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From the Director

Partnerships and Sustainability: Models for the Future

These are not easy times for agriculture in California. We are confronting continued falling prices (in some cases, record 30-year lows) for many of our mainstay field and orchard commodities, increased global competition and dumping of agricultural commodities, and ever-increasing demands on agricultural resources by a growing urban population. In these difficult times, the concept of sustainable agriculture, in the broadest sense, asks important questions: What is agriculture's role in our economy and society, and how should it function in shaping the future of our state? What human partnerships will be required to shape a sustainable future for California agriculture? Why is the success of California agriculture one of the most important environmental issues of the 21st century?

These questions and potential answers were discussed for two days this spring in Woodland by over 230 participants at the SAREP co-sponsored conference: "Partnerships for Sustaining California Agriculture: Profit, Environment, and Community." The proceedings of this conference will be available in early December. Conference sponsors included: The United States Environmental Protection Agency (Region 9), California Department of Pesticide Regulation, California Department of Food and Agriculture, USDA Western Region Sustainable Agriculture Research and Education program, Clarence E. Heller Charitable Foundation, Almond Board of California, California Association of Winegrape Growers, California Integrated Waste Management Board, California Prune Board, Community Alliance with Family Farmers, Lodi Woodbridge Winegrape Commission, and the California Sustainable Agriculture Working Group.

The conference program highlighted innovations in agricultural production, research and extension activities involving practices that are profitable as well as environmentally friendly. Speakers, panel discussions, and workshops focused on efforts to implement "win-win" strategies that merge agricultural and environmental concerns. Twenty percent of conference participants were farmers and ranchers, and panelists in commodity-specific sessions included **Rick Antle** (Tanamura and Antle), **Randy Lange** (Lange Twins Inc.), **Robert LaVine** (Robert Mondavi Winery), **Craig Weakley** (Small Planet Foods), **Ed Sills** (Pleasant Grove Farms), **Bryce Lundberg** (Lundberg Family Farms), and **Dan Benedetti** (Clover Stornetta Farms). Over 40 farm advisors, specialists and other UC academics attended, and University of California panelists included advisors **Walt Bentley** and **Carolyn Pickel** from the UC Statewide IPM Project, vegetable crop specialist **Jeff Mitchell** from the Kearney Agricultural Center, **Steve Temple**, specialist in the UC Davis agronomy and range sciences department, **Joy Mench**, professor of animal science at UC Davis, and **Neil Van Alfen**, dean of the College of Agricultural and Environmental Sciences at UC Davis. Highlighting each day were keynotes by

Paul Dolan, president of Fetzer Vineyards in Hopland, Calif., and **John Ikerd**, professor emeritus of agricultural economics at the University of Missouri. Audio files of the keynote speeches are now available at the SAREP Web site (www.sarep.ucdavis.edu/events/).

The main goal of the conference was to increase support for sustainable agriculture principles and practices through cooperative partnerships. Conference co-sponsors see these partnerships and cooperation between growers, researchers, consultants and industry representatives, governmental agencies, and consumers as one of the most important building blocks of sustainable agriculture in California. A high percentage of farmers and agricultural professionals surveyed after the conference indicated that they were enthusiastic about interaction with other conference participants and that they would become involved in agricultural partnerships to either change farming practices or change recommendations to their clientele.

One farmer wrote in an evaluation: *“The conference helped me see that you can reduce pesticides and other ag chemicals and still make a profit; that by building local relationships in my community I can market locally; and that by getting together with other people, I can take heart in the possibilities for the future.”*

I cannot provide a more clear statement of the goals of sustainable agriculture emerging from the partnership model, and I wish to again thank all the conference partners and participants.

Workgroups funded

SAREP-supported proposals for two UC DANR issue-oriented workgroups have received additional funds or been funded for planning efforts. The Biologically Integrated Farming Systems Workgroup has received additional funding from the UC DANR Program Council, according to **Lanny Lund**, DANR assistant vice president-programs. The Organic Farming Research Workgroup was not ratified at this time, but was allocated funds to begin planning. More than 94 UC farm advisors, specialists and departmental faculty, in addition to government and public representatives joined with me and SAREP associate director **Jenny Broome** in writing these proposals to secure funding for the workgroups for the next two years. The BIFS Workgroup met Aug. 16 and will be facilitating the development of Access databases for project management, a statistics workshop for non-traditional experimental designs, and project impact assessment activities. The Organic Farming Research Workgroup planning meeting is scheduled Nov. 1 in Davis, where new research information, funding initiatives, upcoming conferences, and potential partnerships will be featured. DANR workgroups are an important forum for interaction and creation of new, issue-oriented projects and partnerships. Please contact us via email if you would like to be added to the workgroup listserves.— *Sean L. Swezey, director, University of California Sustainable Agriculture Research and Education Program.*

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SAREP funds new production, community development projects

by Bev Ransom, SAREP

Eight new research and education projects have been granted a total of \$156,431 by UC SAREP for the 2001-03 funding cycle, according to **Sean L. Swezey**, SAREP director. New projects were chosen in two different topic areas: 1) optimizing organic and biologically integrated farming systems, and 2) promoting the development of sustainable community food systems. Descriptions of the projects, principal investigators, contact information and amounts awarded follow.

Optimizing Organic and Biologically Integrated Farming Systems

(4 projects; \$96,159)

- **Chris van Kessel**, UC Davis, agronomy and range sciences, "Rice Straw Management as a Means to Control Weed and Pest Pressure in California Rice Fields": \$37,956. Ideal growing conditions coupled with state-of-the-art equipment and management practices have placed California rice yields among the highest in the world. However, growers are facing increased scrutiny over the impact of fertilizer and pesticide use on non-target organisms and the environment. As a result, the continued viability of rice production systems depends upon developing more environmentally friendly management strategies that can support high yields and promote sustainable resource stewardship. In 1991, the California Rice Straw Burning Reduction Act addressed the negative impact of rice straw burning on air quality by requiring rice farmers to adopt alternative methods of straw disposal for the more than 500,000 acres of rice grown in the Sacramento Valley. Since the use of rice straw for other purposes remains limited, farmers have turned to incorporating the straw back into the soil. Straw incorporation is now common, however, doubts remain over its impact on weeds, diseases and invertebrate pests, nutrient availability and overall yield. This project will fully explore the use of alternative straw management practices as a stimulant for biological pest and weed control in rice fields. By using fields that are part of the BIFS rice project, the robustness of earlier observed weed and pest reduction under alternative straw management practices will be tested. Specifically, this project will: 1) characterize the impact of winter flooding and straw incorporation on invertebrate pest populations and determine the potential for increased reliance on biological controls; and 2) quantify the impact of waterfowl on the size of the weed seed bank and the weed populations at harvest. The results will serve as the basis to evaluate current pest management practices, and provide the necessary scientific foundation for additional on-farm demonstrations of alternative pest management practices emphasizing

biological control. (530) 752-4377; cvankessel@ucdavis.edu

- **Marsha Campbell Mathews**, Stanislaus County farm advisor, “Protecting Groundwater Quality on Dairies by Proper Lagoon Nutrient Management”: \$21,580. Most dairies in California clean their holding pens using a flush system to wash the manure into a storage pond, commonly called a lagoon. The improper application of lagoon nutrients has the potential to result in contamination of groundwater, especially in areas with a high leaching potential and shallow depth to groundwater. Traditionally, there has been no practical way of measuring the amount of nutrients in the lagoon water, so the value of the wastewater as a nutrient source has commonly been discounted. Over the past few years, a practical system has been developed using a nitrogen quick test, flow meter, and throttling valve that enables dairy producers to apply targeted amounts of lagoon nitrogen with much the same accuracy as commercial water-run ammonia. These techniques are being implemented as part of the Biologically Integrated Farming Systems (BIFS) dairy project “Integrating Forage Production with Dairy Manure Management in the San Joaquin Valley” to confirm that adoption of these management practices will not result in loss of yields. In a previous SAREP-funded project conducted by Mathews over the last three years, application techniques were developed which enabled researchers to account for the organic fraction of nitrogen in the lagoon water, and to apply lagoon nitrogen at rates very close to crop uptake. This project will continue the relatively precise application of lagoon nutrients to determine if it is possible to achieve drinking water quality in shallow groundwater with a history of overapplication of manures. A second research site will be established in a location with minimal history of manure application. This part of the project is designed to confirm that dairy lagoon nutrients can be used as a sustainable nutrient source for crops without compromising groundwater quality or yields in the absence of high background nitrogen in the soil. (209) 525-6800; mcmathews@ucdavis.edu
- **Milton E. McGiffin, Jr.**, UC Riverside, botany and plant sciences, “The Organic Effect in Desert Vegetable Production”: \$20,000. This project will quantify what is often called “the organic effect,” i.e., the positive changes that result from the transition to organic production practices. Although farmers often experience lower yields in the first few years of transition to organic farming practices, there is frequently a subsequent improvement of crop yields following several years of organic farming. These increases in crop productivity are usually attributed to improvements in soil quality resulting from the use of cover crops, organic amendments, and other aspects of organic crop production. Cover crops are often used in organic agriculture to replace synthetic fertilizer and pesticides, and the increasing demand for organic produce

