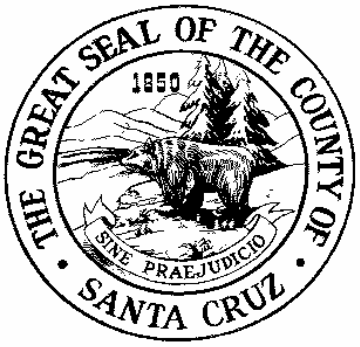
Year 2003 Report
University of California Cooperative Extension
Santa Cruz County



University of California
United States Department of Agriculture
and the
County of Santa Cruz Cooperating

Our Mission:
To protect and improve the resources and quality of life in Santa Cruz County by providing research-generated knowledge and techniques related to agriculture and environmental horticulture, marine sciences, youth development, and nutrition education.

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Overview

I am pleased to submit this Year 2003 Report for the University of California Cooperative Extension (UCCE) Santa Cruz County. UCCE is a cooperative county, state and federal activity authorized by the Federal Smith-Lever Act. It serves as the link to the Land Grant University System to bring applied research and education identified as important to county businesses and local residents.

Our mission and goals are to protect and improve the resources and quality of life in Santa Cruz County by providing research-generated knowledge and techniques with respect to our major programs, including those in agriculture, environmental horticulture, marine resources, and youth development. We conduct multiple applied research projects within each program and further provide technical advice and education to such diverse groups as farmers, fishers, resource managers, nurserymen, teachers, teen leaders, landscapers and home gardeners. In addition, we work closely with other governmental agencies and local non-profit organizations to provide information and assistance in support of our mission and goals.

The Division of Agriculture and Natural Resources (ANR) of the University of California provides the professional staff for UCCE Santa Cruz County as well as overall supervision and management of the department. The county provides office space, vehicles, supplies, and administrative support. For every county dollar, federal, state, University and extramural funding sources provide at least four additional dollars. The following report includes a brief overview of each of the major programs in our department. It then highlights work accomplished by our professional (advisor) staff in the attached annual reports.

Agriculture and Environmental Horticulture. The largest program in the county is applied research and education in the areas of agriculture and environmental horticulture, which is geared toward solving problems and improving practices of local clientele and industry. Integrated Pest Management (IPM) strategies, horticultural improvements for berries, farm management, marketing, and the viability of small farms are research and educational priorities. In 2003 Sudden Oak Death continued to be an important research and educational activity for Santa Cruz County. Additional funding was received to retain our Sudden Oak Death Educational Coordinator position through August 2004. In 2003 substantial research and education efforts were also directed to water quality related issues for the Central Coast and the Monterey Bay National Marine Sanctuary. Selected research and reports resulting from this work can be viewed at our website http://cesantacruz.ucdavis.edu.

The general public and home gardeners continue to be capably served by the UCCE Monterey Bay Master Gardener Volunteer Program, which helps solve problems and provides public education through a telephone hotline, community service projects, and other outreach activities. In 2003 this dedicated and talented group of volunteer gardeners was awarded a bronze medal for their creative garden design at the San Francisco Flower and Garden Show. They also continue to work with Santa Cruz County's Probation Department in the successful and award-winning Youth Garden Program.

Marine Science (Sea Grant) Program. The marine science program conducts applied research and education in the areas of coastal and marine resources within Santa Cruz and Monterey Counties. In addition to applied research and education, activities are focused on the transfer of information to solve practical problems for a wide variety of commercial and industrial businesses as well as recreation, education, and conservation user groups.

The socioeconomics associated with the fisheries industry is a current and important aspect of marine science. With that in mind, during 2003 the Sea Grant Program and UCCE successfully secured federal funding to hire and support a marine-focused economist for California. Santa Cruz County has been identified as the premier location for this position. Rationale and justification for the position stemmed from gaps in knowledge and priorities identified at a local UCCE/Sea Grant sponsored workshop that was convened in 2002. This position has the potential to significantly and beneficially impact local fishers and industry by providing quality research and education programs as appropriate for the community. Recruitment is slated to begin mid-year 2004.

Youth Development. This position supports applied research and education in the areas of natural resource, environmental stewardship, science, and technology programs for youth in Santa Cruz and Monterey Counties. This position also provides oversight for the 4-H Youth Program, which includes projects and activities that focus on cooperation and teamwork while developing citizenship and leadership skills in order to prepare today's youth for adulthood.

In 2003, the youth development program provided curriculum training to community collaborators at the Santa Cruz County Parks, Watsonville Neighborhood Service and the Santa Cruz County Office of Education in the areas of science and environmental literacy. The 4-H Community Club Program was also expanded with the addition of a new community club in Soquel.

Nutrition Education Program (Headquartered at UCCE Monterey County). This program provides information to the Santa Cruz County public at large on a variety of subjects pertaining to human nutrition, food safety, and food preparation and preservation. During 2003 the nutrition education coordinator conducted trainings with employees from Santa Cruz County's In Home Support Services, providing information relevant to food safety and nutrition for caregivers within the community.

Respectfully submitted,

Laura Tourte
County Director

University Academic Staff

ADVISORS IN SANTA CRUZ COUNTY

Laura Tourte	**County Director & Farm Management Advisor**
Mark Bolda	**Strawberry & Caneberry Advisor**
Lynn Schmitt-McQuitty	**Youth Development Advisor**
Richard M. Starr	**Sea Grant/Marine Advisor**
Steven A. Tjosvold	**Environmental Horticulture Advisor**

ADVISORS IN MONTEREY COUNTY WITH CROSS COUNTY ASSIGNMENTS TO SANTA CRUZ COUNTY

Larry J. Bettiga	**Viticulture Advisor**
Michael Cahn	**Water Resources & Irrigation Advisor**
William E. Chaney	**Entomology Advisor**
Steven T. Koike	**Plant Pathology Advisor**
Richard Smith	**Weed Science & Vegetable Advisor**

ADVISORS IN SAN BENITO COUNTY WITH CROSS COUNTY ASSIGNMENTS TO SANTA CRUZ COUNTY

William W. Coates	**Tree Crops & Pomology Advisor**
Sergio Garcia	**Livestock & Range Science Advisor**

ADVISORS IN SANTA CLARA COUNTY WITH CROSS COUNTY ASSIGNMENTS TO SANTA CRUZ COUNTY

Aziz Baameur	**Small Farm Advisor**

University Research/Support Staff

Karl Buermeyer	**Sudden Oak Death Education Coordinator**
David Chambers	**Staff Research Associate**
Mary Cross	**4-H Program Representative**
Kathleen Nolan	**Nutrition Education Coordinator (Headquartered at UCCE Monterey County)**

County Administrative Staff

Judy Bettencourt	**Division Secretary**
Robin Friedman	**Clerk III**

Relevant Workload Statistics - 2003

Education & Outreach

• **Field Days, Workshops & Conferences with Advisors**	**44**
• **Consultations (Field, Office, Phone, E-Mail)**	**2,600**
• **News Releases & Mass Media**	**53**
• **Publications Distributed**	**1,097**
• **Newsletters Mailed**	**12,261**

Volunteer Programs

Master Gardeners Program

• **Master Gardener Volunteers**	**123**
• **Master Gardener Hotline Hours**	**870**
• **Master Gardener Community Service & Project Hours**	**4,200**

