, but creating the right environment may allow desired change to emerge.

"Any time we are working with complex systems, innovation can happen as an emergent property of a particular combination of things that we bring to bear, says Bob Bugg, of the UC-Davis Sustainable Agricultural, Research and Education Program (SAREP).

In short, there are no cookbook answers, but there are concepts, principles and approaches. Similarly, in terms of program outreach, a farm advisor can create the space for farmer learning and change, but when and how that change will express itself is not predictable, the report says.

"You can't even measure what may be the most important impacts of these programs. That's been one of the biggest problems when you are talking about IPM or biointensive," agrees Paul Gosselin, Assistant Director of the California Department of Pesticide Regulation (DPR). "You are talking about a philosophy or a way of thinking and you can't measure that in any way that is quantifiable. Yet we are all asking for quantifiable evidence."

Indeed, some observers consider the influence of BIOS on DPR to be one of the most important impacts of the program. By creating political space for state legislative approval of BIFS, and EPA and DPR funded program administered by SAREP and CAFF institutionalized the partnership model in the California Department of Agriculture, DPR and the University of California.

"Now DPR is funding its own BIOS-like projects," observes EPA's Katherine Taylor. "This is really a result of the political pressure that CAFF brought to bear. DPR is dependent on the Mill tax that comes from pesticide sales, so in the past the pesticide industry has had a lot of control over how that money was spent. The action of CAFF helped bring more balance to this equation," she says.

Gosselin concurs. "We [DPR] weren't really talking about community-based extension before BIOS, but once it got our attention we started to look around at BIOS, Lodi-Woodbridge, the Filmore district growers and a couple of others. They seemed to follow a consistent pattern in how they were taking the research and transferring it into a local group and how they were interacting on a local level. So all these groups painted a good mosaic of what worked."

Naturally there are skeptics. A University program director has not seen any major impact from the program that reach beyond the small group of BIOS enrolled growers. "...Will BIOS have an effect beyond a small segment of farmers? So far, It hasn't had a major impact," he says. "Most of the growers I work with never ask me about BIOS," agrees an independent PCA involved with the program. "I let them know I'm working with BIOS, but they don't say anything. They never ask me how the BIOS stuff is going. From that perspective, it's not having a huge impact."

Yet other PCAs say they learn from the program as one commented, "I don't talk about BIOS specifically to the farmers I work with, but some of the ideas I get from BIOS I pass on in my recommendations. Like I picked up something from the last field day about San Jose scale. Now I have my farmers trying it. I got that from BIOS."

Sherman Boone, a BIOS farmer in Stanislaus County, points out that the cover crop he planted in his orchard is stirring interest among his neighbors. "People stop and ask where I get my seed mix. They feel like they can talk to me. It's interesting; three chemical company salesmen use my wife's daycare for their kids. If I'm around, we talk about my experience with cover crops. They are seeing it every day when they drive in to drop off their kids. Since we put in the cover crop strips in the orchard, we've had more people stop and talk with us about it."

Frank Assali is an almond farmer and Sherman Boone's processor. While he is not enrolled in BIOS and has misgivings about some aspects of the program he is interested in what Boone is doing and has begun his own experiments with cover crops. "Farmers are real curious. They always want to know what their neighbors are doing. I see people stop all the time to take a look at the cover crops in my orchard."

One grower with acreage enrolled

continued on page 38

SHAPING IPM
continued from page 35

in BIOS points out that even among BIOS growers program impact may be underestimated. "We're actually doing 200 acres under BIOS, but we just don't want to go through all the paperwork to sign it all up. It's on the same irrigation as our BIOS block. We treat it the same way. We just haven't officially signed up."

"I think growers have changed a lot of their practices in the last few years and it certainly isn't all due to BIOS, but BIOS played an important role," says Lonnie Hendricks, a UC Cooperative Extension farm advisor in Merced County. The Bt thing has made a big difference. That's a real big factor. I think growers, whether they realize it or not, have changed their thinking a lot. They've seen that this approach actually works. I think this may have gotten them questioning if they really needed to use any materials that were so toxic. I think that the publicity that CAFF people are able to put together helped an awful lot. It accelerate this whole process."

But its not only the grower community that has changed, the direction of research is changing as wel "Composting is a good example of IPI program impact on research," observe Mark Shimozaki, chairperson of th Lodi-Woodbridge Winegrape Com mission. "Some growers are spendin thousands of dollars to add compost t their soils. It feels right. We're addin organic matter. It's got to be good, bu we really don't know that we are en couraging research through SAREP t find out what's going on."

The Commission grew out of th Lodi District Grape Growers Board, locally organized group that raised vol unteer money to fund locally relevan research. The Commission is now in fluencing University research.

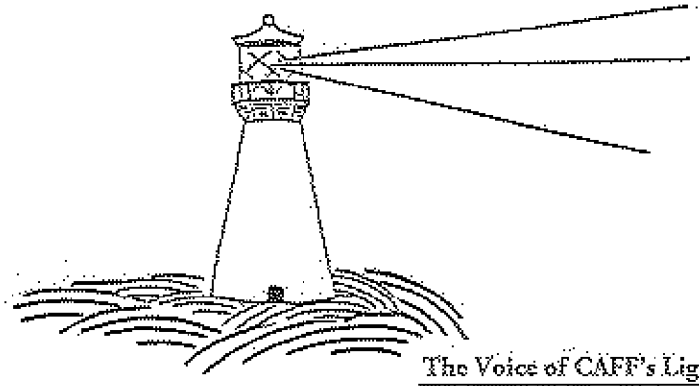
"The Commission has funded re search on cover crops that grew out o the IPM program," observes Randy Lange. "They funded cover crop re search with the idea that it would pro vide an insectary for beneficial insects I don't think it really does that. We also funded research on beneficial insec releases. It works, but costs outweigh the benefits. We're still working on i

Mark Chandler, director of the Lodi-Woodbridge Winegrape Commission, checks out a cover crop being used by a grower near Lodi.

and these are new issues we weren working on a few years ago. So yes, th IPM program has affected research."

"Lodi has legitimized IPM for othe commodities," says Mark Chandle Commission director. "We've don numbers of tours for other commodi groups focused on the IPM program – for other grape grower groups and f regulators and grant makers."