Katie Wennig, a research assistant in a SAREP-funded rice straw management project, monitors the impact of winter flooding and straw incorporation on crayfish and other invertebrate pests at Canal Farms, Colusa County. (photo by Christopher Hartley)

has made many growers consider organic vegetables as a production alternative. Farmers recognize cover crops as a potential solution to many issues of sustainability: leaching of nutrients into groundwater, decreasing pesticide use, complying with organic certification rules, and improving soil quality. By documenting the differences in production systems, this project will address the frequent questions about the effect of organic farming on yield, fertility, and costs. This research is part of a multidisciplinary effort that also investigates soil microbial ecology and weed population dynamics. (909) 560-0839; milt@ucrac1.ucr.edu

- **David J. Lewis**, Sonoma County watershed

management advisor, “Management of Corrals and Pastures to Reduce Pollutant Loading to Coastal Watersheds”:

\$16,623. Water quality and watershed

management is crucial for protecting the health

of residents and insuring the continued economic Two projects in San Joaquin Valley and Tomales Bay will focus on dairies' impact on water quality.

viability of agriculture and shellfish culture in the Tomales Bay Watershed. The Tomales Bay Shellfish Technical Advisory Committee confirmed winter fecal coliform bacteria levels within Tomales Bay are above water quality standards for shellfish harvesting areas. Bay agricultural lands were identified as one of the sources of bacteria. Dairy ranching is a significant economic contributor and an integral component of the rural landscape in coastal counties. The cost of environmental regulation compliance can seem prohibitive for dairies; during the last 18 months five Tomales Bay watershed dairy ranches have gone out of business to avoid these costs. The remaining dairies are searching for economically feasible solutions to improve water quality. The goal of this project is to evaluate the effectiveness of animal waste management practices (vegetative buffers, dry lot and corral management, and other pasture management improvements) to reduce pollution. Researchers will sample and analyze storm runoff from corrals and pastures with different management practices, including scraping and seeding for corrals, and variation in quantity and timing of field-applied manure to pastures. Samples will be analyzed for fecal coliform, nutrients, total suspended solids, pH, electrical conductivity and turbidity. (707) 565-2621; djllewis@ucdavis.edu

Promoting the Development of Sustainable Community Food Systems

(4 projects; \$60,272)

- **Patricia Allen**, assistant director, UC Santa Cruz Center for Agroecology and Sustainable Food Systems, “Perspectives and Strategies of Alternative Food Initiatives in California”: \$19,360. This project will examine the range of new civic organizations addressing alternative food systems issues in California. Innovative organizations

support farmers markets, urban gardens, eco- and regional labels, community food policy councils, and other programs and initiatives in response to concerns about the existing food system. The organizations complement on-farm efforts to promote sustainable agriculture by connecting these concerns with economic, social and policy aspects of the food system beyond the farm. Working with participants in the organizations, project researchers will evaluate the potential of the initiatives to contribute to the goals of better health and quality of life for all California communities. Through study of participants' intentions, researchers will provide analysis to help groups accomplish their goals and minimize potentially contradictory outcomes. Researchers will seek to discover what participants have learned through their concrete practices about how the food system works, how to change it, and how participants view their efforts within the development of these initiatives. Different visions of food system alternatives will be assessed, as well as the issues confronted and the methodologies used. This project will provide an overall assessment of the strengths and weaknesses of alternative strategies of institutional change. (831) 459-4243; rats@cats.ucsc.edu

- **Toni Martin**, food service director, Winters Joint Unified School District, "Linking Education, Agriculture and Foodservice (LEAF)": \$15,872. Community groups, advocacy organizations, and school districts have begun exploring ways to increase the viability of small- and medium-sized family farms while improving the quality of school meals. Many school districts are implementing "farm to school" programs in order to extend the direct marketing options for local farmers, improve students' food choices during lunch, and educate young consumers and their parents about the relationship of the food they eat to the agricultural systems that produce the food. This project will establish a pilot project to test the feasibility of a farm to school salad bar at a local elementary school as a one-day-per-week option to the regularly served hot lunch. Several factors will be evaluated so that at the end of the year a planning team of parents, teachers, school district and food service personnel can assess the success of the program and determine whether and how it can be expanded for the next year. (530) 795-6160; tmartin@winters.K12.ca.us
- **Dana Harvey**, director, Environmental Science Institute, Oakland, "West Oakland Food Security Council Model": \$15,040. The first goal of this project is to create a food security council model that will serve as a public voice to raise awareness and understanding of food security. The council, organized with an active advisory board, community agency representatives, and community members from seven West Oakland neighborhoods, will bring sustainable agriculture into the community through community- and entrepreneurial-based demonstration projects, and through a comprehensive education and outreach campaign. The council will also develop a comprehensive food system plan and work to implement the identified strategies to improve access to food and revitalize the community. Using a variety of outreach methods including workshops and community meetings, the council will mobilize food security action. (510) 534-7657; envsciinst@earthlink.net
- **Aaron Shonk**, resource

manager, Davis Joint Unified School District (DJUSD), “Davis Joint Unified School District Farm to School Program”: \$10,000. Viable models of farm to school programs are needed to extend markets for sustainable agriculture in public schools. Given the state’s system for school nutrition programs, school districts need additional

Davis and Winters schools will receive SAREP funds to integrate the “farm to school” salad bar program into regular nutritional services, and to educate the public. *(photo by Lyra Halprin)*

resources to make the transition from traditional food purchasing and classroom education to farm-direct purchasing and garden-based education. With the help of area farmers and local organizations, the Davis Joint Unified School District developed a foundation to establish a farm to school program in three schools. The farm to school program features an instructional garden, a farmers market salad bar known as the “Crunch Lunch” (a complete, balanced school meal of carbohydrates and proteins with seasonal fresh food grown on local sustainable farms), food waste diversion (vermicomposting of food waste, food rescue and an “offer” vs. “serve” lunch program), and cooking in the classroom. Through participation in the “Crunch Lunch” program and the school site gardens, students learn to understand and appreciate the source of their food. (See “[Staff Project Update: Davis Farm to School Connection](#)”) This project will enable DJUSD to examine ways to integrate the salad bar into the regular nutritional services program, educate the public at the Davis Farmers Market Fall Festival and biweekly markets, and engage in public outreach and development of a school districtwide food policy. (530) 757-5300 ext. 121; ashonk@djUSD.k12.ca.us

Complete summaries of these projects (and all other SAREP funded projects) are located on SAREP’s Web site at: www.sarep.ucdavis.edu/grants/database.