4-H Youth Program

• **4-H Clubs in Santa Cruz County**	**14**
• **4-H Club Youth Members**	**266**
• **4-H Adult Volunteers**	**122**
✓ **Years of Service for Adult Volunteers (range)**	**1-26**
• **Number of Projects with Enrolled Youth**	**97**
• **Five Most Popular Projects by Enrollment**	
✓ **Foods and Nutrition**	**87**
✓ **Aerospace and Rocketry**	**83**
✓ **Camping and Outdoor Activities**	**70**
✓ **Creative Arts, Crafts and Hobbies**	**66**
✓ **Horses and Ponies**	**60**
• **Number of Youth Serving in Advanced Leadership Roles:**	**82**
• **4-H Community Service & Project Hours – Youth**	**7,200**
• **4-H Community Service & Project Hours – Adults**	**2,200**

Funding Sources (2002-2003)

University of California & Federal Funds

• **Direct & Indirect**	**$962,415**
• **Competitive & Non-Competitive Funds**	**240,812**
Total University & Federal Funds	**$1,203,227**

County of Santa Cruz Funds

• **Direct & Indirect**	**$232,990**
Total County Funds	**$232,990**

Total Funding

• **University, Federal, & County**	**$1,436,217**

University & Federal Funds as a Percent of Total	**84%**
County Funds as a Percent of Total	**16%**

STEVEN A. TJOSVOLD

ENVIRONMENTAL HORTICULTURE ADVISOR (100% FTE)
SANTA CRUZ & MONTEREY COUNTIES
YEARS IN COUNTY – 21

PROGRAM DESCRIPTION

The Environmental Horticulture advisor is responsible for the planning and implementation of educational and adaptive research in floriculture, nursery production, turf management, and landscape horticulture in Santa Cruz and Monterey Counties.

The environmental horticulture position helps support an industry with significant local economic impact. Flower and nursery production in the Monterey Bay area exceeded $273,050,000 in 2002. As evidence of the importance of the area to the California floral industry, the California Cut Flower Commission is located in the Pajaro Valley.

California's landscape maintenance and installation industry is a multi-billion dollar industry with over 86,000 people employed. The Monterey Bay region is noted for its many beautiful and varied state, county, and city parks and its private gardens that are maintained by professional landscape gardeners. The environmental horticulture advisor serves the professional clientele working in public parks, private gardens and landscapes, and the landscapes of state and local municipalities.

The environmental horticulture advisor has had an important role in the implementation of the Integrated Pest Management (IPM) Policy for the County of Santa Cruz. He currently has an active role in the Department Advisory Group and several important subcommittees: glassy-winged sharpshooter control alternatives, vegetation management alternatives, and gopher control alternatives.

Many residents of Santa Cruz and Monterey Counties have been dramatically affected by the introduction of an important pathogen of forest and woodland species—the disease it causes is commonly known as Sudden Oak Death. The environmental horticulture advisor provides educational outreach, helps coordinate UC research in the County, and investigates management practices regarding this disease.

The general public is served admirably through the UCCE Monterey Bay Master Gardener Program that provides public gardening and pest control problem solving through a telephone “hotline” and many community educational outreach activities. Reduction of pesticide use in gardens is achieved by the proper identification and IPM approaches that are provided by the hotline personnel and at public forums. The master gardeners are backed by the full scientific might of the University of California. The environmental horticulture advisor provides oversight and management for this local program.

SITUATION STATEMENT

This Year's Challenges and Opportunities:

1. Sudden Oak Death
Sudden Oak Death (SOD) is a serious disease on coast live oak and other native species in the forests and woodland in parts of central and northern coastal California. It is particularly serious in many parts of the Santa Cruz County mountains, and in some parts of Monterey County (Big Sur). We discovered, in December 2000 and March 2002, infected rhododendrons in a commercial nursery in Santa Cruz County, and nursery products are now implicated as potential sources for long distance movement of the pathogen. Research funds were received for 2002-2003 to evaluate the effectiveness of fungicide control of the pathogen in rhododendron. These comprehensive experiments were recently completed and this information has been presented at three professional meetings. A manuscript was completed in late 2003 and will be submitted to a professional journal for publication. In the last three years, there has been significant demand to respond to the public, professionals, and governmental agencies at the local, statewide, and national levels with respect to information for SOD. For the period August 2002-2004, the California Department of Forestry funded a Sudden Oak Death Educational Coordinator position to serve as a liaison for researchers, follow disease monitoring of the pathogen, and to provide direct educational outreach to the community. The coordinator is housed in at UCCE Santa Cruz County, and now offers close contact and information for residents and professionals in the County. In 2003, a fungicide was registered in California for use in preventing infections on oak trees. The research information that eventually lead to the fungicide registration was conducted by a UCCE research team, including the environmental horticulture advisor, conducted in part, in Santa Cruz County.

2. Floriculture and Nursery Industry
The flower and nursery industry is faced with unprecedented international competition, rising energy costs, and pressures to reduce its environmental impact. Educational programs and applied research programs are directed to soften agriculture's impact on the environment in the Monterey Bay Area and to reduce pesticide exposure to workers in a practical and economical manner. Research programs have been involved with the reduction of conventional pesticides. In particular, a statewide research program was completed in 2002 to develop and provide the latest in IPM practices to commercial rose nurseries. The research and educational outreach was, in part, conducted in the Pajaro Valley. Educational programs are directed to floriculture and nursery clientele with respect to IPM practices and use of reduced risk pesticides. In 2003 the rose IPM information was extended through newsletters, industry publications, and a new reference, the Encyclopedia of Rose Science. New plant diseases and pathogens that become resistant to registered fungicides continue to be an important problem. The identification of diseases and the testing of new reduced-risk fungicides and non-chemical management approaches were an important component of the environmental horticulture program in 2003.

3. Santa Cruz County Integrated Pest Management (IPM) Policy Program

After the successful implementation of the Santa Cruz County IPM Program in 2001-2002, the environmental horticulture advisor continued to work closely with the County of Santa Cruz to provide advice for sound IPM practices. In 2003 the advisor had an active role in the Department Advisory Group (IPM-DAG), and in addition, continues to work on three subcommittees to help solve the most difficult problems. They are: gopher control for County parks and the local levee system, roadside vegetation management, and control for the Glassy Winged Sharpshooter (GWSS). Research on alternative controls for gopher control on the levee system was completed in 2003 and results presented to the IPM-DAG by Dr. Desley Whisson (Wildlife Specialist, UC Davis). A formal report is forthcoming (Whisson, Tjosvold, Tourte). A vegetation management subcommittee was charged with the goal of reducing or eliminating the use of chemical weed control along the Santa Cruz County roadways. At the end of 2003 the committee started to plan for field research and a demonstration site to show how the herbicide Roundup could be used more effectively to control the highly-invasive "french broom" on mountain roadsides. Moreover, another demonstration site will be established using native plantings to compete with invasive weeds along public roads in Watsonville. We hope that these experiments/demonstrations will provide model weed management systems that can be used to reduce pesticide use along the roadways of Santa Cruz County.

RESEARCH ACTIVITIES

Reduced Risk Nematode Control in Greenhouse Roses

Nematodes can be a serious threat to many greenhouse crops. There is only one nematicide registered for greenhouse use and that product in the field has proven to be marginally effective. Experiments evaluated the efficacy of four reduced-risk pesticides to root-knot (*Meloidogyne hapla*) and lesion (*Pratylenchus vulnus*) nematodes in roses in greenhouse pot experiments. These experiments determined that one product Avid (abamectin) might be useful as a post-plant treatment to reduce nematode infestation in roses. Dr. Anton Ploeg (UC Riverside) is principal investigator, with UCCE Santa Cruz County. A publication in Hort Science (accepted July 2003) is forthcoming.

Sudden Oak Death (SOD) Field Research

Multiple projects emphasize issues and problems related to oak trees at the urban interface, and rhododendron and azaleas that are produced by nurseries, and which could be moved to other non-affected areas. The environmental horticulture advisor coordinates local work on SOD with the Statewide Task Force and the research community.

