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From the Director

Scarcity and Abundance

We have all experienced the feelings of scarcity and abundance. I experienced scarcity the first time I was in a sail boat. I was sailing in a small boat and went about two miles up a lake with a good strong breeze at my back. When I got to the end of the lake, I suddenly realized I could not return because I could not sail into the wind the way I had gone up the lake. After some struggle and thinking about my predicament, I experimented with doing things differently and in about 10 minutes I was headed back down the lake. It was not straight and direct but rather a zig zag tacking course which took longer, but I made it back home. In this example I experienced both an abundance of wind in one direction and scarcity of wind in the other direction. I needed to change my behavior to make a round trip if I was going to use the boat as it was meant to be used.

Both individuals and organizations run into scarcity and abundance. How can we adapt and adjust to these changes in resource availability? The survival of an organization, and indeed, California in the long-term will most likely be determined by what we do when times are hard. It is during those times that we need to change our behavior. Civilizations that have not made adjustments, such as those that ignored soil salinity, no longer exist.

Due to the state of California's fiscal problems, the University of California suffered severe budgetary shortfalls in the 1990s. The legislature cut UC's allocation by approximately 20 percent of the 1989-90 budget through 1994-95. SAREP's response to scarcity might have been to scale back our efforts in proportion to our declining budget: lay off staff, cancel some kinds of grants, etc. Instead, we tried another tack: We maintained all of our competitive grant categories (although the average size of individual awards was reduced) and our staff looked for opportunities to form partnerships with other individuals and organizations inside and outside the university. One of these partnerships, with the Community Alliance with Family Farmers Foundation, UC Cooperative Extension Merced County Farm Advisor Lonnie Hendricks and others, was the Biologically Integrated Orchard Systems (BIOS) project for almonds which has since expanded into walnuts and other crops. This program started with the idea that there are many players who can come to the table with ideas about how to solve agricultural problems. The heart of this work involves participatory management teams of farmers, consultants, UC farm advisors and researchers, and independent pest control advisers. Approximately 20 farmers per area work with the participatory teams to develop whole systems on their farms that are more biologically based and therefore need fewer chemicals. In 1994 the state legislature passed AB 3383 which authorized a new program of competitive grants for projects modeled after BIOS. In this new Biologically Integrated Farming Systems (BIFS) program, we are supporting two collaborative projects in grapes and row crops (see Sustainable Agriculture Vol. 7, No. 4, "SAREP Awards BIFS

Grants to San Joaquin Valley Growers, Scientists")-with more to come. Similar projects are underway around the state, with funding from US-EPA, California Department of Pesticide Regulation and private foundations. Instead of shrinking programs with a mentality of scarcity, we have expanding programs with new partners and new sources of funding.

In this issue of Sustainable Agriculture (page 3, "Marin Coastal Watershed Project: Part 2") we present another example of collaborative work used to adapt to "changing winds." Ellen Rilla, UC Cooperative Extension director in Marin and Sonoma counties and Stephanie Larson, UC Cooperative Extension livestock and range management advisor, Marin/Sonoma counties have written about the Marin Coastal Watershed Enhancement Project. This collaborative project evolved from elements similar to those faced in BIOS and BIFS projects-public perceptions of agricultural practices and resultant criticism of farmers, threats of an increasingly restrictive regulatory environment in agriculture (in this case related to nonpoint source pollution or NSP), and a lack of understanding of practices that contribute to this problem. The issues were and are potentially contentious and yet this group of people, including UC Cooperative Extension personnel, farmers and ranchers, natural resources agencies, and environmental groups came together to work out solutions that will benefit individuals and the larger communities. They coordinated information on all aspects of NSP and encouraged farmers and ranchers to take a proactive stance in planning for NSP regulations. The Marin project is an example of how cooperation and creativity can bridge the gap that exists between a large and complex job to be done, and the limited resources any single organization can bring to the table.

Bill Liebhardt, director, University of California Sustainable Agriculture Research and Education Program.