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SAREP, IPM, forestry programs award educational events grants

by David Chaney, SAREP

UC SAREP awards educational grants to individuals and organizations to conduct workshops, field days, and other instructional events related to sustainable agriculture. For the 2001-2002 cycle, SAREP is awarding a total of \$19,920 to support 17 events. For the first time, SAREP collaborated with the University of California Statewide Integrated Pest Management Project (UC IPM) to fund three of the educational events. In addition, SAREP is funding seven grants/events in the community development/community food systems area, and the non-profit International Tree Crops Institute is funding three grants (seven events) related to agroforestry. For more information about a particular event call the telephone number or write to the email address listed below. To learn more about SAREP's educational grants program, call **David Chaney** at (530) 754-8551, dechaney@ucdavis.edu

Integrated Pest Management (funding through UC IPM)

- **Bruce Badzik**, National Park Service, \$1,500. "Urban Rodent Summit." Date: March 2002. Location: Fort Baker, Marin County. (415) 561-4831, Bruce_a_badzik@nps.gov
- **David Chang**, Santa Barbara County Agricultural Commissioner's Office, \$900. "Noxious Weeds Workshop." Date/Location: TBA. (805) 681-5600, Dchang@co.santa-barbara.ca.us
- **Emily Chase Bueermann**, Mariposa Elementary School PTA, \$1,500. "All S.Y.S.T.E.M.S. Go! IPM in School Gardens Workshop." Date: September 29, 2001. Location: Redlands. (909) 875-5945

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

- **Bob Roan**, PlacerGROWN, \$1,500. "PlacerGROWN Farm Conference." Date: February 3, 2002. Location: Lincoln. (916) 823-7385
- **Christina Carpenter**, \$1,500. Sustainable Sonoma County, "Sonoma County Food System/Farm-to-School Coalition Building 2001." Date: September 2001. Location: TBA. (707) 824-9791, Sustain@sonic.net
- **Robin Crown**, Area Agency on Aging Serving Napa and Solano, \$1,500. "A Community Forum: Framing the Future of Nutrition & Meal Delivery Services in Napa & Solano Counties." Date: October 26, 2001.

Location: Fairfield. (707) 644-6612, Rlcrown@napanet.net

- **Janine Hasey**, UC Cooperative Extension Sutter-Yuba Counties, \$1,280. “Certified Organic Tree Crops: Transition, Growing Practices & Markets.” Date/Location: TBA. (530) 822-7515, Jkhasey@ucdavis.edu
- **Steve Schwartz**, California FarmLink, \$1,500. “Business Planning & Innovative Financing Strategies to Promote Intergenerational Farm Transitions.” Date/Location: TBA. (916) 443-4225, Info@californiafarmlink.org
- **Jennifer Baumbach**, University of California Cooperative Extension Solano County, \$1,500. “Solano County Jr. Master Gardener Educator Training.” Date: October 6, 2001. Location: Fairfield. (707) 435-2803, Jmbaumbach@ucdavis.edu
- **Miguel Altieri**, UC Berkeley, ESPM-Division of Insect Biology, \$1,450. “Community Gardening & Seed Saving Workshop.” Date: Oct. 13, 2001. Location: Berkeley. (510) 642-9802, Agroeco3@nature.berkeley.edu

Agroforestry

(funding through International Tree Crops Institute USA Inc.)

- **Stephanie Larson**, University of California Cooperative Extension Sonoma County, \$1,500. “Designing Riparian Buffers for Rangelands to be used for Addressing TMDLs & Water Quality Issues in Sonoma & Marin Counties.” Dates/Location: 3 meetings TBA. (707) 565-2621, Slarson@ucdavis.edu
- **Vance Howard**, Yolo County Resource Conservation District, \$4,290. “Bringing Farm Edges Back to Life!” (2 field meetings); “Conservation Practices for Sustainable Agriculture & Riparian Buffer Strip Creation/Restoration,” (2 meetings). Dates: TBA. Location: Yolo County. (530) 662-2037, Howard@yolorcd.ca.gov

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Staff Project Update

Davis Farm to School Connection

By Gail Feenstra, Chris Lewis and Lyra Halprin, SAREP; Ann Evans, California Department of Education; Renata Brillinger and Dorothy Peterson, Davis Joint Unified School District; Cynthia Havstad and Lynn Wheeler, Food Waste Diversion Project; and Kerri Stevens and Jeri Ohmart, Community Alliance with Family Farmers

In February 2000, a coalition of parent leaders working with education, nutrition, and environmental professionals from local nonprofits, the University of California, and the California Department of Education, formed the Davis Farm to School Connection. Their vision:

To educate and nourish students through a farm and garden-based experience that embraces the connections between agriculture, environment, nutrition, health and community; to celebrate the cycles and seasons of life by growing, preparing and eating fresh food, and to integrate these principles into the curriculum and lunchroom.

To realize this vision, the Davis Farm to School Connection raised money under the auspices of the Davis Educational Foundation, a 10-year-old 501 (c) 3 nonprofit organization, to support the following goals:

- Develop pilot “Farmers Market Salad Bars” as a method to add value to the District’s existing Nutrition Services program. The salad bars offers seasonal fruits, nuts and vegetables purchased from local farms that practice environmentally sound agriculture, as well other agricultural commodities. It provides students with more choices to meet their nutritional needs.
- Reinforce lessons learned from eating local, seasonal produce by offering visits to local farms and farmers markets.
- Maintain and expand existing school gardens, and integrate environmental and nutrition concepts from the garden, farm and lunchroom experiences into the curriculum.
- Incorporate waste from the salad bar and garden into an on-site recycling and composting program to reduce overall waste.
- Develop a culinary and cooking component that enhances nutrition

education.

In pursuing these objectives, the Davis Farm to School Connection joined a growing movement across the nation that recognizes the importance of nutrition to learning, and focuses on innovative approaches to education that connect students to agriculture and the natural world. Some school districts in California, most notably in Santa Monica and Berkeley, are pioneering the linking of school gardens, culinary arts, school food service, recycling and local sustainable agriculture to the educational process and state standards.

FIRST YEAR PROGRESS

In addition to identifying the milestones reached during this first year, the information presented here provides preliminary data aimed at improving the effectiveness and sustainability of the Davis Farm to School Connection. Because this project is only in its infancy, and because many of the activities have only been implemented in their most nascent pilot phases, the authors strongly caution against using any of the data to make more than qualitative predictions about future impacts and costs of this program.

Pioneer Elementary “Crunch Lunch” Salad Bar Pilot Project

The “Crunch Lunch” salad bar offers a nutritionally complete meal alternative to the regular hot lunch. Sustainably grown (primarily organic) ingredients for the salad bar are purchased from local growers in season. A salad bar coordinator organizes the salad bar purchases from growers and oversees their delivery, preparation, mealtime set-up, and clean up at the school site. The Pioneer Crunch Lunch Salad Bar pilot program opened in mid-March 2001, offering the alternative salad bar on a daily basis to school children until the end of the school year.

Impacts on small farm profitability

Total gross sales to farmers during the first three months of the pilot project totaled \$4,261. Eight primary suppliers provided 85 percent of the produce used in the salad bar. Each of the primary suppliers made sales of between \$20 and \$80 per week on average. Eighty percent (by dollar value) of the produce purchased came from organic growers. Interviews with three of the most consistent suppliers to the pilot project revealed that the growers were very satisfied with the pilot project so far, and look forward to its growth.

“Crunch Lunch” participants enjoy using a variety of dressings on their fresh vegetables. (photo by Lyra Halprin)

School nutrition services viability

Preliminary cost analysis of the 57 days of salad bar operation showed that total food costs (including local produce, protein, breads, milk and supplies) for the salad bar averaged 83 cents per meal. It is anticipated that this cost will

decrease as a higher volume of produce is purchased due to the addition of schools. Due to the start-up nature of the pilot project, projected labor costs are not yet available. It should be noted that all of the labor costs for the period of the pilot phase of the project are paid for by grants.

School children's preferences, participation

Students generally like the salad bar and were excited when it was introduced. Although participation dropped off from initial levels of up to 295 students daily in the first two weeks to an average of 179 during April and May, the salad bar consistently increased participation in the school lunch program by 25 percent over the average attendance during the two weeks prior to its introduction. Adult participation rose from zero before the Crunch Lunch option was introduced to 41 in April and 42 in May (about two to three adults per day). Seasonality, selection and presentation appear to significantly affect participation, as do other quality control issues including ripeness and cosmetic pest damage. Further evaluation will include more in-depth analysis based on interviews and focus group results from the next year. The addition of a second pilot project at another school will provide more statistically valid and significant data.

Parents, other community member participation

Many parent volunteers participated in the program from its inception. In addition to financial and in-kind support from the Pioneer PTA as well as other parent and teacher volunteers, a number of community organizations have been instrumental in the Crunch Lunch's early success. Among them is the leadership of the Davis Farmers Market manager, who has been part of the Farm to School Steering Committee. Teachers and administrators have been instrumental in the implementation of this program, and have cooperated in blazing a trail for future participants. Parents, students and staff at other elementary schools in Davis are looking forward to seeing salad bars in their schools as the project progresses.