"BIFS is absolutely important Lange says. "I think it is doing tw things. It's doing something in th fields, but it's also doing a lot i people's minds. We couldn't have a complished what we have without it."



The Foghorn

The Voice of CAFF's Lighthouse Farm Network April 1999, Issue 70

CAFF's central office in Davis will be moving next month to Glide Ranch, a turn-of-the-century restored farmhouse a few miles outside of town. You are invited to join us in celebrating our move on May 1, from 3-6 P.M. There will be plenty of room for community events. When you are in the area, please be sure to stop by and say hello.

San Joaquin Valley

New Marketing Strategies for California Clean

—Kingsburg, March 11

Fruit tree orchards are in full bloom right now. Because of El Niño, trees put out a half-sized crop last year. However, that gave the trees a rest and time to store energy in their roots. This year, growers predict an abundance of high quality fruit, and hope for a high demand and stable prices.

California Clean growers are continuing to diversify and find new markets. "There's no use competing with growers who have 10,000 acres of carrots, with specialized equipment for every step of the process," says grower Paul Buxman. "We have to offer a 'different carrot.'" Local growers found that people are willing to drive as much as 25 miles to a farm for fresh, high quality, low-priced vegetables, melons, eggs, dairy products and meat.

We have to offer a "different carrot."

Kingsburg growers are in the process of opening a fruit stand. The cost for an in-town stand was too high, so they are building an on-farm stand. Seven growers will provide 50 items, including value-added products, like dried peaches and jams.

The next frontier for California Clean is pasture-raised hogs. Growers already have the pastures and are now looking for appropriate fencing. Although profit is a few years away, they are encouraged by requests from folks who are interested in animals raised in this manner.

Alternatives to Dormant Spray

—Modesto, February 16

Greg Plunkett from Abbott Labs talked about his company's brand of *Bacillus thuringiensis (Bt)*, called Dipel. *Bts* are used at bloom time, as an alternative to dormant spray to control peach twig borer (PTB) in almonds, peaches, and apricots.

PTBs overwinter as first or second instar larvae, mostly in the crotches of one- to two-year-old trees. At bloom time, PTBs crawl out of their tunnels (hibernaculum). The 1/8" inch chimney of frass at the entrance to the hibernacula will tell you that you have PTB larvae.

In the spring, the pests crawl up the branches, chew on buds and leaves, and eventually tunnel in to the growing shoots of the tree. There they finish their development into pupae and moth.

Abbott Labs offers a service where "Dr. Hibernacula" representatives go into your fields to estimate how many PTBs have emerged and how many are still inside. The timing of *Bt* application is important for maximum effectiveness.

If it's too early, they haven't come out yet, and won't feed on the *Bts*. If it's too late, they may have already burrowed into a

The Foghorn is the monthly newsletter of the Lighthouse Farm Network (LFN), a program of the Community Alliance with Family Farmers (CAFF). Through a statewide network of monthly meetings and field days, the LFN provides technical information and support to all those interested in biologically based farming practices.

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This month's contributors: Keith Abeles, Paul Buxman, Cathy Darling, Prudy Foxx, Gary Gliddon, Reggie Knox, Tom Lockhart, Lee Moren, Miriam Volas, Beth von Gunten.

Many thanks to our funders: Wallace Genetic Foundation, Patagonia, Farm Aid, CalEPA, Foundation for Deep Ecology, UCSC Center for Agroecology, California Integrated Waste Management Board, USDA-EQIP, Cal Fed Bay/Delta Accord.

shoot, feeding from the inside rather than the outside.

The ideal time for the first *Bt* spray is when 20% of PTBs have emerged from the hibernacula. Follow up with a second spray when 50-80% of them have emerged.

PTB larvae eat *Bt*, get sick, immediately stop feeding, and shortly afterwards die. It has been found that *Bt* kills PTB as effectively as standard dormant spray, such as Diazanon.

Managing Cover Crops & Bees in Almonds

—Livingston, February 25

Cindy Lashbrook discussed strategies for managing cover crops, including seed selection, when to mow, frost protection, and bees. Leslie Miller, who has a cover crop planting business, was on hand to discuss different species, needs, and care of cover crops. For more information, contact Cindy at (209) 761-0081 or Leslie at (209) 522-4324.

A local beekeeper was present at the meeting. He encouraged people to plant mustard and others species that flower before almonds bloom. Bees need strength at this time. Don't worry about competition when almonds start to bloom. Bees will prefer the high protein content of almond nectar and pollen. He also advised keeping hives together—one strong active group of bees works better than smaller clusters. Plus, bees will fly quite a distance to find pollen.

Southern Sacramento Valley

Economics of Alternative Practices

—Yolano, February 16

Dr. Karen Klonsky and George Kresa led a discussion about financial aspects of using cover crops and other alternative practices.

Karen is a Cooperative Extension Specialist in the Department of Agricultural and Resource Economics at UC Davis. "Using cover crops," she said, "requires thinking about farming in a different way." It's important to evaluate your resources, and determine whether or not you need new equipment, or different kinds of labor and materials. The costs of cover crop incorporation, mowing, irrigation, and labor vary greatly from location to location, and must be evaluated on an individual basis.

According to Karen, timing of operations is critical when using alternative practices. For example, when growing a winter cover crop before tomatoes, you may need to use transplants in order to delay planting long enough to get a good cover crop stand. This may cost up to $350 more than direct sowing, but can be offset through low weed management costs, good yields and higher prices. The Sustainable Agriculture Farming Systems project at UC Davis found that organic and conventional systems had similar costs, but when cover crops were used with some chemical herbicides, costs were the lowest.