- Control of *Phytophthora ramorum* with fungicide in California Live Oak (Garbelotto, Tjosvold, et. al.)
- Fungicide control of *Phytophthora ramorum* on Rhododendron (Tjosvold, Koike)
- Azalea Susceptibility to *Phythophthora ramorum* (Tjosvold, Koike, Davidson, Rizzo)
- Epidemiology of *Phytophthora ramorum* in nurseries. (Tjosvold, Koike)

Integrated Pest Management (IPM) Policy Program - Santa Cruz County

The traditional control of gophers on local river levee systems has been with the toxic fumigant, fumitoxin. As part of the goal of the IPM policy, alternatives to this fumigant were

investigated. Research was completed in 2003 by Dr. Desley Whisson (UC Davis), Laura Tourte (UCCE Santa Cruz County), the County Department of Public Works, and myself to study treatments and cost of chemical and alternative controls of gophers on the Salispuedes and Pajaro levees in Watsonville. For this study, no treatment (chemical or alternative) was found to effectively control the gopher population. Possible alternative control strategies will be presented in a forthcoming final report.

Integrated Pest Management (IPM) on Roses
This is a statewide, multi-year, research and demonstration project bringing together multiple disciplines, IPM techniques, and methods for the commercial greenhouse cut rose industry. The project was completed in 2002. In 2003 this information was incorporated into a new comprehensive publication, Encylopedia of Rose Science (published November, 2003), in a chapter on mites, thrips, and IPM. The project incorporates IPM strategies for insect, mite and disease control, with emphasis on scouting, biological control of spider mites, and threshold levels. An alliance of researchers, farm advisors and industry representatives are cooperating on a statewide program to implement a practical reduced-risk pest management strategy. The California Department of Pesticide Regulation (CDPR) and USDA funds this project. The project leader is Dr. Michael Parrella (UC Davis), with researchers: Dr. Jim MacDonald (UC Davis), Dr. Karen Robb (UCCE San Diego), Julie Newman (UCCE Ventura), and Christine Casey (UC Davis graduate student) cooperating.

Air Circulation Tubes for Prevention of Botrytis
Botrytis is a major disease problem affecting the profitability of the relatively new cut flower crop *Lisianthus*. An experiment was initiated to study how air circulated through tubes placed within the crop could control this important disease (Tjosvold, Wegulo, and Thompsen). A UC IPM grant partially funded a demonstration-type project with the plan to determine basic strategies prior to undertaking and implementing a more comprehensive experiment. Preliminary results indicate a 49% reduction of *Botrytis*. Moreover, crop production and quality was improved. With air circulation tubes, there has been a 42% reduction of plant rosetting (rosetting plants do not develop properly and lead to a loss in production) and a significant increase in flower stem length (over 5 cm.). A new experiment has been set up to substantiate these exciting results and it is expected that these preliminary results could lead to funding for additional experiments.

EDUCATIONAL ACTIVITIES & PRESENTATIONS

Problem Solving and Providing Research-Based Information
An important mission of the environmental horticulture advisor is to help solve clients' acute production and pest problems and answer general questions related to environmental horticulture. This could include identifying pests, diseases, weeds, and responding to post harvest problems, and providing the latest research-based recommendations to correct a problem. The advisor disseminates information that will help growers make decisions in such areas as buying equipment, supplies, or technology related to the client's business.

CORF (California Ornamental Research Federation)
CORF represents the efforts of many University of California academics working effectively together to meet the statewide educational needs of the floriculture and nursery industry. Planning meetings are held at least four times a year. Members consist of professors, extension specialists, farm advisors, growers, and associated industry members.

Meetings Organized with Educational Component

Date	Meeting Name	Topic	Location
02/22/03	Master Gardener Class	Diagnosis of Plant Problems, Telephone Hotline, UCCE Policy	Watsonville
4/12/03	Master Gardener Class	Basic Botany and Introduction to Horticulture	Watsonville
8/21/03	CA Assoc. of Nurseryman Monterey Bay Chapter / CORF	Irrigation Management: Hands on Training	Watsonville
9/16/03	CORF Marketing for Ornamentals	Marketing of Ornamentals, Flowers	Watsonville
10/28/03	CORF Disease Symposium	Symposium on Ornamental Diseases.	Watsonville

Educational Presentations at Meetings

Date	Meeting Name	Topic	Location
1/14/03	United Horticultural Products Grower Seminar	Fungus Gnat Control	Watsonville
4/24/03	Retired Public Employees Lunch	Pest Management in the Garden	Watsonville
6/26/03	CA Assoc. of Nurserymen, Monterey Bay Chapter	New Ornamental Diseases; Update on *Phytophthora ramorum* in Nurseries	Watsonville
9/23/03	CA Assoc. of Nurserymen Research Meeting	Sudden Oak Death for Nurseries	UC Davis
10/28/03	CORF Disease Symposium	*Phytophthora ramorum* and Importance to Nursery Industry	Watsonville
11/13/03	Plant Disease Conference	*Phytophthora ramorum* and Importance Nursery Industry	Salinas

AFFIRMATIVE ACTION

My floriculture colleagues and I have planned and implemented comprehensive, statewide, educational programs to meet the needs of Spanish-speaking growers and farm workers. In the last several years, programs have included insect and disease identification, scouting, pesticide spray application, and management training. In 2002 we initiated a new program for Spanish-speaking supervisors and workers on "ABC's of Horticulture", held in Watsonville. This program turned out to be highly successful and was continued in 2003 in Half Moon Bay. Next year the program will be moved to the Carpinteria area.

PUBLICATIONS

Peer Reviewed

Garbelotto M. M., D. J. Schmidt, S. Tjosvold , and T. Y. Harnik. 2003 . Chemical treatment strategies for control of sudden oak death in oaks and tanoaks. Abstract in *Phytopathology* 93:S28.

Karlik J.F. and S.A. Tjosvold. 2003. *Integrated Pest Management*. In: Encylopedia of Rose Science. Editors: T. Debener, S. Gudin, and A. Roberts. Elsevier publisher. pp. 466-472

Koike S. T., S. A. Tjosvold, J. Z. Groenewald, and P. W. Crous. 2003. First report of a Leaf Spot Disease of Bells-of-Ireland (*Moluccella laevis*) Caused by *Cercospora apii* in California. *Plant Disease*, Vol. 87. No. 2, pg. 203.

Schochow, M., S.A. Tjosvold, and A.T. Ploeg. 2003 Host status of Lisianthus 'Mariachi Lime Green' for three species of root-knot nematodes. *HortScience* (Accepted July 8, 2003).

Tjosvold, S. A., Chambers, D. L., Davidson, J. M. and Rizzo, D. M. 2003. Incidence of *Phytophthora ramorum* inoculum found in soil collected from a hiking trail and hikers' shoes in a California park. Abstract. *Proceedings of the 8th Internatioal Congress of Plant Pathology*. Vol. 2. pg. 148.

Tjosvold, S.A. and J.F. Karlik. 2003. *Mites*. In: Encylopedia of Rose Science. Editors: T. Debener, S. Gudin, and A. Roberts. Elsevier publishers. pp. 431-437

Tjosvold, S.A. and S.K. Koike. 2003. First report of downy mildew on Delphinium caused by *Peronospora ficariae* in California. *Plant Disease*. Vol.87 No 12. pg. 1540.

Tjosvold, S. A., Koike, S. T., Davidson, J. M. and Rizzo, D. M. 2003. Susceptibility of Azalea (*Rhododendron*) to *Phytophthora ramorum.* Abstract. *Proceedings of the 8th Internatioal Congress of Plant Pathology*. Vol. 2. pg. 147.