Future Directions

It is anticipated that two more elementary schools will be able to open Crunch Lunch Salad Bars during the 2001/2002 school year. Issues that will require attention as the salad bar scales up include: more efficient delivery systems for getting foods from farmers to the schools; additional kitchen and cold storage space needed to prepare and store produce for the salad bar; and union and contract hiring requirements that affect various staff.

School Gardens

Three pilot elementary schools have been the focus of this study: Pioneer, César Chávez and Birch Lane. The district garden coordinator has kept site team leaders at each school apprised of grant criteria for their school gardens and created a regional network to enhance opportunities to partner with local, county and state public agencies as well as private

Students in the Pioneer Elementary School garden

check the ripening strawberries, which are used in school lunches when available. Most food is purchased from local farmers who sell at the Davis Farmers Market. *(photo by Lyra Halprin)*

businesses. Through this network, the garden coordinator locates resource information and materials to distribute to the school garden team leaders. So far, each school has received free plants every four to five weeks from two local businesses. Team leaders from each school also attend planning meetings twice a year to maintain ongoing communication and receive gardening and nutritional information updates as they come into the district from both public and private agencies. The garden coordinator also has also sought to identify grants applicable to the overall strategies of the garden and nutrition programs in the district.

In the summer and fall of 2001, the garden coordinator will focus on establishing a district garden policy draft and action plan for the growth of school gardens over the next three years. Team meetings with representatives from each of the district's 14 schools will continue to provide opportunities for all participants to contribute to the development of the policy and action plan. These meetings will also keep them informed of progress on the Crunch Lunch Farmers Market Salad Bar, and the application of garden-based education toward meeting state education requirements. One of the activities planned for next year in partnership with the Davis Food Coop will be cooking demonstrations and culinary lessons for students at local junior and senior high schools.

Networking and partnerships will continue to play a key role in connecting the school district administration and school board to agencies and individuals who will help support and enrich a garden-based curriculum that improves the overall educational experience for students.

Composting and Waste Reduction

The school district piloted food waste composting systems at Birch Lane, César Chávez and Pioneer elementary schools during the 2000-2001 school year. The goal of the Food Waste Diversion Project is to develop and test site-specific systems to reduce the lunch waste stream, particularly the food components, while engaging students in the ongoing practice of composting and recycling. Project goals are to integrate composting into the school garden program as part of a larger farm to school vision; train teachers to include composting in the curricula and thus provide students with hands-on learning activities; model the practice of reduce, reuse, recycle and rot; educate the community; and create a sustainable program.

The school district is uniquely poised to model the way a medium-sized district conceptualizes and implements a lunch food waste diversion program in a suburban county. The district's Food Waste Diversion Project includes vermicomposting (using worms), composting, food rescue efforts and a switch to an "offer vs. serve" food service plan. At all schools in Davis, including the three sites for this project, the district's nutrition service director has implemented a lunch program that offers students a choice of entrées and fruits or vegetables. Providing students with a choice at lunch can reduce the waste stream. Also at all three project sites, the organic waste generated from student lunches and school gardens are composted or vermicomposted. The methods of composting include a mid-scale composting system with an enzyme pretreatment, mid-scale composting and vermicomposting systems without pretreatment, and a classroom-scale vermicomposting system. Rescue

of edible, unopened food was included in the project at César Chávez and Pioneer elementary schools. To further reduce the lunch waste stream, molded fiber trays replaced the polystyrene ("foam") trays previously used for hot lunches at César Chávez and Pioneer.

Establishing a team of teachers, parents and students lead by a salaried site coordinator was the first step in implementing the program at each school site. All site coordinators worked with the Composting and Waste Reduction Project's manager and assistant manager to audit the lunch waste stream at their sites and create work plans based on that waste stream. The project included audits and a planning phase in order to design systems that were appropriate to the needs and resources of the school and to ensure school site "buy-in." Additional factors in the success of the project were training of staff, teachers and students throughout the project; integrating composting into the curricula; assessment of the results; and outreach to the community.

Farm-based Nutrition, Culinary Education

A team of teachers and garden coordinators from the three pilot schools have developed an outline for enhancing existing nutrition curricula in their schools with links to the gardens, the salad bar, and cooking lessons. The plan is in its early stages of development, and will be initiated in the 2001-02 school year. Resources will be primarily focused at the Grade Two level where the statewide standards include components on

understanding where food comes from and the role of agriculture. The teacher teams will be evaluating published garden and nutrition curricula with the intention of incorporating new elements into the resources of their school.

Students choose food from sections marked "Protein," "Vegetables" and "Fruits" at the salad bar. Observers guide the children if they're not getting a balanced lunch. (photo by Lyra Halprin)

Grade Two students in the pilot schools will have an opportunity to visit a farm and take part in activities with real farmers, beginning in the spring of 2002. Community Alliance with Family Farmers organizes the visits; many will be hosted by the same farmers supplying produce to the Crunch Lunch salad bars. A pre-trip classroom activity will prepare the students for the visit. The farm visit itself will address a key question outlined in California's statewide educational standards, "What role does a farmer play in food production?" A post-trip discussion will solicit students' reactions, and possibly include a visit with the farmer in the school setting where students can connect what they saw and did on the farm to their everyday activities. Preliminary efforts to identify local farmers interested in hosting field trips have been encouraging, and outreach and planning will continue during the summer and fall.

Grade Two teachers will also have access to garden-based training offered by the UC Children's Garden; the training will teach teachers how to conduct participatory cooking activities using produce from the school garden. Schoolwide activities involving local farmers are also being planned. Funding is available for purchasing cooking carts for use in pilot school gardens and classrooms. The California Department of Education Nutrition Services

Division funds all of these components.

FUNDING SOURCES

The following federal, state, and local agencies, organizations and individuals have contributed funding to the Davis Farm To School Connection:

USDA/Initiative for Future Agriculture and Food Systems, California Department of Education, California Integrated Waste Management Board, University of California Sustainable Agriculture Research and Education Program, Pioneer Elementary School PTA, Rotary Club of Davis, Davis Farmers Market Board of Directors, Venture Club of Davis, Soroptimist International of Davis, Twin Pines Cooperative Foundation, Women's Social and Cultural League, and an anonymous donor.

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Summer 2001 (v13n2)

21st Century Agriculture: The end of the American farm or the new American farm?

by John Ikerd, professor emeritus, agricultural economics, University of Missouri

*Note: The following article is excerpted from a presentation by **John Ikerd** at the March 2001 **Partnerships for Sustaining California Agriculture: Profit, Environment and Community** conference, co-sponsored by UC SAREP in Woodland, Calif. In this inspirational address, Ikerd offers an alternative perspective to the corporate and industrial models of agriculture that currently pervade the American agricultural scene. The full text of this address is included in the conference proceedings, which will be available in December 2001. The audio file of Ikerd's speech is available on the SAREP Web site at <http://media.ucdavis.edu:8080/ramgen/ag/ikerdaudio.rm>*

The conventional economic wisdom in America today seems to be that only *the markets* are capable of ensuring that the right things are done, and are done efficiently. Supply and demand are seen as the only true arbiters of value. If something is profitable, it should be done, if it is unprofitable, it shouldn't. Anything that interferes with the markets - the government, public attitudes, or cultural values, for example - by definition creates economic inefficiency and is bad for society. Few people are aware of the origin of these *beliefs*, and even fewer seem willing to challenge them. In fact, the few who dare to question the sanctity of the markets are quickly attacked by people in powerful places with obvious self-interest in perpetuating *the myth of the markets* - including an army of economists.

John Ikerd identifies a growing consensus that a sustainable agriculture is one that meets the needs of the present while leaving equal or better opportunities for the future. (photo by Mike Hembree, Woodland Daily Democrat)

From Adam Smith's observations of more than 200 years ago, neo-classical economists developed the fundamental assumptions that underlie "free market" economic thinking even today. Although contemporary economists try desperately to rationalize arguments to the contrary, these conditions must hold before the *invisible hand* of competitive capitalism can transform the pursuit of individual short-run self-interest into the greater long-run good of society in general.