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From the Field

Marin Coastal Watershed Project:

A Cooperative Approach to Adapting Nonpoint Source Pollution Guidelines to Local Conditions-Part 2

by Ellen Rilla and Stephanie Larson, UCCE

[Editor's Note: This is the second part of a two-part article on the Marin Coastal Watershed Enhancement Project, which was coordinated by Ellen Rilla, UC Cooperative Extension director, Marin/Sonoma counties, and Stephanie Larson, UC Cooperative Extension livestock and range management advisor, Marin/Sonoma counties, and involved the work of many individuals in UC Cooperative Extension, the agricultural community, natural resources agencies, and environmental groups. Funding for the project was provided by the Marin Community Foundation. Part 1, which appeared in Sustainable Agriculture, Vol. 8, No. 3, Summer 1996, page 4, detailed the deteriorating condition of riparian habitat in coastal Marin County, and the fact that agricultural practices are often cited as a primary cause of this habitat degradation. It noted how a significant aspect of the project was the cooperative effort of local government agencies and private support groups working together as a team to assist landowners with nonpoint source pollution, or NPS, issues. A 30-member advisory committee made up of community representatives, producer groups from shellfish growers to dairy operators, regulatory and resource agencies, and environmental organizations provided general guidance and oversight. In this concluding article on the Marin project, the authors describe landowner outreach, local compliance, and next steps.]

Landowner Outreach

Project input from agricultural landowners has been obtained through personal interviews and informal public meetings. Key landowners, who either control large tracts of land or are outgoing and influential, were contacted and personally interviewed to assess their knowledge of nonpoint source pollution regulations and gain a feeling for the types of support that are most needed. Many of these interviews were conducted by a local rancher.

Following the interviews, two informal potluck meetings were held for livestock producers and dairy producers. A local rancher helped conduct the meetings, providing a comfortable environment for other landowners to express their opinions. These meetings provided a forum for members of the two producer groups to air concerns and discuss issues.

Primary concerns discussed at these meetings included: a feeling of over regulation; confusion over regulatory agency roles; lack of understanding of water quality laws; lack of understanding of management problems that contribute to NPS pollution; and concern that agriculture has been unfairly targeted. The greatest needs for assistance include: financial support to make improvements; political support; technical assistance; coordinated information on all aspects of NPS pollution; and the improvements themselves, such as fencing, water source development and erosion repairs.

The meetings were effective in generating a feeling of unity. They also encouraged farmers and ranchers to take a proactive stance in planning for nonpoint source pollution regulations.

Local Compliance

After staff gathered information from landowners they developed several workshops in response to the need for technical information. They planned and implemented a ranch planning short course held in the evenings and on weekends for 50 ranchers. The course included setting short- and long-term goals, a facilities and natural resources inventory, assessment of their current ranch condition and planned management and monitoring practices. Participation was high and the evaluations indicated that the participants found the workshop to be worthwhile. Based on specific feedback, workshop leaders were also able to incorporate more materials into the ranch plan workbook. Since the workshops, several ranchers have completed their plans and others have requested copies of completed plans and suggested future workshops be held. Several evaluation comments stated that participants never expected to find the ranch planning as beneficial to their overall operating goals, since they came with the expectation that they were just attempting to comply with NPS pollution regulations. They indicated that they were very pleased with the results.

Project products also include the development of technical handouts, a creek care guide, and an accompanying report assessing watershed condition and recommending future watershed enhancement projects. The technical fact sheets were adapted from materials gathered from water quality NPS pollution efforts around the state and nation, including the Tillamook project in Oregon and Chesapeake Bay on the east coast. The fact sheets include the names of all cooperating resource agencies with master copies provided to each agency for use with clientele. Again, the idea is to provide information with a common and coordinated voice. In response to landowner requests for information on NPS pollution issues, the Marin Agricultural Land Trust (MALT), a private agricultural conservation organization, began publishing an informational newsletter for all rural landowners in Marin County. Staff representing the various resource agencies contributed articles. MALT has agreed to continue this important communication link with landowners.

The creek care guide is being distributed to rural landowners and residents of the project area. The agency team participated in its development and has received copies for use with their constituents. One positive offshoot of this coordinated effort is the expressed interest of the Urban Run-Off Program in the eastern, more urban portion of Marin County to adapt and use some of the project materials. This program is a multi-jurisdictional effort to comply with the urban aspects of NPS pollution.

The final product is the 80-page report and action plan that describes the project area historically in terms of water quality and work done to date, and proposes future action in the watersheds. The advisory committee worked in three half-day sessions over eight months to brainstorm, prioritize and finalize their recommendations for future action. They worked in small teams that included a broad cross-section of interests, from regulatory to environmental. The report is the starting point for future watershed proposals, especially where foundation funding is sought. The Marin Community Foundation will use the priorities set for future watershed projects as their funding guidelines.