Non-Peer Reviewed Articles, Trade Journals, and Newsletters

Tjosvold, S.A. 2003. Control greenhouse humidity to prevent plant diseases. *GM Pro*. February 2003.

Tjosvold, S.A. 2003. Trunk injection with trifloxystrobin and myclobutanil to control powdery mildew of Coast Live oak. *Landscape Notes.* Vol. 17 No. 4

Tjosvold, S.A. 2003. Pesticide registration information. *Between the Furrows*. Vol. 27, Issue 1, pg. 3.

Tjosvold, S.A. 2003. *Phytophthora ramorum* in Europe. *Between the Furrows.* Vol. 27, Issue 4, pg. 3.

Tjosvold, S.A. 2003. New ornamental plant disease. *Between the Furrows.* Vol. 27, Issue 9, pg. 3.

CORF News: Statewide Newsletter

Tjosvold, S.A. 2003. *Regional Report*. In: CORF News. Winter, Spring, Summer and Fall issues.

RICHARD M. STARR

MARINE ADVISOR (100% FTE)
SANTA CRUZ & MONTEREY COUNTIES
YEARS IN COUNTY – 12

PROGRAM DESCRIPTION

Marine Advisors in UC Cooperative Extension help identify and solve coastal and marine resource problems. We apply and transfer research information to solve practical problems for a wide variety of commercial and industrial businesses as well as recreation, education, and conservation user groups. During 2003 Marine Advisor Rick Starr worked in four primary areas. They were:

1) Developing an ocean science camp for children,
2) Helping promote and coordinate marine research and education in this region,
3) Providing technical advice and training, and leadership to help governmental agencies, environmental organizations, and resource users develop and coordinate coastal resource management plans; and
4) Conducting research on rockfish, lingcod, and groupers to help promote the wise use, conservation, and management of valuable fishery resources.

SITUATION STATEMENT

The focus of marine and coastal activities in Santa Cruz and Monterey Counties is on resource conservation, education, and the development of world-class marine research institutions. Tourism, recreation, research, and education are the primary marine related revenue generators in the local area. The existence of the Monterey Bay National Marine Sanctuary, the nation's largest marine sanctuary, provides a backdrop for these activities. Fisheries are less important components of the coastal economy than they were in the past, but still play an important role in the culture of central California.

The focus on resource conservation has brought a greater attention to the need for a high quality marine and coastal environment. The current issues in fisheries revolve around the need to conserve fished populations and improve fishery management while maintaining viable commercial and recreational industries. Other pressing resource conservation issues include the decline in abundance of some non-harvested species, coastal development and habitat loss, degradation of water quality, user conflicts, and a need to maintain recreational opportunities. Additionally, there is a need for coordination of the many research, education, conservation, and recreation groups in this area.

RESEARCH ACTIVITIES

Research and creative activities include:

Fisheries

Much of my recent research is intended to help evaluate the marine reserve concept as a tool for managing fisheries. Marine reserves appear to have the potential to conserve stocks of fish, but there are some critical variables that influence their effectiveness. For example, estimates of sizes of home ranges and frequency of movements of a species are vital elements to determining an appropriate design for a marine reserve that would help conserve that species. However, little is known about typical movements of many coastal species. I am working to develop the tools and techniques needed to determine the home ranges and frequency of movements of key species of coastal fish.

I also work with other west-coast researchers to study species-habitat associations of rockfishes. We use submersibles to run visual belt transects of rocky habitats. From direct observations and video tapes, we determine habitats used by different fishes. Data from observations are entered into database, statistical, and GIS programs and analyzed. Results of my research are presented in scientific journals and at scientific symposia. My work is known and respected at local, national, and international levels.

Summary of Primary Accomplishments:

- Studied rockfish, lingcod, and grouper movements and habitat use
- Published peer-reviewed and non peer-reviewed publications
- Provided information to fishery managers about sizes of marine reserves necessary to conserve lingcod
- Presented my research at conferences, schools, universities, and agencies
- Conducted collaborative field research with west coast researchers
- Convinced fishery managers in Belize to improve conservation of endangered groupers

Technical and Policy Support for Resource Managers

Current fishery management activities are proving to be insufficient to prevent declines in fishery resources. Thus, the California Legislature enacted new laws requiring fishery management plans and investigation of alternative fishery management techniques. In response, resource managers are considering new methods for managing fisheries, such as the use of marine protected areas. Although new fishery management methods are being considered by resource managers and legislators, little is known about the efficacy of these new techniques. New information is needed with which to develop fishery management plans and to evaluate new management methods.

I participated in workshops with nationally and internationally known scientists that were convened to provide advice to the California Department of Fish and Game on the development of fishery management plans. I also worked with other Sea Grant Extension

staff to provide support for California Department of Fish and Game's efforts to develop fishery management plans.

Summary of Primary Accomplishments:

- Reviewed and provided comments about the California Department of Fish and Game's Draft Squid Fishery Management Plan
- Provided advice and help to the California Department of Fish and Game Marine Protected Area process.
- Provided advice and help regarding fisheries, benthic habitat disturbance, and marine protected areas to the Monterey Bay National Marine Sanctuary for its Management Plan Review.
- Participated in the discussion about marine reserves in this area.

EDUCATIONAL ACTIVITIES & PRESENTATIONS

Central California Coastal Resource Education

For the past two decades, the United States has experienced a well-documented decline in the quality of science education. Mean Scholastic Aptitude Test scores have declined for all ethnic groups, gender and racial differences in mathematics and sciences have increased, most schools have lost funds needed to keep up with new technologies and ideas, and as a result, teachers have experienced increasing difficulty maintaining proficiency in science literacy. United States school children rank poorly in performance of science and math scores compared to other developed countries. Many people today are concerned that our country will lose our competitive edge in the global economy unless we train our youth to apply scientific methods and new technologies towards the use and management of our finite natural resources.

I have been working with leading educators, business people, scientists, researchers, and resource managers in this region to establish a national ocean science camp for children - named S.E.A. Lab Monterey Bay. S.E.A. stands for Science, Education, and Adventure. Our vision is to develop a school that utilizes community resources to provide children with an appreciation for science, resource conservation, and potential marine related careers. Our goal is to provide a year-round, high quality marine science education experience within a camp setting for middle school and high school-aged children.

Summary of Primary Accomplishments:

- Hired and supervised full time planning director for S.E.A. Lab Monterey Bay
- Provided leadership to planning team for S.E.A. Lab Monterey Bay
- Helped create promotional video for S.E.A. Lab Monterey Bay
- Provided leadership to Board of Directors of S.E.A. Lab Monterey Bay

Coordination of Researchers and Educators, and Public Education

There are more than 20 major research and educational institutions in the Monterey Bay Region, and many smaller organizations that have a combined research budget of more than $200 million. One of my objectives is to help facilitate communication between the institutions and to encourage local researchers to work on applied topics. I also synthesize research publications and make presentations to provide people with a clear understanding of natural resource and public policy issues.

I attend meetings and organize workshops and symposia to discuss research and education in this region. I talk with many individuals from different institutions and let people know what other researchers are doing. I frequently make public presentations about natural resources and resource management, and also write publications oriented to a general audience.

Summary of Primary Accomplishments:

- Attended over 10 meetings to discuss research activities
- Wrote 3 short articles about natural resources for public distribution
- Made 5 presentations about natural resource policy issues

AFFIRMATIVE ACTION

The university commitment to affirmative action is to make all programs available to any person interested in coastal or marine topics. My program is in compliance with university affirmative action criteria, however, I am also working to develop ways to increase cultural diversity among coastal users. One of my long-range goals is to try to achieve a greater involvement of Hispanics in marine issues.