First, markets must be economically competitive - meaning numbers of buyers and sellers so large that no single buyer or seller can have any noticeable effect on the overall market. In such markets, no one has the power to retain profits by exploiting anyone else. It must be easy for new sellers to enter

enterprises that are profitable and easy for sellers to get out of unprofitable enterprises, so that producers are able to respond to market signals of consumers' wants and needs. Consumers must have clear and accurate information concerning whether the things they buy will actually meet their wants and needs. And finally, consumers must be *sovereigns* - their tastes and preferences must reflect their basic values - their tastes and preferences untainted by persuasive influences.

None of these assumptions holds in today's society. Today, agricultural markets are dominated by the large agribusiness corporations, certainly at every level other than farming, and increasingly even at the farm level. In addition, it is not easy to get into or out of any aspect of agriculture, and it is becoming increasingly harder to get into or out of farming. Consumers don't get accurate, unbiased information concerning the products they buy, but instead get disinformation by design, disguised as advertising. Finally, consumers are no longer sovereigns. The food industry spends billions of dollars on advertising designed specifically to bend and shape consumers tastes and preferences to accommodate mass production and mass distribution, which enable corporate control of agriculture. There is no logical reason to believe that the corporate agriculture of today is evolving to meet the changing needs or wants of consumers.

Instead, corporate agriculture today is designed specifically to generate profits and growth for corporate investors. In fact, we no longer have a competitive, capitalistic agricultural economy. Capitalism requires that individuals make individual decisions in a competitive market environment. As corporations extend their control horizontally "within" the same functional levels, such as marketing, storage, transportation, processing, or retailing, they increase their ability to protect profits from competitors. As corporations extend their control vertically, "across" functional levels, including additional different stages of production and marketing, they gain control over decisions concerning how much of what is produced, when it is produced, how it is produced and for whom. Those decisions are made to maximize their short-run profits and growth, not to meet the long-run needs of society.

Toward a More Enlightened Future

Thankfully, as society becomes more enlightened, we are beginning to understand the true costs of cheap food. We are beginning to realize that the industrialization of agriculture, while enhancing economic efficiency and reducing food costs, has brought with it unanticipated ecological and social costs. The industrialization of agriculture, characterized by specialization, standardization, and centralization of control, has put farmers in direct conflict with their ecological, social, and economic environment.

The outdated economics that supports agricultural industrialization for the sake of economic efficiency is fundamentally incapable of dealing effectively with either the environmental or the social challenges confronting agriculture today. In economics, the environment and society are external or outside of the decision making process - something that may impact or be impacted by decisions but not part of the process. In reality, the economy, environment, and society all are parts of the same inseparable whole. Society needs a more enlightened system of decision-making - one capable of integrating economic, ecological, and social decisions.

It's true, people will pursue their self-interest - it is an inherent aspect of being human, as conventional economics assumes. But, people, by nature, do not pursue *only* their narrow, individual self-interest. It is within the fundamental nature of people also to care about other people and to accept the responsibilities of humanity as the caretakers of the earth. People are perfectly capable of rising above the *economics of greed* to an *economics of enlightenment*. An *invisible hand* can still translate pursuit of self-interests into the greatest good for society, but only if each person pursues a *more enlightened* self-interest - a self-interest that values relationships and stewardship as important dimensions of our individual well being.

Our *enlightened* self-interests include our *narrow* self-interest, which focuses on individual possessions and pleasures. However, it also includes a *broader* self-interest, which recognizes the value of relationships with other people - even those relationships that return nothing in the way of possessions or individual pleasures. Our *enlightened* self-interests also include our *higher* self-interests, which recognizes the value of stewardship, and other ethical and moral behavior, in giving meaning and purpose to our lives. All three - personal, interpersonal, and spiritual interests - contribute to our well being. Each contributes to a *more enlightened* sense of quality of life, which explicitly recognizes that each individual is but a part of the whole of society, which in turn must conform to some higher order or code of natural laws.

Sustainable Agriculture — the New American Farm

The sustainable agriculture movement in America exemplifies the pursuit of a more enlightened self-interest. People may disagree on the specific words, but there is a growing consensus that a sustainable agriculture is an agriculture that is capable of meeting the needs of the present while leaving equal or better opportunities for the future. The concept of sustainability applies the Golden Rule across generations. *We should do for those of future generations, as we would have them do for us, if we were of their generation and they were of ours.* We must find ways to meet our needs, all of us who are here today, without diminishing the ability of those of future generations to meet their needs as well.

A sustainable agriculture must have three fundamental characteristics. It must be ecologically sound, economically viable, and socially responsible. Any system of farming that lacks any one of the three quite simply is not sustainable. This is not a matter for debate; it is just plain common sense. A sustainable agriculture must protect and maintain the productivity of its natural resource base. If the land loses its ability to produce, the farm is not sustainable. A sustainable agriculture must provide for the food and fiber needs of people, but it also must provide people with opportunities to lead successful lives. Agriculture must do its part to sustain society or society will not sustain that type of agriculture. Finally, a sustainable agriculture must make sufficient profits for farms to remain economically solvent. If the farmer goes broke, the farm is not sustainable.

No one of the three dimensions is any more or less important to sustainability than the others. The ecological, economic, and social dimensions of sustainability are like the three dimensions of a box. A box that is lacking in

height, width, or length quite simply is not a box. A farm that lacks economic viability, ecological integrity, or social responsibility quite simply is not sustainable.

Farmers motivated by sustainability share a common pursuit of an *enlightened* self-interest, in spite of their diversity in many other respects. They are not trying to maximize profit, but instead are seeking sufficient profit for a desirable quality of life. They recognize the importance of relationships, of family and community, as well as income, in determining their overall well being. They accept the responsibilities of environmental stewardship, not as constraints to their selfishness, but instead, as opportunities to lead more meaningful, successful lives. To them, practicing friendship and stewardship are not sacrifices made solely for the benefit of others, but are means by which they pursue a higher quality of life.

Sustainable farmers seek to farm in harmony with the world around them. They match their unique abilities and talents with their land, their community, and their markets. This requires a higher level of understanding of themselves, their capabilities, their values, and their purpose in life. This requires a higher level of understanding of consumer tastes and preferences and of the uniqueness of relationship markets. This requires a higher level of understanding of the land and of nature's productive processes. In general, sustainable farming requires more intensive resource management - more thinking and creativity per acre of land or dollar of investment.

Sustainable farming is thinking farming. It requires an ability to translate observation into information, information into knowledge, knowledge into understanding, and understanding into wisdom. Certainly, sustainable farming involves hard work, but farming sustainably is not the "first stage of development beyond hunting and gathering." It is the next stage, beyond "industrialization." Sustainable agriculture is very much in harmony with a post-industrial paradigm for future human progress - the next step forward in the ongoing process of human development. Sustainable farmers are thinking workers - or working thinkers. Contrary to suggestions by UC Davis agricultural economist **Steven Blank** in his book *The End of Agriculture in the American Portfolio* that we must abandon agriculture as it moves beyond industrialization, perhaps America simply needs to embrace this new kind of agriculture that brings with it a new vision for the American economy and society.

This new paradigm for agriculture is being developed by thousands of farmers all across the American continent and all around the world. These new American farmers are developing the replacement for the old industrial model of agriculture. They are developing a new pattern for farming in the future. Farming sustainably is no simple task, but thousands of farmers are finding ways to succeed. They may carry the label of organic, low-input, alternative, biodynamic, holistic, permaculture, or no label at all, but they are all pursuing common economic, ecological and social goals. By their actions, these farmers are defining the *new American farm*.

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Staff Update

SAREP Associate Director on NAS Committee

SAREP associate director **Janet C. “Jenny” Broome** has been selected to serve on a National Academy of Sciences (NAS) committee evaluating the quality, relevance and effectiveness of federally funded agricultural research.

Committee members will focus on the United States Department of Agriculture’s research agencies within the Research, Education, and Economics mission (REE) area.

REE agencies provide research, education and extension services that address nutrition, food safety, quality, and quantity; the relationship between agriculture, natural resources, and the environment; and profitability of the domestic agricultural enterprise including quality of life through economic and social opportunities.