Sample Operating Costs for Winter Cover Cropping, in $/Acre:

	low	high
plant	$21	$60
irrigate	0	$10
mow	0	$4
incorporate	$4	$15
TOTAL	$25	$104

How to Work a Covercrop In

1. **Cut and weigh the fresh covercrop from 16 square feet (4 by 4 feet).**
2. **Multiply the fresh weight in pounds by a factor (given below) to estimate the pounds of nitrogen per acre contained in the covercrop.**
3. **Repeat this sampling 5 to 10 times over the field, depending on its uniformity, and average your results. Samples should be free of dew.**

The factors are:	
Lana woollypod	16
Purple vetch	16
Bell beans	10
Berseem clover	13
Cowpeas	12

—from *Cover Crops for California Agriculture*, UC Division of Agriculture and Natural Resources Publication 21471, 1989

George Kresa, a successful organic walnut farmer, disks in his cover crop with two passes. George then goes through his orchard with a springtooth harrow after each irrigation. Some growers are using resident vegetation, and find that by harvest it has all dried down.

George uses the "rule of 16," (see above) to determine how much nitrogen the cover crop will contribute to the subsequent crop, and whether or not the crop will require supplemental nitrogen.

For more information contact Karen at (530) 752-3563 or Miriam Volat at CAFF, (530) 756-8518, ext. 23.

Central Coast

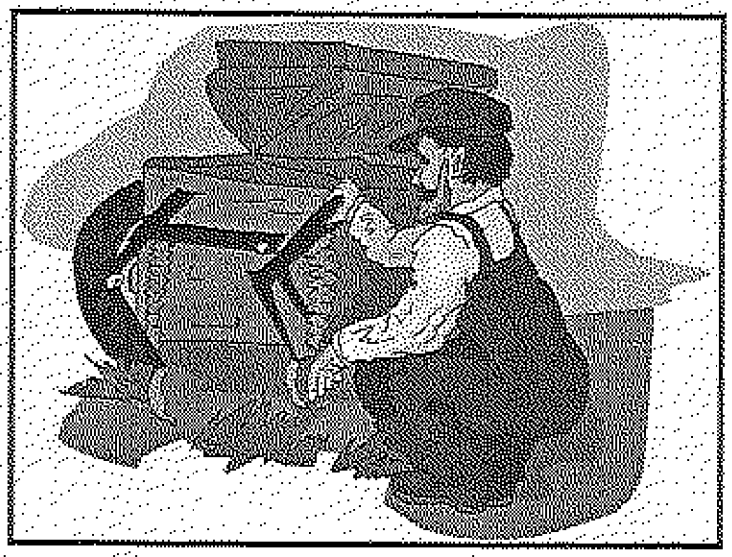
Salinas Valley East Side Watershed Project

—Salinas, February 17

The Resource Conservation District of Monterey County is beginning an erosion control project southeast of Salinas, near Old Stage Road. The goal is to promote erosion control and water management practices on private lands in order to prevent flooding and soil loss, and to improve soil and water quality.

Landowners participating in this project will receive training in management practice selection, sizing, placement and monitoring. Project Coordinator and RCD soil scientist Tom Lockhart, said the project will be modeled on the well-accepted Elkhorn Slough Watershed Project.

The Old Stage Road area is characterized by large, often overgrazed upper watersheds with relatively steep slopes, flowing down to intensively row-cropped ground. Increased residential development and agriculture pressures have contributed to some of the sedimentation and flooding problems. Streams in this area have been straightened to maximize size. Streambanks have eroded



through the practice of clean farming right up to stream edges. Stormwater control has been reduced to routing water out of the fields as quickly as possible. Houses and greenhouses have been placed in areas that should be considered flood plain.

Sediment arrives in streams due to bank slumping, and streams have lost their ability to transport it. Streambanks in the row crop land are no longer protected by trees and shrubs and can be easily eroded. High sediment load in the water during fast flows creates a scouring or sandblasting effect. As the water slows, streams become choked with sediment, lose channel definition and function poorly. High concentrations of nitrates in groundwater in the project area are a threat to drinking water.

The RCD would like this to be a landowner-led project that promotes planting vegetation to improve erosion problems wherever possible. Properly selected and positioned vegetation is the most environmentally and economically friendly solution. Cover cropping can protect the soil from erosion, add valuable nutrients, and increase soil organic matter. Barley and triticale plantings on streambanks, accompanied by properly placed shrubs and trees, provide a vegetative solution to slumping. Hedgerow plantings with native perennials can filter water flowing from fields, and roots from these plants will stabilize soil. Perennial grasses like creeping wild rye reduce erosion in ditches and roadways. Quick soil tests are being promoted as a means of fine tuning midseason sidedress applications of nitrogen fertilizer. Slowing runoff through various management measures can also also affect nitrate concentrations in groundwater by allowing more water to infiltrate the soil.

When something more than vegetation is required to reduce erosion and stormwater flows, the RCD promotes well engineered, landowner-constructed features such as sediment traps and basins, well placed rock rip-rap-type streambank stabilization, and correctly sized stream crossings.

Stalling peak flows of runoff until the drainage system can accommodate more water will reduce flooding hazards in the Old Stage Road area. Often a solution can include a berm and spillway system engineered in a way that does not excessively hinder the farming operation.

The aim of the project is to enable landowners who have implemented various erosion control practices to be able to monitor the effectiveness of the management themselves.

Range specialist Danny Marquis stated that the RCD works with the Natural Resources Conservation District to promote the Environmental Quality Incentives Program (EQIP), which provides cost-share incentive to landowners who have completed a five-year conservation plan with the NRCS. The RCD and NRCS would like to see landowners functioning as a group to determine what needs to be done in the watershed and then use cost-share programs to assist them in meeting those needs. Call Tom Lockhart for more information, (831) 424-1036.

Using Compost on Your Farm
—Watsonville, February 24

Local suppliers and specialists in high quality agricultural compost met with growers to discuss what to look for, where to buy, and how to use compost in farming operations.

Karin Grobe, of Organic Recyclers Anonymous, described how compost is made and what quality parameters to look for. She encouraged growers to visit the site where the compost is pro-

Agriculture in Partnership with San Jose &
Community Alliance with Family Farmers Lighthouse Farm Network
invite you to the

Z-Best Compost Facility Tour
Wednesday, April 14, 1999, 1-3 P.M.
Z-Best Composting Facility
Hwy 25 in Gilroy

Z-Best processes clean green yard trimmings collected curbside in the City of San Jose. Alex Sharpe, Z-Best, will explain how compost is made. A horizontal Zehr Grinder and a Power Screen will be demonstrated.