SELECTED PUBLICATIONS

Non-peer Reviewed

Starr, R. July 2003. Camp SEA Lab Monterey Bay. *Between the Furrows*. Volume 27; Issue 7.

Starr, R. February 2003. Sanctuary Currents. *Between the Furrows*. Volume 27; Issue 2.

LAURA TOURTE

FARM MANAGEMENT ADVISOR (30% FTE)
SANTA CRUZ, MONTEREY &
SAN BENITO COUNTIES
YEARS IN COUNTY – 4

PROGRAM DESCRIPTION

Farm advisors in UC Cooperative Extension help identify and work on issues of concern to local growers. Applied research and educational programs are at the forefront of the effort to provide the local agricultural community with information to help problem solving capabilities. Work associated with this program includes performing research and providing information to help small, beginning, and limited resource farmers understand the relationship of farm and financial management to healthy, viable agricultural enterprises. More specifically, program activities are being tailored to include information on costs of production, farm profitability, record keeping, financial management, alternative practices, and marketing.

SITUATION STATEMENT

From an economic standpoint, "success" in farming is harder than ever before, with multiple pressures hampering farmers' ability to remain in business. The overriding goal of my farm advisor work is to help strengthen farm businesses—especially those that are small, beginning and/or limited in resources. In order to achieve this, my efforts are focused in two areas: farm management—extending knowledge and information to improve business skills for the short-term; and decision-making—performing research and creative activity that will ultimately provide area farmers with research results, thus tools, to help them make informed choices and business decisions for the long-term.

RESEARCH ACTIVITIES

Research and creative activities during 2003 included:

- *Estimated Costs and Potential Benefits of Central Coast Water Quality Conservation Practices (Year 2)*. Project will result in studies that provide coastal farmers with information relevant to the installation, operation and maintenance of 12 water quality conservation practices. A total of nine studies are now complete (please see publications section). Three additional studies are expected to be completed in 2004. Project role: Principal Investigator. Cooperators: Daniel Mountjoy, USDA-Natural Resources Conservation Services; Monterey Bay National Marine Sanctuary; Six-County Coalition of Farm Bureaus; Resource Conservation Districts; Karen Klonsky, Extension Specialist, Department of Agricultural and Resource Economics, UC Davis.

  A recently added component to this project is the development of a "conservation practices cost calculator", as well as expanded "cost/benefit" educational and in-service training workshops specifically related to central coast water quality conservation practices. Funding to complete this component was received from the Renewable

Resources Energy Act in collaboration with Mary Bianchi, Farm Advisor UCCE San Luis Obispo County and Karen Klonsky, Extension Specialist, UC Davis Department of Agricultural and Resource Economics.

- *Marketing Alternatives for Small-Scale Farmers – Phase II (Year 2).* Continuation of the second phase of a project funded by UC Center for Cooperatives/USDA Rural Cooperative Development Grants. Project role: Co-Principal Investigator with Mark Gaskell UCCE Santa Barbara and San Luis Obispo Counties.

- *Alternatives for Central Coast Vineyard Floor Management (Year 2).* Project is evaluating associated costs for alternative vegetation management practices in vineyards. Project role: Cooperator. Principal Investigators: Larry Bettiga and Richard Smith, Farm Advisors, UCCE Monterey County.

- *Santa Cruz County Integrated Pest Management (IPM) Program (Year 2).* Continued work with Santa Cruz County's IPM Department Advisory Group, Department of Public Works, UCCE Advisor Steve Tjosvold and UC Davis Wildlife Extension Specialist Desley Whisson on rodent control study for Santa Cruz County's levee system. Project role: Cooperator. Principal Investigators: Steve Tjosvold, UCCE Santa Cruz County and Desley Whisson, UC Davis.

- *Cover Crop Practices in Central Coast Specialty Crops (Year 1).* Project is evaluating associated costs for cover crops in specialty crops (organic vegetables) for Central Coast farmers. Project role: Cooperator. Principal Investigator: Eric Brennan, USDA-ARS Salinas, CA. Other investigators: Michael Cahn and Richard Smith, Farm Advisors, UCCE Monterey County; Steve Fennimore and Howard Ferris, Extension Specialists, UC Davis.

- *Costs of Production for Organic Vegetables – Central Coast (Year 1).* Project is evaluating costs of production for Central Coast organic romaine lettuce and broccoli. Project role: Co-Collaborator/Investigator. Others Investigators/Collaborators: Karen Klonsky and Rich DeMoura, UC Davis Department of Agricultural and Resource Economics; Richard Smith, Farm Advisor UCCE Monterey County.

- *Business Skills Workshops for Small and Limited Resource Farmers on the Central Coast (Multi-Year).* Ongoing work to bring "hands on" educational opportunities to coastal farmers with respect to farm management and marketing. Project role: Educational coordinator and trainer.

- *Costs of Production for Raspberries and Organic Strawberries – Central Coast (Completed in 2003).* Project evaluated costs of production for Central Coast raspberries and organic strawberries. Project role: Co-Collaborator/Investigator. Others Investigators/Collaborators: Mark Bolda, Farm Advisor, UCCE Santa Cruz County, Jose Bervejillo, Post Graduate Researcher, UC Davis Agricultural Issues Center, Karen Klonsky, Extension Specialist, UC Davis Department of Agricultural and Resource Economics.

EDUCATIONAL ACTIVITIES & PRESENTATIONS

Aside from disseminating information through routine extension methods (telephone, e-mail, surface mail, and in-person inquiries), during 2003 I extended knowledge and information for the Santa Cruz County and Central Coast agricultural community at the following workshops, conferences and/or educational meetings:

- *Alternatives to Vineyard Floor Management Practices – Associated Costs.* UCCE Monterey County. February 2003. Central Coast Vineyard Seminar. Coordinated by: Larry Bettiga UCCE Monterey County. Presenter.

- *Costs of Production for Central Coast Organic Strawberries*. UCCE Monterey County. February 2003. Organic Strawberry Short Course. Coordinated by: UC Davis Extension; UC SAREP. Presenter.

- *Vegetable and Flower Growing for Gardeners.* UCCE Santa Cruz County. May 2003. Master Gardeners Class of 2003. Coordinated by: Master Gardeners. UCCE Santa Cruz and Monterey Counties. Workshop leader/presenter.

- *UC's Role in Developing New Technology.* Focus on laboratory procedures for diagnosing plant diseases and tests to determine soil nitrogen. UCCE Santa Cruz County. June 2003. Agricultural Education Workshop. Coordinated by: Agri-Culture. Presenter.

- *Estimated Costs and Potential Benefits of Central Coast Water Quality Conservation Practices*. Farm Water Quality Short Courses & Trainings for Central Coast Farmers, Ranchers, and Agency Personnel. July, October, November 2003. Salinas, CA. Presenter/Trainer.

- *Selling What You Grow: Developing Market Plans*. UCCE Santa Cruz County. September 2003. California Ornamentals Research Foundation (CORF) Marketing Workshop. Coordinated by: Ann King, UCCE San Mateo County and Steve Tjosvold UCCE Santa Cruz County. Presenter.

- *Record Keeping and Financial Management*. Farm Management Workshop. December 2003. Coordinated by: Agricultural Land-Based Training (ALBA). Salinas, CA. Workshop Leader/Presenter.