Broome will serve on the “environmental quality and harmonization of natural and agricultural resources” subcommittee of the Opportunities in Agriculture committee. Other subcommittees are food and fiber supply, food safety, diet and nutrition; and economic and social development in a global context. These subcommittees and a synthesis committee that includes UC Davis vice provost **William Lacy**, former SAREP interim director **Robert Reginato**, and UCD animal science professor **Ransom Baldwin, Jr.**, will submit a report in 2002.

Other UCD representatives serving on the economic and social development subcommittee include **Julian Alston**, agricultural and resource economics professor, and **Christine Bruhn**, UC Cooperative Extension consumer food marketing specialist.

The National Academy of Sciences (NAS) was established in 1863 under a charter granted by the U.S. Congress that requires that “the Academy shall, whenever called upon by any department of the Government, investigate, examine, experiment, and report upon any subject of science or art.” During the more than 125 years since the enactment of this charter, the NAS has become the most prestigious scientific honorary society in the United States and the federal government’s most important independent advisor in scientific and technical matters.

W.R. “Reg” Gomes, UC vice president-agriculture and natural resources, serves on the NAS Board of Agriculture and Natural Resources, which is responsible for providing advice on issues of agricultural production and related matters of natural resource development, including forestry, fisheries, wildlife, and land and water use. The Board oversees the work of its committees, including Opportunities in Agriculture. Other UC representatives on the BANR Board include **Robert Fridley**, emeritus professor at UC Davis and **Brian Staskawicz**, professor of plant biology at UC Berkeley.

Broome previously provided expert testimony in 1999 at a public workshop on a NAS study on the future role of pesticides. At SAREP she has worked extensively with the Biologically Integrated Farming Systems projects and the alternatives to methyl bromide grant program. She has a Ph.D. and a M.S. in plant pathology from UC Davis, and an undergraduate degree in biology from Swarthmore College.

Organic Gardening, Farming Apprenticeship at UC Santa Cruz

An "Apprenticeship in Ecological Horticulture," a six-month training course in organic gardening and small-scale farming is being offered at The Center for Agroecology at UC Santa Cruz. From April to October each year, apprentices take classes and work with instructors in the Center's 25-acre farm and two-acre Alan Chadwick Garden. The course awards 20 units of UC Extension credit for the approximately 300 hours of formal instruction and 700 hours of in-field training and hands-on experience in the greenhouses, gardens, orchards and fields. Several full and partial tuition waivers are available for minorities and low-income individuals. Tuition for the 2002 program is \$3,000 with additional costs for books, tools and food. Dates for the 2002 program are April 15-Oct. 18, 2002. Application deadlines are November 1, 2001 for U.S. and Canadian citizens, and was September 1, 2001 for international applicants. For more information, contact the program at Apprenticeship Information, CFAFS, UCSC, 1156 High Street, Santa Cruz, CA 95064; Tel: (831) 459-3240; Web: www.ucsc.edu/casfs; Email: apprenticeship@cats.ucsc.edu

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USDA WESTERN SARE GRANTS

The U.S. Department of Agriculture's Western Region Sustainable Agriculture Research and Education (WSARE) program has released calls for proposals for its competitive grants in research and education, professional development, and farmer/rancher projects. Grant applications can now be accessed via the Web at <http://wsare.usu.edu>. Several changes should be noted: More funds are available in each program (more than \$2 million total) than in past years, pending final action by Congress, and the deadline for farmer/rancher grant applications is earlier. WSARE has also strengthened the economic assessment and outreach requirements in the research and education grants program.

- Sustainable Agriculture Research and Education (Chapter 1) grants are for sustainable agriculture research, education, and outreach. Funds are targeted at projects that increase understanding and adoption of sustainable agricultural approaches and methods. An assessment of the economic impact of findings generated by research projects is required. Due date: **Oct. 15, 2001**.
- Professional Development Program grants provide funding to help Cooperative Extension Service, Natural Resource Conservation Service, Farm Service Agency and other professionals expand their knowledge of sustainable agriculture and help them conduct educational programs and activities in this area. Project subject matter may deal with any agricultural endeavor, including the way sustainable practices affect the quality of life for farmers, ranchers, and rural communities. Projects may be designed for agents and field staff working in production agriculture, 4H/youth development, or market development. Due date: **Oct. 15, 2001**.
- The Farmer/Rancher Grants program targets producers seeking to learn more about production, management, or marketing approaches that build the environmental and economic sustainability of their operations. Grants of up to \$7,500 for an individual grower or \$15,000 for a group of producers are available for on-farm experimentation, market research, educational events or other activities. Due date: **Oct. 1, 2001**, one month earlier than last year's deadline.

Calls for proposals, as well as funded project results, are available at the program's Web site, or by contacting the Western SARE office at Utah State University at (435) 797-2257 to request an application. National SARE, mandated by Congress in the 1985 and 1990 Farm Bills, is implemented by four regional councils. Western SARE is coordinated by Utah State University soil scientist **V. Philip Rasmussen** and lead by an administrative council that represents diverse agricultural, business, producer, and public interests in the West. The Western Region includes Alaska, American Samoa, Arizona, California, Colorado, Guam, Hawaii, Idaho, Micronesia, Montana, Nevada, New Mexico, N. Mariana Islands, Oregon, Utah, Washington, and Wyoming.

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Technical Reviews

Building Soils for Better Crops (Second Edition)

Fred Magdoff and Harold Van Es

Sustainable Agriculture Network, Washington D.C. 2000

This book is a practical guide to understanding and managing soil. It was written primarily for farmers, extension advisors, students, and gardeners, and focuses on the importance of soil health in sustaining agricultural production and rural communities. The first edition of this book focused exclusively on soil organic matter as a key component of productive soils. In the second edition, organic matter is still the main emphasis, but it is now more comprehensive with additional information on managing soil physical properties, and farmer profiles that provide insight into the practical issues and challenges of managing soils. The text is clearly written in a farmer-friendly format, and provides clear descriptions of how soil systems function and how farming practices impact those systems.

The book consists of three main sections: 1) The Basics of Soil Organic Matter, Physical Properties, and Nutrients; 2) Ecological Soil and Crop Management; and 3) Putting It All Together.

Section 1 covers some of the basic aspects of soil health. Magdoff and Van Es (faculty members at University of Vermont and Cornell University, respectively) define soil health as “how good the soil is in its role of supporting the growth of high yielding healthy crops.” They briefly address the various factors that determine soil health (e.g., nutrients, tillage and depth, drainage, level of disease and weed organisms, level of toxic chemical residues, and how well the soil can resist degradation) and then turn their attention to the very deliberate process of building healthy soil. Organic matter is the critical factor in this process, and is the major focus for this first section: What it is, why it is so important to farmers, and how to increase the level in soils. Continuing the theme of “soil building,” this section also covers the importance soil physical properties, and provides excellent discussions of water and aeration, tillage effects, erosion, and compaction, to complement the discussion of organic matter.

The second section looks at specific practices that can be used to increase soil quality and productivity. Specific chapters address: animal manures, cover crops, crop rotations, making and using composts, reducing soil erosion, preventing/lessening compaction, and reducing tillage. Ecological approaches may not result in as precise a nutrient supply as with conventional fertilizers, so two chapters are devoted to managing nutrients in sustainable systems. Nitrogen and phosphorus receive special consideration because of their potential to pollute water supplies. The authors provide an informative and realistic discussion of the benefits and challenges of managing these two nutrients in more biologically based systems. Having accurate information

about soil nutrient levels is key in this task; one entire chapter focuses on soil testing. Because soil tests have limitations and cannot be solely relied upon for making management decisions, the authors provide recommendations on how to conduct soil tests wisely, and examples of interpreting the results for different geographic and soil conditions.

Through the first two sections, *Building Soils for Better Crops* looks at a wide range of practices that can increase the quality and health of soil. The final section, Putting It All Together, gives guidance about how to assess the effectiveness of these practices, and how to modify and combine them in ways that make the most sense for your farm. As previously noted, soil tests provide a limited snapshot of one aspect of soil health: nutrient levels. The concept of soil quality goes much further than just nutrients, however. Assessing soil health, according to the authors, requires a combination of intuition, qualitative measures, and some quantitative analyses. [Table 1](#) provides an overview of recommended measures as determined by research conducted in Maryland, Oregon and Wisconsin.