DIRECTIONS: To get to the Z-Best Facility, take the Highway 25 exit from Highway 101 (just sough of Gilroy). Proceed approximately 1.6 miles. The entrance to the Z-Best Compost Facility will be on your right.

The event is open to the public and admission is free.
In case of rain, wear boots and raincoats.
For more information, contact Karin Grobe at (831) 427-3452 or Sam Earnshaw at (831) 471-9915.

duced whenever possible. Be on the look out for treated lumber and yard waste that could be undesirable in a fresh quality compost blend. Do the "sniff test." Compost should smell earthy but not too odorous. If it smells like ammonia it might burn your plants. A rotten smell would indicate that the compost has not been properly aerated. The compost should be at least three months old, the carbon to nitrogen ration should be below 18, there should be no sulfites or nitrites present, and the ammonium should be less than 100 ppm. A good pH is around 7.5. After the compost is delivered to you, test for moisture by monitoring the pile temperature for a few days. A rise of no more than 10-15°F is optimal. A pile that is too wet may become anaerobic. When visiting the facility, look at the size of the compost windrows in progress. Four feet is the optimal height. This provides enough surface area to maximize microbial activity. Current compost regulations require that all compost be kept at 131°F for 15 days and turned at least five times. This ensures the destruction of most pathogens and weed seeds.

Mike Brautovich from Sun Land Garden Products in Watsonville brought samples of two kinds of compost produced by his company. "The materials that go into making the compost," he said, "are the most important part of producing a quality, consistent product."

Sun Land constantly turns and monitors their compost, and provides a complete chemical analysis of their products. They can custom blend soil amendments like gypsum, soil sulfur, and agricultural lime with compost to suit individual grower needs. Sun Land services the transplant industry with a blend that is composted longer than the field product. Mike said most growers add four to five tons compost per acre after every cropping cycle. Sun Land's web site is www.sunlandgarden.com

Don Cranford, from Cranford Compost in Salinas, encouraged growers to think of their soil as a bank account. Compost puts the biology back into the ground. Most growers prefer to spread compost in the fall prior to planting a cover crop. Compost prefers to have roots growing in it to keep the microbial life happy and available to break down the cover crop in the spring. Materials that go into making Don's compost are different in the spring than in the fall.

Don's operation will blend agricultural lime or gypsum into compost prior to delivery, depending on grower needs. His company produces two kinds of compost. One is a commercial compost geared to conventional operations, which contains fewer ingredients. The compost for organic operations is more diverse and finished. Don favors incorporating compost with a spader. He also customizes spreader equipment. Find Don on the internet at www.cranfordinc.com.

Kenny Rumrill of Aptos Landscape in Aptos brought in many samples of raw ingredients that go into various compost blends. Kenny caters to the smaller grower who requires smaller batches of custom blended compost. He also works with container growers. He is experimenting with blending colloidal minerals with compost to provide trace minerals.

Mike Sears of C&N Tractor was on hand with a Mill Creek manure spreader and information on other Mill Creek loaders and spreaders. Growers had an opportunity to look at the equipment and discuss the pros and cons of various spreaders on the market.

Call Prudy Foxx at (831) 457-1007 for more information.

North Coast

Organic Apple Day

—Sonoma, March 6

Local UCCE Farm Advisor Paul Vossen and Sean Swezey, who works at UC SAREP and UC Santa Cruz Center for Agroecology and Sustainable Food Systems, presented the essentials of organic apple production: selection, nutrition, irrigation, culture, weed control, diseases, and key pests.

Paul discussed significant diseases, such as apple scab, russeting, fireblight, root rot, papery bark, and others. Scab is the most serious, resulting from lingering free moisture at temperatures of 58°-76° F. Controls include spraying nitrogen on leaves, removing litter from the orchard, avoiding overhead water, and regular applications of sulfur and copper products during wet periods.

Paul moved on to discuss orchard culture. Healthy, well-drained soil is ideal. Nutrition can be accomplished with cover crops, composts, and manures. Weed competition is fierce, and must be controlled for small trees. Thinning should be done within thirty days of petal fall; one fruit per cluster is ideal. Apples need ample amounts of good quality water. For maximum production in our cool, coastal climate, apples need 34 inches of water between April and October. That can mean five to seven thousand gallons per acre on a warm July day.

Sean discussed significant apple pests, such as codling moth, aphid, skinworm, and orange tortrix. Codling moth is a difficult and constant challenge to keep under control. The larvae bore into the apple, destroying its commercial value. The moth begins mating when sunset temperatures reach 62°F and higher. Activity generally begins the last week of March. A generation develops in one thousand degree days. Each degree above fifty for one day constitutes a degree-day.

According to Sean, there are three methods used to control moths: cultural, biological, and pheromones. Culturally, moth habitat surrounding the orchard should be minimized. Biologically, viral toxicants can be sprayed during a four- to five-day period

when larvae are vulnerable. All surfaces must be covered. Beneficials like the *trichogramma* wasp can be released at key times. Pheromones confuse males during mating, and lower reproduction.

Contact the Sonoma County Cooperative Extension at (707) 527-2621 or http://www.ucipm@ucdavis.edu for more information, including a production guide developed for the 1998 UC Short Course on Apple Production.

South Central Coast

Weed Management

—San Luis Obispo, February 23

Cathy Darling of San Luis Obispo County Agriculture Department discussed weed management approaches, including yellow starthistle control and biocontrol of weeds.

Mapping your weed population densities will help determine which management approach to use. Treating all population sizes in the same fashion is often a waste of resources and can increase problems. "Eradication," she said, "is only possible on low populations of weeds, and containment management is essential on medium-sized stands." Take a practical approach to management of heavy populations.

Cathy said that areas free of weeds are a valuable resource, and vigilant monitoring of those sites is time well spent.

Cathy discussed the biology of yellow starthistle and control techniques for various stages, such as cultivation, mulching, burning, mowing, grazing and plant competition. Chemical controls can rapidly eliminate a yellow starthistle stand, but may also eliminate beneficial legumes, so this method may not be advantageous in the long run.