AFFIRMATIVE ACTION

Efforts are made to assure access of knowledge and information to all clientele, including underserved clientele, through various outreach methods including personal contact, newsletters, announcements and educational workshops. The *Central Coast Family Farm Report* is offered in English and Spanish to make certain that small and limited resource Hispanic farmers have access to this information. Simultaneous Spanish translation services for some workshops, as appropriate, are also offered at UCCE. In addition, all articles,

announcements and resources are designed and included in the newsletter with all small and limited resource farmers specifically in mind.

PUBLICATIONS

Peer Reviewed

- Keith, Diana, Ellen Rilla, Laura Tourte, et al. 2003. *Obstacles in the Agritourism Regulatory Process: Perspectives of Operators and Officials in Ten California Counties*. Agricultural Issues Center. Issues Brief Number 22. September 2003. University of California. Davis, California. Cooperator/Contributor.

Non-Peer Reviewed

- Tourte, Laura, Merrilee Buchanan, Karen Klonsky, and Daniel Mountjoy. 2003. *Estimated Costs and Potential Benefits – Central Coast Conservation Practice Series.* Nine studies completed to date: *Grassed Farm Roads; On-Farm Row Arrangement; Non-Engineered Vegetated Waterway; Non-Engineered Water-Sediment Control Basin, Underground Outlet; Perennial Hedgerow Planting; Annually Planted Grassed Filter Strip; Perennially Planted Critical Area Planting; Annually Planted Cover Crop.* University of California Cooperative Extension Santa Cruz County. Principal investigator and lead author.

- Bolda, Mark, Laura Tourte, Jose Bervejillo, and Karen Klonsky. 2003. *Costs of Production for Organic Strawberries, Central Coast (Santa Cruz and Monterey Counties).* University of California Cooperative Extension. Davis, California. Cooperator and co-author.

- Bervejillo, Jose, Mark Bolda, Laura Tourte, and Karen Klonsky. 2003. *Costs of Production for Raspberries, Central Coast (Santa Cruz and Monterey Counties).* University of California Cooperative Extension. Davis, California. Cooperator and co-author.

- Laura Tourte and Mark Bolda. 2003. *Vegetable Garden Planting Guide for Santa Cruz County.* Revised/Updated April 2003. University of California Cooperative Extension Santa Cruz County. Led revision activities.

- Tourte, Laura. June, December 2003. *Central Coast Family Farm Report*. Newsletter for the small farm community with contributions from UCCE Santa Cruz, Monterey, San Benito, and Santa Clara County advisors. In English and Spanish. Editor and contributor.

- Tourte, Laura, January-December 2003. Ask Laura Column. *Between the Furrows*. *Santa Cruz County Farm Bureau Newsletter*. Topics included: Tools for Farm Management; Market Prices for Agricultural Crops. UCCE Coordinator/Contributor.

LYNN SCHMITT-MCQUITTY

YOUTH DEVELOPMENT ADVISOR (100% FTE)
SANTA CRUZ & MONTEREY COUNTIES
YEARS IN COUNTY – 3

PROGRAM DESCRIPTION

This position provides applied research, outreach and leadership in the areas of science, technology, environmental stewardship and natural resource education for youth. Programs focus on integrating issues related to coastal resources, the environment, and agriculture with human and community development.

Additionally, this position works with associated organizations involved in youth development and education in Santa Cruz and Monterey Counties. Work is also geared towards coordination with other UCCE programs in neighboring counties, and with external agencies.

This position serves clientele in Santa Cruz and Monterey Counties, with the position head quartered in Santa Cruz County.

SITUATION STATEMENT

The University of California Cooperative Extension Youth Development Program embraces multi-disciplinary methods of working with youth in local communities. The major themes or goals of my program are to:

1. Conduct applied research, outreach and leadership in the areas of science, technology, environmental stewardship and natural resource education for youth in Santa Cruz and Monterey counties.

2. Serve as an educational resource by providing local leadership and knowledge of youth development, science, technology, environmental stewardship and natural resource education through collaboration with local youth and community groups.

3. Extend knowledge and information to the Santa Cruz and Monterey County 4-H community club programs and staff.

RESEARCH ACTIVITIES

Research and creative activities include:

1. **Develop programs for youth in science, technology, environmental stewardship and natural resource education in Santa Cruz and Monterey Counties.**

   - *Youth Community Science Education Program. January – December*
     In 2003, I provided research-based education and curriculum training to the following community collaborators on the following resources:

1. Santa Cruz County Parks: Kitchen Science for Kids
2. Watsonville Neighborhood Services: Youth Experiences in Science
3. Fort Hunter Liggett: TWIGS (in conjunction with Marilyn Johns), Project Learning Tree, Project WET and Project WILD
4. Santa Cruz County Office of Education: Wetland Protectors
5. Monte Vista After School: TWIGS

- *Developing Experiential Learning Design Models. January – December.*
  As a sub-group of the Science, Technology and Environmental Literacy Workgroup, the Experiential Learning (EL) project created, tested, and evaluated a three-step training module that provides experiential learning opportunities for non-formal educators to enhance their understanding and capacity to develop and deliver experiential learning opportunities.

2. Serve as an educational resource by developing and disseminating science, technology, environmental stewardship and natural resource education information relevant and useful to youth, associated organizations, and agencies.

- *Golden State Environmental Education Consortium Environmental Education and Training Partnership Program. January – December.*
  As a member of the Golden State Environmental Education Consortium (GSEEC) and the project evaluator for the Environmental Education and Training Partnership Program (EETAP) grant, I worked with key environmental education leaders in California to expand the capacity, visibility, reach and participation of diverse people in the delivery, training and leadership of environmental education programs and initiatives in California. This project has identified that environmental education leaders and practitioners from the Central Coast are under represented in this area. Therefore I will be developing collaborations and partnerships to strengthen this relationship.

- *Together for Youth: Youth Opportunities Website. January – December.*
  The Youth Opportunities Website – also called the "Local Down Low", is a segment of the ShoutOut website, an on-line version of the Watsonville youth written quarterly newspaper. <http://www.shoutoutnews.org/downlow/index.php> I worked to identify resource guides and possible organizational links that provide leadership training and volunteer opportunities for youth. As a result, the website will connect youth to volunteer opportunities, employment, entertainment ideas, health, and related information throughout Santa Cruz County.

3. Extending knowledge and information to 4-H Community Club Programs and Staff.

- *Fiscal Training Series Development. Quarterly.*
  4-H Youth Development Program staffs, support staff and County Directors from Santa Cruz, San Benito and Monterey Counties developed a comprehensive educational training program for community 4-H club treasurers and club leaders on the fiscal policies, responsibilities, and procedures of 4-H clubs. The engaging and

interactive training sessions will be offered in January of 2004 and will act as a mid-year check in to see how clubs are utilizing the new treasurer materials.

- *Santa Cruz County Leaders Council Investment Program. June - December*
  Under my guidance, the Santa Cruz County Leaders Council adopted five investment programs which I initiated as a way for the Leaders Council to "give back" to the Santa Cruz County 4-H Program. The investment program included money to support:

  1. Service-Learning Project Grants: $3000
  2. Volunteer Fingerprint Reimbursement: $300
  3. Volunteer Development: $2000
  4. Member Development: $1500
  5. Curriculum Lending Library: $600

- *Monterey County 4-H Club Education Development. January – December.*
  During the course of the year I worked closely with various 4-H clubs to provide education and training on policy and reporting guidelines, address issues, and develop new management techniques. In addition, a new community club was formed at the Porter Youth Center located at Fort Ord Army Base.

EDUCATIONAL ACTIVITIES & PRESENTATIONS

1. Develop programs for youth in science, technology, environmental stewardship and natural resource education in Santa Cruz and Monterey Counties.