Decisions about which practices to use on your farm need to be based on the economic bottom line. But that assessment, say Magdoff and Van Es, should be made for the long-term, i.e., looking at potential economic returns over a generation, not just the immediate crop season. This long-term perspective needs to be supported by careful observations and record keeping, clear goal setting and planning, and a thorough knowledge of the limitations and opportunities of your particular farming system.

Building Soils for Better Crops is 230 pages in length and includes a glossary, resource list, index, and many useful tables and figures.

For more information: Sustainable Agriculture Network, (301) 504-6425. Web site: www.sare.org

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Contributed by David Chaney

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Table 1: Qualitative Soil Health Indicators

INDICATOR	BEST CONDITIONS FOR ASSESSING	Quality Rating		
		POOR	MEDIUM	GOOD
Earthworms	Spring/Fall. Good soil moisture.	0-1 worms in shovelful of top foot of soil. No casts or holes.	2-10 in shovelful. Few casts, holes, or worms.	10+ in top foot of soil. Lots of casts and holes in clods. Birds behind tillage.
Organic Matter Color	Moist soil.	Topsoil color similar to subsoil color.	Surface color closer to subsoil color.	Topsoil clearly defined, darker than subsoil.
Organic Matter Residues	Anytime.	No visible residues.	Some residues.	Residues on most of soil surface.
Root Health	Late spring (rapid growth stage).	Few, thick roots. No subsoil penetration.	Off color (staining) inside root.	Roots fully branched and extended, reaching into subsoil. Root exterior and interior is white.
Subsurface Compaction	Pre-tillage or post harvest. Good soil moisture.	Wire breaks or bends when inserting flag.	Have to push hard, need fist to push flag in.	Flag goes in easily with fingers to twice the depth of plow layer.
Soil Tilth, Mellowness, Friability	Good soil moisture.	Looks dead. Like brick or concrete, cloddy.	Somewhat cloddy, balls up, rough pulling seedbed	Soil crumbles well, can slice through, like cutting butter. Spongy when you walk on it.
Erosion	After heavy rainfall.	Large gullies over 2 inches deep joined to others, thin or no topsoil, rapid runoff the color of soil.	Few rills or gullies, gullies up to 2 inches deep. Some swift runoff, colored water.	No gullies or rills, clear or no runoff.
Water Holding Capacity	After rainfall. During growing season.	Plant stress two days after a good rain.	Water runs out after a week or so.	Holds water for a long period of time without signs of drought stress.
Drainage Infiltration	After rainfall.	Water lays for a long time, evaporates more than drains,	Water lays for a short period, eventually drains.	No ponding, no runoff, water moves through soil

		always very wet ground.		steadily. Soil not too wet, not too dry.
Crop Condition (How well it grows)	Growing season. Good soil moisture.	Problem growing throughout the season, oor growth, yellow or purple color.	Fair growth, spots in field different, medium green color.	Normal healthy dark green color, excellent growth all season, across field.
pH	Anytime, but at same time of year each time.	Hard to correct for desired crop.	Easily correctable.	Proper pH for crop.
Nutrient Holding Capacity	Over a five-year period always at same time of year.	Soil tests dropping into "low" category.	Little change or slow down trend.	Soil tests trending up in relation to fertilizer applied and crop harvested but not into "very high" category.

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Resources

Print Publications

American Farmer Profiles

The New American Farmer: Profiles of Agricultural Innovation, 159 pages, USDA-SARE program, 2001. Edited by **Valerie Berton**. This publication presents in-depth interviews with 50 farmers and ranchers across America. The diverse profiles detail the effects of farming practices on profitability, quality of life, rural communities and the environment. The publication is available in print for \$10, and on CD-ROM for \$5. The CD can be searched by subject, state or farmer name, and individual profiles can be printed on demand. To order, contact Sustainable Agriculture Publications at (802) 656-0484, email: sanpubs@uvm.edu. The book and individual profiles (in PDF) are also available on the Web at www.sare.org/newfarmer.

Farmers Markets

The New Farmers' Market: Farm-Fresh Ideas for Producers, Managers & Communities, 272 pages, New World Publishing, 2001, **Vance Corum**, **Marcie Rosenzweig**, and **Eric Gibson**. Aimed at farmers, market managers and city planners, the book covers tips and trends from U.S. sellers, managers and market planners. In Part I the authors discuss the best products to grow and sell at markets, how to combine farmers markets with other outlets, record-keeping, displays, and merchandising. In Part II topics include picking market location, attracting vendors, rules and regulations, insurance, labeling, advertising, special events, and establishing market Web sites. Part III details the steps involved in educating communities about the value of fresh, local foods and how farmers markets can serve them. Appendices cover insurance, customer surveys, farmers market profitability, and benefits of farmers markets. The resource section includes sources for scales, baskets, and packaging materials. Downloadable selections from the book, including "Hottest Products to Sell," "Selling to Ethnic Groups," "Special Events at your Market" and "Getting Grants for your Market" are available at www.nwpub.net. To order, send \$24.95 plus \$4.50 shipping to QP Distribution, 22260 C St., Winfield, KS 67156. Credit card orders call (888) 281-5170. California residents add \$1.81 tax. Quantity discounts available.

Food System & Environmental Movement

Environmentalism Unbound: Exploring New Pathways for Change, 408 pages, 2001, **Robert Gottlieb**, MIT Press. Gottlieb, co-founder of the Community Food Security Coalition, former SAREP Technical Advisory Committee member, and faculty member at Occidental College proposes a new strategy for social and environmental change that involves reframing and linking the movements for environmental justice and pollution prevention. He believes the environmental movement's narrow conception of environment has isolated it from such vital issues as workplace safety, healthy communities, and food security, leading to a fragmented approach that prevents an awareness of how these are also environmental issues. Gottlieb focuses on three examples that

can be reframed and linked: 1) a small industry (dry cleaning) and the debate over pollution prevention approaches; 2) a set of products (janitorial cleaning supplies) that may be hazardous to workers; and 3) the obstacles and opportunities presented by community approaches to the food supply in the face of an increasingly globalized food system. For ordering information contact MIT Press at (800) 356-0343, or <http://mitpress.mit.edu/books.tcl>, or contact local bookstores.

Farmworker Pesticide Exposure

Migrant and seasonal farmworkers and pesticides: Community-based approaches to measuring risks and reducing exposure, **Thomas A. Arcury**, and **Sara A. Quandt**, editors, *Environmental Health Perspectives* Vol.109, Supplement 3: 427-473, June 2001. The supplement includes a series of papers on farmworker pesticide exposure, including:

- **Thomas A. Arcury, Sara A. Quandt, and Allen Dearry.** Farmworker pesticide exposure and community-based participatory research: rationale and practical applications.
- **Sara A. Quandt, Thomas A. Arcury, and Aaron I. Pell.** Something for everyone? A community and academic partnership to address farmworker pesticide exposure in North Carolina.
- **Beti Thompson, Gloria Coronado, Klaus Puschel, and Emily Allen.** Identifying constituents to participate in a project to control pesticide exposure in children of farmworkers.
- **Linda A. McCauley, Marco Beltran, Jacki Phillips, Michael Lasarev, and Diana Sticker.** The Oregon migrant farmworker community: an evolving model for participatory research.
- **Freya Kamel, Tirso Moreno, Andrew S. Rowland, Lillian Stallone, Gabriela Ramírez-Garnica, and Dale P. Sandler.** Recruiting a community sample in collaborations with farmworkers.
- **Joan Flocks, Leslie Clarke, Stan Albrecht, Carol Bryant, Paul Monaghan, and Holly Baker.** Implementing a community-based social marketing project to improve agricultural worker health.
- **Liam R. O'Fallon and Allen Dearry.** Commitment of the National Institute of Environmental Health Sciences to community-based participatory research for rural health. Ordering information is available at <http://ehis.niehs.nih.gov/>

The EHIS is a service of the National Institute of Health/National Institute of Environmental Health Sciences and the Department of Health and Human Services/ National Toxicology Program.