Southern Coast

Production Practices & Sample Costs for Fresh Market South Coast Organic Valencias & Lemons

—Ventura County, February 17

Laura Tourte of the UCD Department of Agricultural & Resource Economics presented her research on production practices and sample costs associated with the fresh market organic lemon and valencia oranges in Ventura County. Several growers who participated in the research project joined the discussion.

Participants were astounded to hear that raising organic valencias is about five times as profitable as raising organic lemons, while the opposite holds true in conventional production. Here is why: Most conventional growers pick lemons green, store them four months or more, then gas them to ripen and sell when cost is high. A fungicide and wax are applied before storage. The storage wax and fungicide is washed off, and a new wax and fungicide applied before sale. Organic lemon growers cannot use fungicides and therefore cannot store the crop as long. They are forced to pick by color, incur much higher picking costs, and have a smaller amount of fruit for sale during highest profit months (summer).

These circumstances apply to coastal lemons, not to desert lemons. Therefore, Ventura County essentially has the whole summer market to itself. Ventura County is one of only places in world where you can get fresh lemons off trees in the summer. Conventional valencia prices have been down for quite a while, but are quite profitable organically.

Laura's study suggests that many organic production practices are similar to conventional practices, and will be familiar to experienced growers. Experienced organic growers are more likely to report organic production to be less risky than their previous conventional practices, in part because of several distinct marketing advantages enjoyed by organic produce. Much current demand for organic produce goes unfilled, especially in certain export markets, in part due to organic sales expanding at a steady rate of almost 20% annually every year for the past decade, to $4.2 billion.

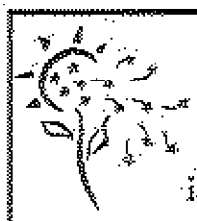
Laura mentioned the report, *Organic Agriculture in California: A Statistical Review*, which gives a statewide overview of current opportunities in the organic market. For further information or to obtain copies of any of the studies, contact Laura at (530) 752-9376.

The Big Chill

—Ventura County, January 13

Local meterologist Terry Schaeffer provides detailed weather and fruit frost reports two times a day to growers in Southern Santa Barbara and Ventura Counties. Growers and citrus packing houses subscribe to this service through the Farm Bureau. Terry's reports are very specific to different districts in the county. He discussed the recent freeze and compared it to other freeze years. Most of Ventura County's citrus was saved from the December freeze by a down valley breeze which raised temperatures dramatically. Terry's graphs showed temperatures dipping into the low twenties for short periods of time, then the breeze would come up and bring it back into the thirties.

Knowledge of how local temperature inversions work play an important role historically in protecting citrus from freezing. Depending on the height of the warm air layer, wind machines and helicopters (used in severe freezes) can be effective some nights and not others. Terry also discussed weather and temperature data from other recent freezes in the different districts of the county.



Community Alliance with Family Farmers

is a membership organization that depends on your support. Please join us now. Contact your local Lighthouse Farm Network meeting coordinator or CAFF's main office at (530) 756-8518, or fax (530) 756-7857 for more details on the benefits associated with different levels of membership.

Upcoming Lighthouse Farm Network Meetings

North Coast

Sonoma: Wednesday, April 14, Farm Bureau Bldg., 970 Piner Rd., Santa Rosa, 6:45-9 p.m. The Use of Reclaimed Water in Agriculture, with Lawrence Jaffe, Lafe Field Farm, and others.

Sonoma: Tuesday, April 27, Farm Bureau Bldg., 970 Piner Rd., Santa Rosa, 6:30-9:30 p.m. Workshop on Conservation Easements and Estate Planning to Keep Farmland Active. *Contact Keith Abdo, (707) 824-0671.*

Southern Sacramento Valley

Yolano: Thursday, April 1, Hatlan's Farm, 5 of Woodland, off Rd 98, between Rd. 27 & Rd. 25A, 10-12 a. Hatlan Winter Cover Crop Trial. *Contact Mimmie Yolano at (530) 756-8518, x23 or Molly Espley x29.*

Central Coast

Hollister: Wednesday, April 14, Z-Best Composting Facility, Hwy 25, Gilroy, 1-3 p.m. Tour of Z-Best Compost Facility.

Watsonville: Wednesday, April 21, Cavallo Farms, 420 Hall Rd. (enter 0.7 miles East of Las Lomas, opposite Sill Rd. & Hall School, follow signs), 8 a.m. Cannons Creek Restoration Tour with Jonathan Berkey, RCD, Monterey Co.; Daniel Mountjoy, USDA-NRCS.

Salinas: Wednesday, April 28, Denny's Restaurant, 1255 De La Torre, NOON-2 p.m. Irrigation Products and Water Management Techniques: New technologies to get the most for your water, with David Zoldoske, Director of the Center for Irrigation Technology, Fresno State Univ.

Santa Cruz: Thursday, April 29, Avanti Restaurant, 8 a.m. Compost Tea Machine Design & Foliar Fertilization using Soil Tests as a Guide for a Foliar Spray Program, with Carl Rosato, Woodland Farms, Oroville. *Contact Sam Earnhart, (831) 471-9915 or Reggie Knox, (831) 457-1007 for all Central Coast meetings.*

Southern Central Coast

San Luis Obispo: Tuesday, April 27, SLO UCCE Auditorium, 2156 Sierra Way, 12 NOON-1:30 p.m. Marketing Strategies with Mark Gaskell, UCCE Santa Maria. *Contact Cathy Darling at (805) 781-5910 or Mary Ann Wasserzieher at (805) 595-9653.*

Southern Coast

Ventura: Arpegio Restaurant, 725 So. Victoria Ave., (south of the 126) 12 NOON. *Contact Beth von Gunten, (805) 646-1578.*

San Joaquin Valley

Madera: TBA. *Contact Kerry Washiba at (209) 227-3997.*

Modesto: Tuesday, April 20, Denny's Restaurant, 1525 McHenry Ave., 7 A.M. *Contact Gary Giddon, (209) 523-8472 or Gwen Huff at 209/521-4455.*

Livingston: Thursday, April 22, Almond Tree Restaurant, 2205 F St., 7 a.m. *Contact Lee Moore at (209) 394-7894 or Gwen Huff at 209/521-4455.*

Kingsburg: California Clean Grower's Association Meeting. Everyone is welcome. Thursday, April 8. Kady's Kitchen, 7 A.M. *Contact Fred Swaik, 209/638-7705.*

Lindsay: TBA. *Contact Andrew Gierde, (559) 436-0604 (hm).*

There will be a new San Joaquin County meeting starting in April. Watch your mailbox for details. To be sure you are on the mailing list for this meeting, contact Russ Hill at (209) 606-2767.