- *Camp SEA Lab Staff and SEA Guides Training. May.*
  Two, 3-hour trainings were conducted with the Camp SEA Lab staff and SEA Guides (teen volunteers) in order to better prepare them for working with Camp SEA Lab campers. Camp SEA Lab is a marine science camp adventure for youth ages 8-13, where they explore the wonders of the marine world from the top of the watershed to the bottom of the deep sea. The training engaged staff members in identifying and understanding leadership styles, as well and how to develop age-appropriate activities for campers.

2. Serve as an educational resource by developing and disseminating science, technology, environmental stewardship and natural resource education information relevant and useful to youth, associated organizations, and agencies.

- *Watsonville Neighborhood Services Program. February – June.*
  I met with the educational program director to evaluate and problem solve concerns about the implementation of the Youth Experiences in Science (YES) program at their after school site. As a result, we developed some additional techniques to assist staff in working with site participants. I also provided the site with the YES curriculum in Spanish as an additional tool to meet the needs of clientele.

- *Serving as an educational resource to community collaborators. January – December*
  Through articles in the Santa Cruz County Farm Bureau newsletter, The Salinas Californian Newspaper, the King City Rustler, KRKC news radio and through participation in events such as the Monterey County Farm Day and the Workforce Investment Board Youth Providers Conference, I was able to educate community partners about programs and services available through the UCCE Youth Development Program, as well as address youth development topics relating to experiential learning, science-based education, as well as leadership, citizenship and life skill development.

3. Extending knowledge and information to 4-H Community Club Programs and Staff.

- *Santa Cruz & Monterey County 4-H Programs. January – December.*
  Met regularly with the program staff to direct and guide program, policy, education, training and events taking place in the Santa Cruz and Monterey County 4-H Club Programs.

- *Live Oak Community Club Barn Development meetings. August – October.*
  The current 4-H animal facility at the Green Acres school site in Live Oak is going to be demolished and re-built by the Live Oak School District. Over the course of three months, worked with the Live Oak 4-H Community Club Leader to develop a new site map and narrative plan for the new facility. The plan was submitted to the Live Oak School District Superintendent in October for consideration.

- *Santa Cruz and Monterey County 4-H event planning, delivery and evaluation. January – December.*
  Worked with 4-H staff and volunteer committees of youth and adults to plan, deliver and evaluate the following Santa Cruz and Monterey County 4-H events: County Presentation Day, Tri-County Presentation Day, Food Booth Food Safety Training, Annual Leader Development Training, Officer Training and Project Leader Training. As a result, these education opportunities enhanced the leadership, citizenship and life skill development of 4-H members, and built the capacity of adult volunteers.

- *4-H Community Club Newsletters. January – December*
  In 2003 the educational focus of newsletter articles were on explaining the Core Values and Program Criteria of the 4-H Youth Development Program, and how those values and criteria impact and can be implemented at the local level.

- *Santa Cruz County Communication and Information Streamlining. May – December.*
  In an effort to better utilize technology, office staff and resources, worked extensively with the Santa Cruz County UCCE webmaster to redesign the Youth Development components of the website. In addition, also worked with the 4-H Program Representative and Leaders Council to move the reproduction and mailing of the monthly 4-H newsletter off site, with the Leaders Council funding the duplication and mailing costs. While there was discussion of moving to an electronic only newsletter,

we were concerned that this would limit access of the program to families without regular access to the web and e-mail.

AFFIRMATIVE ACTION

I am committed to implementing outreach efforts to ensure nondiscrimination in program identification and delivery. Program delivery and implementation promotes and encourages maximum participation of minorities, women and other under-served or protected groups.

4-H Community Club Programs

Community 4-H clubs were required to submit an annual plan of work, of which affirmative action is a component. These plans were reviewed for depth and appropriateness, and were compared to the all reasonable efforts reports to determine club follow through and plan of work completion.

I wrote articles entitled "Diversity and Inclusion" for each edition of the monthly 4-H newsletters. These articles highlighted various methods for implementing outreach plans and assisted in keeping the goals of outreach visible.

In an effort to increase the membership in 4-H of traditionally underserved audiences, the Santa Cruz County 4-H Program Representative and I worked with a student from Cabrillo College to develop an English/Spanish Parent/Member recruitment flyer that has been provided to all community clubs, is posted on the Santa Cruz County website, and has been used at a variety of community events.

County Youth Development Programs

The focus of county youth development programs was in providing science, technology, environmental science and natural resource program resources to underserved communities and populations. In most cases, county youth development programs took place in locations where there are not community 4-H club programs, and have high populations of people of color. This was a deliberate decision in an effort to not only expand the scope and location of the youth development program, but to also increase the diversity of young people involved with the program.

PUBLICATIONS

Non-Peer Reviewed

Schmitt-McQuitty, L. S. (2003). "Ask Lynn": Teens as Leaders. *Between the Furrows*. November. Volume 27. Issue 6. Santa Cruz County Farm Bureau.

Schmitt-McQuitty, L. S. (2003). "Ask Lynn": Youth Community Science Education Program. *Between the Furrows*. November. Volume 27. Issue 11. Santa Cruz County Farm Bureau.

University of California Newsletters

Schmitt-McQuitty, L. S. (2003). Editor and Contributor. *4-H "Club Notes"*. January – December. Santa Cruz County 4-H newsletter.

Schmitt-McQuitty, L. S. (2003). Editor and Contributor. *4-H "News Notes"*. January – December. Monterey County 4-H newsletter.

Information/Training Packages

Schmitt-McQuitty, L.S., Smith, M.H. (2003) *Designing Experiential Learning Design Modules*. A three-step approach to designing experiential learning programs.

MARK P. BOLDA **STRAWBERRY & CANEBERRY ADVISOR (100% FTE)**
SANTA CRUZ, MONTEREY &
SAN BENITO COUNTIES
YEARS IN COUNTY - 2

PROGRAM DESCRIPTION

The position of Strawberry and Caneberry Farm Advisor was established to support the growers of strawberries and caneberries in the tri-county region composed of Santa Cruz, Monterey and San Benito Counties.

My strawberry and caneberry research and extension program is based upon the following strategy:

1. Identify new and emerging issues in strawberries and caneberries, and address them, either through my own research or in collaboration with other researchers and knowledgeable people who have skills necessary to solve the problem.

2. Conduct research into areas, such as fertility, irrigation and post harvest management, which may offer an enhancement of fruit yield and quality of strawberries and caneberries.

3. Identify ways that strawberries and caneberries may be grown to take advantage of new markets and more profitable venues, such as off season and organic production.

4. Extend information primarily to my assigned area of Santa Cruz, Monterey and San Benito Counties. When extending information, I am mindful of minority groups and those groups that may have been underserved in the past.

SITUATION STATEMENT

Strawberries and caneberries (raspberries and blackberries) are expanding commodities in California and the tri-county region which I serve. According to the California Strawberry Commission, fresh strawberry acreage in the tri-county region was 41% of the state's total acreage dedicated to strawberries in 2003, and grossed over $1 billion in both national and international sales. Caneberry production continues to grow as consumer demand for this fruit expands. Growers and shippers of strawberries are well suited to adapt to caneberry production, as much of the same equipment used for growing and shipping strawberries can also be used. Producers of strawberry and caneberry fruit range in size from large, sophisticated operations of international scale to small growers of only a few acres shipping and selling exclusively to local markets.

RESEARCH ACTIVITIES

Redberry Mite in Blackberries. Redberry mite is an eriophyid mite which infests blackberries. Damage is manifested as blackberry fruit which does not ripen, either in part or in whole. Current control recommendations are inadequate to manage this pest. Losses can be significant. Many small farms grow blackberries, since they lend themselves to small, labor intensive operations. However, such growers face significant losses from redberry mite, impairing profitability of the crop. Research is being conducted using new pest management materials, including an organically acceptable treatment. A recommended protocol for pre-harvest control was formulated, with written results now available. The information has also been presented at educational meetings. In addition, information will be used in coming year for an expanded study consisting of multiple trial sites.