Holistic livestock care series

Three natural livestock care books for cattle, goats, and horses focusing on a holistic approach to ranch management and animal husbandry have been published by Acres U.S.A. Written by Australian animal care specialist Pat Colby, the books focus on the connection between soil deficiencies and nutritional requirements, as well as feeding practices, vitamin, herbal, homeopathic and natural remedies. In each of the three volumes, Colby provides systems-level solutions and specific remedies for increasing livestock health and productivity.

- *Natural Cattle Care*, 198 pages. This volume details all aspects of farm management, from the mineral components of the soils where cattle

- graze, to issues of fencing, shelter and feed regimens. \$20.00.
- *Natural Horse Care*, 164 pages. Coleby notes proper horse care begins with good nutrition, and is maintained with an understanding of horses' specific needs, and effective natural regimens. \$20.00.
 - *Natural Goat Care*, 374 pages. Aimed at the goat farmer or hobbyist, this comprehensive volume starts with the premise that goats thrive under fully organic natural conditions. As natural browsers, they have higher mineral requirements than other domestic animals, making diet key to their health. \$25.00. The books are available through bookstores nationwide, or through Acres U.S.A., Tel: (800) 355-5313; Email: info@acresusa.com; Web site: www.acresusa.com/books/books.asp?pcid=2

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Sources of Funding

Biologically Integrated Farming Systems Grants

UC SAREP, with support from US-EPA, has released a new Request for Proposals to fund Biologically Integrated Farming Systems (BIFS) projects in field crops, row crops, orchards, vineyards, or livestock. Proposals are due **October 2, 2001**. SAREP expects to fund two or three new demonstration projects. Awards usually range from \$65,000 to \$100,000 per year for three-year projects. For complete guidelines on how to apply, see the full Request for Proposals at: www.sarep.ucdavis.edu/Grants/RFP/2001/BIFS.htm or call 530-752-7556.

Organic Research Grants

The Organic Farming Research Foundation (OFRF) invites applications for research grants of up to \$10,000 for consideration in its twice-yearly funding cycle. Funds are offered for organic farming research, dissemination of research results to organic farmers and growers interested in making the transition to organic production and consumer education on organic farming issues. OFRF technical program coordinator **Jane Sooby** is available to work with farmers and others interested in doing on-farm research and applying for grants. The foundation's on-farm research guide gives an overview of the research process and is accessible through OFRF's Web site (www.ofrf.org) under "research program" or can be ordered free of charge by calling OFRF at (831) 426-6606. The deadlines for proposal consideration are **January 15** for the spring funding cycle and **July 15** for the fall funding cycle. Contact Sooby at OFRF, PO Box 440, Santa Cruz, CA 95061 or email research@ofrf.org or jane@ofrf.org

Pest Management Grants

The California Department of Food and Agriculture's Department of Pesticide Regulation (DPR) is offering funding for reduced-risk pest management projects. Four proposal options are being offered, including: 1) Applied Research Grants for university researchers, private groups and government entities to develop new reduced-risk practices or refine existing practices. Up to \$30,000 per year is available. Proposals are due **Oct. 4, 2001**. 2) Demonstration Grants for university researchers, private groups, non-profit organizations, government entities and others to address local or regional pest management challenges. Projects typically involve practical demonstration of reduced-risk practices on private or public property (farms, nurseries, schools, parklands). Up to \$50,000 per year is available. Proposals are due **Oct. 4, 2001**. 3) Evaluation Grants, which are required as a preliminary step for the Pest Management Alliance grants (the fourth grant option). Evaluations describe an existing pest management system. Groups can receive up to \$10,000 to prepare an evaluation. Proposals are due **Sept. 13, 2001**. 4) Alliance Grants to help commodity groups, non-agricultural groups, and urban

groups address pest management issues on a regional or statewide scale. Groups can receive up to \$100,000 per year, with a required dollar-for-dollar match. Proposals are due **November 1, 2001**. For more information on the grants, download complete Request for Proposal bid packages at the DPR Web site: www.cdpr.ca.gov/dprgrants.htm, or contact **Bob Elliott** at DPR, P.O. Box 4015, Sacramento, CA 95812-401; Tel: (916) 324-4100; Fax: (916) 324-4088; Email: belliot@cdpr.ca.gov.

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Calendar

*** SAREP WEB CALENDAR**

SAREP offers a regularly updated sustainable agriculture calendar on our World Wide Web site at: www.sarep.ucdavis.edu (click on "Outreach/Calendar"). Please feel free to add sustainable agriculture events.

*** NATIONAL/INTERNATIONAL CALENDAR**

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

*** MONTHLY MEETINGS**

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

SEPTEMBER

19 *School Gardens Workshop Series: Insects & Other Critters*, UC Davis Plant Science Teaching Center & Student Farm, 3:30 p.m.-6 p.m. For teachers, parents, volunteers working with school gardens to enhance elementary school garden projects/integrate them into curriculum. Contact: Carol Hillhouse, (530) 752-7655. \$10.

OCTOBER

2 *School Garden Workshop Series: Gardens for Good Nutrition*, UC Davis Plant Science Teaching Center & Student Farm, 3:30 p.m.-6 p.m. See Sept. 19 listing.

2-3 *Living on the Land: A Conference for Agricultural and Natural Resource Educators*, Reno, Nevada. Aimed at ag & natural resource educators from extension, NRCS, resource conservation districts who work with small landowners. Includes educational resource package/curriculum aimed at helping small acreage landowners manage their land more sustainably. Contact: Holly George, (530) 283-6262, hageorge@ucdavis.edu.

6-9 *Taking Back the Food System: Strategies for Healthy Food, Farms & Communities*, Community Food Security Coalition's 5th Annual Conference, Washington, D.C. Coincides with legislative process of US Farm Bill. Focus is on policy at all levels to build healthy farms, communities, food systems. Congressional reception, keynotes, workshops, field trips. Speakers include Gus Shumacher, Michelle Mascarenhas, Mohammed Nuru, Julie Paradis, Mark Ritchie. Discount for registration by Sept. 14; limited scholarships.

Information: www.foodsecurity.org , or CFSC, PO Box 209, Venice CA 90294, fax (310) 822-1440.

19-21 Bioneers Conference: Revolution from the Heart of Nature—Improving the Environment by Changing the World. Marin Center, San Rafael, Calif. Workshops include: restaurants as agents of change, investigative reporting, preventing breast cancer, saving biodiversity's treasures, thyroid & environmental poisons, medicinal herbs, art/gardening in prisons, African-American horticultural heroines. Contact: Bioneers, 901 W. San Mateo Rd., Ste. L, Santa Fe, NM; Tel (toll free): (877) 246-6337 or (505) 986-0366; Fax: (505) 986-1644; info@bioneers.org, www.bioneers.org

23-25 Oaks in California's Changing Landscape, Bahia Resort Hotel, San Diego. 78 papers at concurrent sessions on oak woodland ecology, oak restoration, wildlife relations, oak conservation policy, urban forestry, grazing relations, fire relations, damaging agents, genetics, monitoring. General session with 9 papers on sudden oak death; poster session/reception. Registration: contact Joni Rippee, (510) 642-0095; rippee@nature.berkeley.edu. Web site: <http://danr.ucop.edu/ihrmp/symposium.html>

29 USDA SARE presentation/poster applications due for the October 2002 “On The Road to Sustainable Agriculture” conference, Raleigh, NC. Web site: <http://www.griffin.peachnet.edu/sare/>

NOVEMBER

1 UC SAREP Organic Farming Research Workgroup meeting, Davis. New research information, funding initiatives, conferences, potential partnerships will be discussed. To participate contact: Sean Swezey, SAREP, (530) 752-7556 or 752-2379, findit@cats.ucsc.edu

DECEMBER

7-9 Northeast Community Supported Agriculture Conference III, Frost Valley Environmental Education Center, Claryville, New York. To strengthen existing CSAs, help new ones. Workshops, tools, resources, display area, trade show, youth programs, regional food. Cost: \$150-\$280. Contact: Robyn Van En Center for CSA Resources, Wilson College Center for Sustainable Living, 1015 Philadelphia Ave., Chambersburg, PA 17201; (717) 261-2880; info@csacenter.org, www.csacenter.org

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Summer 2001 (v13n2)

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