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Ads & Announcements

Organic Farmer Wanted for 50 acres of ginger, veggies, herbs, fruit. 5 yrs. exp. growing vegetable crops. Richard, Kauai Organic Farms, POB 1122, Hanalei, HI 96714; fax 808/828-6888; Ph 808/635-0878.

Olive Trees for sale. Italian varieties, including Frantoio Leccino. 831/728-4269.

Positions & Grants Available for community profit sharing in agro-forestry, permaculture, edible landscaping, organic market garden, sustainable logging, furniture building. Old Mill Farm. 707/937-0244 (pref. Wed. morn.) or www.rich.org/d/omf.

Independent Monitoring Service for the Central Coast. We find what's bugging you. Call Lewis & Carlson. 831/728-3198 for brochure.

Wanted: 40-60 acres of orchard land w/ in 2 hrs. of Sacto. Jerry. 530/622-9289.

Property wanted for a community education center for cultivation & use of medicinal herbs. $500 reward. Darren Hickie, Living Farmacy, 831/469-0216.

For sale: brush shredder, orchard heaters, refrig. display cases, 42' refrig. van, '74 Dodge D-500 refrig. truck, 24"x25' inclined reversible belt conveyor, walk-in freezer, juice pressing equip., rotary table steer. Priced to sell. 559/583-8670 after 6 p.m.

Position Available: Vineyard/Ranch Worker/Manager. F/T. Org. exper helpful. 831/722-0692. S.C. Rodgers or R. Repass, R bar R Ranch, c/o 500 Westridge Dr., Watsonville, CA 95076.

Job Opportunity: Calif. SAWG. F/T Coordinator for policy advocacy, movement-building & educ. activities for sustainable & socially just agriculture. SAWG, PO Box 1599, Santa Cruz, CA 95061 ; ph: 831/457-2815; fax 457-1003; casawg@igc.org

Farmstay placements for int'l students sought. Contact Sally Anders, 530/792-8230, wise2@ips.net, www.wisefoundation.com.

BIOS update

Newsletter of the Biologically Integrated Orchard Systems Program
A project of the Community Alliance with Family Farmers

Winter 1999
Volume 13

A "Soft" Approach to Lowering Rejects & Improving Quality

BIOS grower Jim Haag farms 60 acres of Tulare, Vina and Chandler walnuts in Esparto. Since purchasing the orchard in 1979, he has wanted to avoid the use of organophosphates and, if possible, all other insecticides. However, in certain years his reject levels were high and he wanted to eliminate the economic loss of this damage. Still wanting to avoid the use of all insecticides for the 10th straight year, he enrolled in BIOS in 1994 with the hope of using a whole systems approach to reduce insect damage in his orchard.

Jim Haag

In 1998, Jim was very pleased with the results he was able to attain. The amount of insect damage, based on his huller gradesheets, was significantly reduced from 10% to 1%. The decline in insect damage improved his walnut quality and he received number one Diamond walnut ratings in all three varieties. According to Jim, his soft approach to improve walnut quality worked this past El Niño year. He attributes his success to the following practices:

Orchard Sanitation - Immediately following harvest, the orchard was hand gleaned twice; following gleaning, all mummy nuts were poled down. Once on the ground, a single pass with a ringroller followed. Orchard sanitation is a cultural practice to help eliminate overwintering navel orangeworm (NOW), a major problem in this orchard.

Blight Sprays - A trio of copper sprays was applied with an electrostatic sprayer at 2 m.p.h. in order to ensure adequate coverage. Blight sprays have never been used two consecutive years in Haag's orchard in order to lessen the chances of developing resistant strains of the blight bacterium. NOW are more likely to enter damaged nuts. Haag's strategy is to apply blight sprays, minimizing the amount of blight-damaged nuts and reducing NOW damage.

Insect Growth Regulator - One application of the insect growth regulator Confirm® was applied approximately 250 degree days after the first codling moth flight. This substance is lethal, causing premature molt in the larval stage of codling moth life cycle.

Beneficial Insect Releases - In cooperation with UC Berkeley entomologist, Nick Mills, two species of beneficial wasps from an area in Central Asia, where walnuts are thought to have originated, were released in his orchard. These wasps have now established in his orchard due to year-round sources of pollen and nectar from his planted cover crop and the perennial insectary shrubs planted on the perimeter of the orchard.

Early Harvest - A helicopter was used to apply Ethephon, a plant growth hormone, to cause uniform early ripening. This allowed for a harvest 10 days early. Early harvest is a cultural practice that minimizes navel orangeworm damage.

Prior to enrolling in BIOS, Jim was using a no-till system, but expressed concerns about low water permeability in his Type II high clay soil. During his first year with BIOS, he planted the low-grow cover crop mix. The presence of the cover crop has somewhat increased the water permeability of his soil. In addition, to account for nitrogen present in the cover crop he has reduced the amount of applied synthetic nitrogen by 25%.

For additional information, Jim Haag can be contacted by telephone at 530-787-3603; his email address is haag@mother.com or you can visit his website at http://members.tripod.com/HaagFarm/overview.html.

Almonds
Merced, Stanislaus, Colusa, Madera and San Joaquin Counties

Walnuts
Solano and Yolo Counties

BIOS Staff

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Pest Management Alliance (PMA) Holds Field Days

Over 100 growers attended the first almond PMA field day, which was held at the Chico State University farm. Growers heard presentations about reduced risk alternatives to dormant organophosphate (OP) sprays. The local ag commissioner, UC IPM staff, Department of Pesticide Regulation (DPR) staff, and Butte County farm advisor Joe Connell all spoke of the need for reducing pesticide runoff and adopting a "whole systems" approach to orchard management. Chris Heintz of the Almond Board of California gave an overview of the scope of the PMA project and what growers will be able to see at the demonstration sites.