Cost of Production of Raspberries and Organic Strawberries on the Central Coast of California. In collaboration with other University of California researchers, two cost of production studies were generated to assist growers in understanding costs and the decisions they make when producing a crop. These are up to date studies, which are among some of the most valuable publications offered by UC Cooperative Extension. Studies are available to interested parties by hard copy or via the internet (http://cesantacruz.ucdavis.edu). Results and information from the studies have also been presented at educational meetings.

Macro-tunnels for Enhanced Yield in Caneberry Production. Continuing with work begun in 2002 in strawberries, I investigated the utility of macro-tunnels for enhancing yield for caneberries from October through March, traditionally the period of low production in California. The use of macro-tunnels was seen as a potential opportunity to extend fruit production and provide an economic advantage to growers during this time. Though caneberry production at initial trial sites was not enhanced, information obtained from this study will be useful in future investigations under macro-tunnels in 2004.

Efficacy of Less Toxic Compounds for the Control of Slugs in Strawberries: Slugs are serious problem in strawberries as they consume leaves and fruit of the strawberry plant, especially early in the season when conditions are cool and damp. Slugs are often controlled using a bait (metaldehyde), which is applied by hand and results in applicator and fruit exposure. A new slug bait (Sluggo) presents much less toxicity to humans and other mammals and has no fruit exposure issues. In an experiment conducted in 2003, it was determined that the new less toxic compound was of equal efficacy to metaldehyde.

Nutrient Survey of Raspberries: In the past, very little information has been developed with respect to fertility guidelines for caneberry production in the tri-county region. With the assistance of the UC's Division of Agriculture and Natural Resources laboratory, I am presently testing soils and plants, and compiling information on the nutrient status of several commonly grown raspberry and blackberry varieties at key points during the growing season. Laboratory results will help develop foundational fertilization guidelines and ultimately assist caneberry producers with improved fertility practices for the area.

EDUCATIONAL ACTIVITIES & PRESENTATIONS

Meetings Organized with Educational Component

*Annual Central Coast Strawberry Meeting 2003***.** Watsonville, CA. February 12, 2003.

*Methyl Bromide Regulatory Meeting***.** Co-sponsored meeting with Santa Cruz and Monterey County Agricultural Commissioners, and California Strawberry Commission. In English and Spanish. May 28, 2003.

*Annual Monterey Bay Academy Strawberry Field Day 2003***.** Watsonville, CA. June 24, 2003.

Educational Presentations at Meetings

Cultivo de la Mora. Raspberry Cultivation. Sponsored by ALBA (Agricultural Land Based Training Association). Salinas, CA. January 28, 2003.

Distribution of Methyl Bromide Alternative Fumigants. Coordinated by Vegetables West Farming Magazine. Salinas, CA. February 20, 2003.

Cómo aplicar pesticidas a la manera profesional. Improving Spray Efficiency. Monterey Bay Ag Expo and Ag Seminar. Watsonville, CA. February 24, 2003.

*Arthopod Pests of Organic Strawberries***.** UC Extension Organic Strawberry Shortcourse. UCCE Monterey County. February 27, 2003.

*Uso de Pesticidas: Un Repaso Antes de la Campaña de Este Año***.** Pacific Gold Farms. March 7, 2003.

*Controles Químicos e Organicos de los Patógenos del Suelo***.** Presentation of available conventional and alternative (including organic) methods of soil disease control. Prunedale, CA. March 27, 2003.

Parámetros del sistema de fumigación por goteo. Drip Fumingation in Strawberries. 2003 Central Coast Spanish Strawberry Field Day. July 15, 2003.

*Control of Insects and Diseases in Caneberries/ Control de Insectos y Plagas en las Moras***.** In English and Spanish. Naturipe Grower's Cooperative. August 28, 2003.

Control of Slugs in Central Coast Strawberries. 2003 Annual Strawberry Production Meeting, Camarillo, CA. September 3, 2003.

AFFIRMATIVE ACTION

The group to which I direct a significant part of my affirmative action efforts is composed of minority growers and Pest Control Advisors in strawberries and caneberries. Many of these clientele are mono-lingual Spanish speakers. My work is greatly enhanced because of fluency in Spanish speaking, listening, reading and writing. I make regular farm visits, give talks and presentations in Spanish, and also provide translations at meetings which I organize. In addition, I publish newsletter articles in Spanish, and assist colleagues with the translation of their research and educational work into Spanish.

PUBLICATIONS

Peer Reviewed

E.J. Perry, Bolda M. P., Bettiga L.J., Tyler, R. H. 2003. *UC IPM Pest Management Guidelines: Caneberries: Insects and Mites*. UC ANR Publication Number 3437.

W.D. Gubler, Bolda M. P., Perry E.J., Bettiga, L.J., Tyler, R. H. 2003. *UC IPM Pest Management Guidelines: Caneberries: Diseases*. UC ANR Publication Number 3437.

Non-Peer Reviewed Articles, Trade Journals, and Newsletters

Bolda, M.P. 2002. Planting Strawberries: Why is it that I never see strawberries planted in straw around here? Isn't that the way it is supposed to done? Ask Laura. *Between the Furrows*. Santa Cruz County Farm Bureau. 26:3.

Bolda, M.P. 2002. Use of Macro-tunnels for Enhancement of Yield in Strawberries in Winter Months. *Monterey County Crop Notes*. November/December.

Bolda, M.P. 2003. How to Get More Performance from Pesticides: A Review for Applicators. *Monterey County Crop Notes*. January/February.

Bolda, M.P. 2003. Why are strawberries grown from transplants and not from seed? Ask Laura. *Between the Furrows*. Santa Cruz County Farm Bureau. 26:8.

Bolda, M.P., Tourte, L., Bervejillo, J.E., Klonsky, K.M.. 2003. *Sample Costs to Produce Organic Strawberries*. University of California Cooperative Extension.

Bervejillo, J.E., Bolda, M.P., Tourte, L., Klonsky, K.M.. 2003. *Sample Costs to Produce Raspberries*. University of California Cooperative Extension.

Bolda, M.P. 2003. Organic Strawberry Transplants – Are They Possible? *Central Coast Family Farm Report*. June. Translated into the Spanish of the same report as "Trasplantes Orgánicos de Fresa- Son Posibles?"

Bolda, M.P. 2003. Adjusting Cane Densities by Pruning of Nova Raspberries to Enhance Yield and Fruit Size. *Monterey County Crop Notes*. July/August.

Bolda, M.P. 2003. Why Are Raspberries Pruned in the Wintertime? Ask Laura. *Between the Furrows*. Santa Cruz County Farm Bureau. 27:8.

Bolda, M.P. 2003. Control of Slugs in Strawberry. *Monterey County Crop Notes*. September/October.

Bolda, M.P., Show, E. 2003. Preliminary Results for the Control of the Redberry Mite in Blackberries. *Monterey County Crop Notes*. November/ December.

Bolda, M.P., Show, E. 2003. Resultados Preliminarios de la Investigación del Daño del Eriophído en la Zarzamora. *Monterey County Crop Notes*. November/ December.

Bolda, M.P. 2003. Central Coast Strawberries: Can Parasitoids Control Lygus Bugs? *Central Coast Family Farm Report*. December. 2003.Translated into Spanish in same edition as "Uso de Parasitoides Para el Control De Chinche Lygus en la Fresa de la Costa Central."