A similar meeting was held in Stanislaus County where approximately 150 growers came to hear local farm advisors Roger Duncan and Lonnie Hendricks give presentations focused on alternative practices to the use of dormant OP sprays. UC IPM Area Advisor Walt Bentley discussed winter monitoring guidelines, and Gary Gliddon of Treevine Consulting provided monitoring information from local farms that hadn't used a dormant sprays for several years and still maintained low damage levels at harvest.

Many new faces were present at the meetings and over half of those attending indicated that the information provided would be useful in their own orchards. Look for more PMA field days during the growing season.

BIOS ALMOND PROJECTS

Colusa County

- Marcia Gibbs, Program Coordinator

On January 13th, in Arbuckle, Colusa County almond growers had the opportunity to hear about the problems associated with the use of dormant organophosphate (OP) sprays. Carolyn Pickel, UC IPM Area Advisor shared with the latest on alternatives to the use of dormant OP sprays.

The meeting also emphasized the importance of monitoring. Good monitoring provides information about what pests are present, the impact of beneficial insects on pest populations, and measures overall orchard health. Growers were provided with monitoring guidelines for their orchards.

Results of winter monitoring for the enrolled Colusa County growers was presented. In January, 100 twigs were collected from each orchard block, and then examined for the presence of San Jose scale, parasitized scale, and mite eggs. Monitoring results were then compared with the growers' harvest crackout results to determine what pests had caused their damage at harvest. By making this connection, growers were able to see the practical importance of monitoring in making pest management decisions.

Visits to Colusa County growers will be scheduled in March. The management team will be visiting each of the enrolled growers as well as new growers interested in joining the program. Look for an April cover crop field day!

San Joaquin County

- Russ Hill, Project Coordinator

The beginning of the almond season is rapidly approaching, with less than fourteen days left until almond bloom!

Winter orchard management was the topic at the December San Joaquin workshop. Gary Gliddon gave a presentation on the biology of pests and beneficials in the orchard, Lonnie Hendricks spoke on winter monitoring and orchard sanitation, and Paul Verdegaal discussed the importance of pollination and bloom. If you would like information about this interesting field day, please give me a call. Thanks again to the presenters for doing a great job!

On January 29, the management team visited several orchards to update farm plans, make suggestions on orchard management techniques, and field growers' questions. Spring visits to enrolled growers' orchards are being scheduled for March or April. Please contact me if you are interested.

Currently, the management team and I are working on putting together our next workshop, which is scheduled for Tuesday, February 16, 1999 from 10:00AM - 12:30 PM at the Ripon Firehouse. We have invited Mark Finan of Channel 3 News to talk about this year's weather pattern, La Niña. We have also invited Cheryl Norton of Abbott Labs to come and discuss Bt sprays for control of PTB and NOW. We will have a follow-up panel of growers and PCAs discussing bloom sprays. We hope you will plan to attend.

Merced & Stanislaus Counties

- Gwen Huff, Regional Project Coordinator

Greetings, I'm Gwen Huff and I'd like to introduce myself to the CAFF, BIOS and LFN communities as the new Regional Project Coordinator for Merced and Stanislaus counties. I received my degree in agriculture from CSU Fresno. Following graduation, I worked on a few small, organic farms and as a Pest Control Advisor in tree fruit and vines in the Fresno area for three years. I was a Peace Corps volunteer in the West African country of Mauritania, and most recently, I worked in urban pest control in Santa Barbara.

The East Merced Resource Conservation District (EMRCD) has received funding to continue its BIOS activities in Merced County another year. Activities funded by their grant from the EPA Agriculture Initiatives Program include organizing field days and producing a newsletter. This year, they have contracted with CAFF to fulfill the requirements of the grant.

The EMRCD Board is comprised of local landowners who volunteer their time to take responsibility for the oversight and guidance of this and other important conservation programs. I will administer the day-to-day program activities such as assisting the BIOS advisory committee in Merced county, contacting speakers for field days, publicizing events and editing the newsletter.

The *BIOS Update* is a quarterly newsletter of the Community Alliance with Family Farmers (CAFF) BIOS program. The mission of BIOS is to build a community of farmers, other agricultural professionals, and public institutions dedicated to the voluntary adoption of a whole systems approach to farm management that is flexible, maintains long term profitability, and relies less on chemical inputs.

This arrangement ensures that the EMRCD will have a high-quality program without undue burden on the EMRCD board. Additionally, I will help Lee Moren and Gary Gliddon, CAFF's Lighthouse Farm Network coordinators in Merced and Stanislaus counties, find presenters for their monthly meetings and assist with outreach. I look forward to joining the CAFF team and to meeting the people who participate in these exciting programs.

Madera and Fresno Counties

- Kerry Washinko, Project Coordinator

On December 10 the Madera BIOS project held a field day titled "Honeybees and Pollination." Christian Hunt, from Sierra Ag, discussed supplemental pollen sources. Supplemental pollen can increase pollination if used properly. Some hints that he gave us were:

1. Put bees in a sunny spot so that they warm up earlier in the day. Bees only fly if the temperature is over 50 degrees.
2. Placing the bees up off the ground on picking bins can add 30 minutes of flight time each day.
3. Make sure bees have a water source close by. Bees take care of their water needs before pollinating.

Another speaker was Brian Beekman, a third generation beekeeper. He recommended that for best results, growers should use 2 1/2 hives per acre. Dr. Thomas Ferrari spoke about products available through his company, the Pollen Bank. He invented a supplemental pollen dispenser that can be attached to the hive in seconds. The bees must walk through the pollen dispenser before they leave the hive and pollen is sticking to their legs even before they get to a flower.

Eric Mussen, a UC honeybee researcher, told us that fog, rain, winds above 12 m.p.h. and damp blooms all reduce pollen foraging. He also warned growers that honeybees fly up to 4 miles from the hive and can be poisoned by neighbors using insecticides. Currently he is doing research on the effects of fungicides on honey larvae and pupae. He has found that Captan has an affect on these stages and that Rovral may also harm bees.

In addition to these honey bee experts, Mike Buttress from A&L Labs talked about almond fertilization. Mike emphasized that nitrogen uptake by dormant trees is low. If nitrogen is applied prior to or during the dormant period, losses through leaching can be great. Another point he stressed is that nitrates in the water, organic matter in the soil, a cover crop and composting all add nitrogen to the trees. These sources need to be subtracted from the amount of chemical fertilizers that are normally used. Thanks also to Brent Holtz, the Madera County pomology farm advisor, for giving the growers some reminders on winter sanitation.

I have visited some of the Madera BIOS orchards recently to do winter monitoring. While some growers' trees are extremely clean, with less than 2 nuts per tree, others have over 40 per tree. Remember, the best way to control NOW is to get rid of these mummy nuts by reshaking or poling. This should be completed by February 15. The nuts should be chopped or shredded with the mower by March 15.

BIOS WALNUT PROJECT

- Miriam Volat, Southern Sacramento Valley Coordinator

On January 19, 1999, the Biologically Integrated Orchard Systems program and the Lighthouse Farm Network presented an informational meeting on Trusts and Inheritance: Preserving Family Lands. Kathryn Kelly, Executive Director of Yolo Land Trust, and Erik Vink, California Policy Director of American Farmland Trust discussed tools for insuring the passing of farm lands to the next generation.

Land values in California are rapidly increasing and inheritance taxes can be as high as 50 – 60% of the appraised value. This can force heirs into the unwanted sale of land to pay federal and state estate taxes. Both Ms. Kelly and Mr. Vink stressed the urgency for landowners to begin planning for the transfer of their estates now.

The primary tools discussed for securing agricultural land from development were agricultural conservation easements. To create an easement, landowners enter into an agreement with a trust agency such as their local land trust, the American Farmland Trust, or the California Oak Foundation. The creation of the trust reduces tax liability and allows the farming operation to continue. The exact agreement depends on the individual farmer and the particular trust organization.

Both the Yolo Land Trust and the American Farmland Trust are nonprofit organizations that promote conservation of agricultural land and open space. Land trusts buy or accept land through donation and are governed by a volunteer board of directors. These organizations help preserve farmland through conservation easements for perpetuity (forever). These easements are essential in preservation of habitat and natural resources by protecting them from the threat of development.

For more information contact American Farmland Trust: (413) 586-4593 or (530)753-1073, www.farmlandinfo.org, Yolo Land Trust: (530)795-3110, California Oak Foundation: (510) 763-0282, www.californiaoaks.org, or Miriam Volat, regional coordinator for CAFF: (530)756-8518 X23.

MONITORING & DOCUMENTATION

- Max Stevenson, Staff Scientist

The Economics of BIOS

Often times when people ask if the BIOS program "works", they want to know the bottom line: is BIOS economically viable? While the income generated from a certain yield and quality of almonds can be calculated relatively easily, the costs incurred in a particular operation can be difficult to determine and varies greatly between orchards. For this reason, in an attempt to help answer this question without the resources to complete an extensive cost comparison, Agricultural Economist Sarana Miller and I completed an economic analysis that does not account for the costs, but compares the gross income (not net profit) of BIOS orchards to the county average.

(Continued on back page)

(Continued from page 3)

For this analysis, 1996 and 1997 yield data for nonpareil almonds grown in Stanislaus and Merced counties was used. In order to determine the county average yield in pounds per acre, the total amount of almonds produced each year was divided by the number of acres (by county and variety). The total pounds of almonds is reported by the Almond Board of California (ABC). The ABC also reports the percent damage. The acres of almonds in California is reported by CASS, the California Agricultural Statistics Service. The resulting average pounds per acre includes all producing acreage, whether harvest results were good or bad.

The BIOS harvest results were taken from our BIOS grower survey. All participating BIOS growers are surveyed by telephone each year and asked to provide information about their harvest results and management practices. The harvest results are reported directly from their huller gradesheets and reflect the true financial returns.

Depending on the year and county, along with other assumptions, the income generated from BIOS orchards ranged from $2,221 per acre to $3,566 per acre. The difference between BIOS and the county average ranged from $160 less per acre to $294 more per acre. Sometimes the difference in income between BIOS and county averages was less than $12/acre. More details about this economic analysis will be released sometime this summer in the BIOS 1993-98 Five-Year Report.

UPCOMING EVENTS

Yolo and Solano Counties: Tuesday, February 16, 1999 from 8 A.M. - 10 A.M.
Topics: Economics of Alternative Practices.
Location TBA.
Contact Miriam Volat for more information.

San Joaquin County: *Tuesday, February 16, 10:00 AM - 12:30 PM, Ripon Firehouse Number 2, Manteca.*
Topics: Weather or not to Spray: a discussion on La Nina and the effective use of Bts.
Contact Russ Hill (209) 537-0976 for more information.

Correspondence regarding this publication should be sent to CAFF, P.O. Box 363, Davis, CA 95617.
Telephone: 530-756-8518 Fax: 530-756-7857
Email: bios@caff.org

Community Alliance with Family Farmers is a membership organization that depends on your support. Please join us now! Contact your local BIOS Coordinator or CAFF's main office at (530)756-8518 for more details on the benefits associated with the different levels of membership.

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BIOS
BIOLOGICALLY INTEGRATED ORCHARD SYSTEMS

PUBLICATIONS

BIOS for Almonds Guide
The guide is based on the experiences of growers, PCAs, and researchers. The cost is $10, shipping included.

BIOS Reader
The BIOS Reader contains a list of articles organized under several headings: insect, fungal disease and nematode management; cover crop management; nutrient management; earthworms; weed management; habitat enhancement; pollination.

Fact sheets available on BIOS practices:
- Establishing a Cover Crop in Almonds and Walnuts
- Chipping and Shredding in Almonds and Walnuts
- Compost Use in Walnuts
- Navel Orangeworm Control in Almonds and Walnuts
- Insectary Shrubs

These fact sheets are available at BIOS Field Days and through the CAFF office.

Learning from the BIOS Approach: A Guide for Community Based Biological Farming Programs.
This guide, produced by CAFF and the World Resources Institute (WRI), introduces the principles driving the BIOS program, gives an overview of on-the-ground operations, and identifies lessons learned and challenges faced in implementing a BIOS-style program.

To order publications contact Carla at (530) 756-8518 x15.