Next Steps

At the beginning of the project, key factors for success were determined to hinge on the following:

- involvement of the agricultural community in project decision making
- addressing concerns and needs from landowner meetings and interviews
- regulatory agency recognition of local voluntary efforts
- continued cooperation of support agencies in the team approach
- willingness of landowners to recognize problems and be proactive in their compliance

Follow-up interviews 18 months later indicated that agencies, staff and landowners have become more aware of NPS pollution and what needs to be done. They all mentioned that just coming together and building consensus was an important accomplishment of the project. Ranchers mentioned that there is a good balance of environmental, water quality and ag interests and that they truly wanted to improve their operations. Ranchers asked for more workshops and technical assistance while agency and environmental representatives and staff had a wide range of suggestions about how to reach more people. All of those interviewed indicated the need to continue this effort in some fashion after the formal project funding expired.

One shortcoming was the lack of information and assessment regarding economic considerations. Most of our educational transfer efforts in the workshops and field days focused on the technical feasibility. Do the expected benefits occurring from the investment in a management practice exceed the anticipated cost? Is there sufficient cash flow to pay for the investment? As a result of this, staff have applied for research funds to develop a cost-benefit analysis of varying practices for these specific watersheds.

The EPA is encouraging the use of their Watershed Protection Approach (WPA) to meet water quality goals. One clear advantage of this approach is the fact that EPA favors funding projects that are watershed specific. Additionally, regional water quality assessments are based on watershed boundaries, which often coincide with regulatory agency boundaries. This approach could easily be married with the politically determined Resource Conservation District by encouraging watershed representatives to work directly with Resource Conservation Districts.

Both EPA and the State Water Resources Control Board recognize that NPS pollution compliance programs are best accomplished in partnerships at the local level. The Marin County Resource Conservation District (MCRCD) is an obvious agency to look toward to carry out the priorities established in this project, since it has been operating watershed enhancement projects for 14 years and has a proven track record in working with landowners and obtaining funding. Regional EPA staff have recently approached the MCRCD to develop operational working agreements between the district and selected agency partners. It is hoped that these agreements will carry forward the work this project initiated.

A similar effort is just getting underway in the Russian River watershed in the county directly north. Project coordinators have requested use of the materials and some staff time assisting them with organizing a similar

collaborative process for their advisory committee and conducting the ranch planning and water quality workshops in that watershed.
More information can be obtained on this project and others through the California Watershed Projects Inventory. The database and G.I.S. is located at a World Wide Web site http://ice.ucdavis.edu and provides a tool for sharing watershed level projects throughout California.

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Project Update

Cover Crops in Central Coast Farming Systems

by Davis Chaney, SAREP

Farmers and ranchers often question whether or not cover crops can supply enough nitrogen for the cash crops they grow. This question is particularly important in vegetable cropping systems where the amount and timing of nitrogen uptake is crucial to both the yield and quality of the harvested crop. Two SAREP-funded projects coordinated by Richard Smith, a UC Cooperative Extension farm advisor in San Benito County, are providing answers to these questions for farmers in California's Central Coast Region.

Organically Grown Bell Peppers

In 1992 Smith received funding to explore the feasibility of using cover crops prior to planting bell peppers, an unusually long-season crop with a high demand for nitrogen (about 250 pound per acre over a five-month growing season). Supplying sufficient nitrogen to bell peppers in organic production systems is particularly challenging. Can the soil be conditioned to meet this demand over 150 days? A well grown leguminous cover crop can supply 200 to 250 pounds of nitrogen that the subsequent crop can use, but according to Smith, the release of this nitrogen reaches a peak about 75 to 80 days following incorporation into the soil. Under these conditions, will there be enough nitrogen for the remainder of the growing season?
In Smith's study, nitrogen from a lana vetch cover crop (about 200 pounds per acre) was supplemented with 0, 25, 50, and 100 pounds of nitrogen in the form of feather meal. Feather meal is an organic form of nitrogen that releases nitrogen over 120 days. Smith felt that the slow release form of nitrogen would complement the relatively fast release by the cover crop. The results of his study indicate that the cover crop nitrogen was running out toward the end of the season, as evidenced by the petiole nitrate levels which were below the conventional critical level of 700 ppm in the 0 and 25 pounds per acre treatments, and the fact that the unfertilized plants had turned yellow by the end of the season. Nitrogen applications of 50 and 100 pounds per acre as feather meal provided adequate nitrogen to the bell peppers over the season to maintain the recommended petiole nitrate levels, but, Smith said, this added nitrogen did not lead to any significant increase in yield. When Smith repeated his study in 1993, the additional nitrogen in the 50 and 100 pounds per acres treatments did result in significant yield increases.

Organic, Conventional Systems

In 1995 Smith began a new study aimed at providing organic farmers with better information about how to monitor the nitrogen status of their crops. As

the bell pepper study revealed, growers that utilize organic sources of nitrogen such as compost and cover crops are able to provide enough nitrogen to meet the crop demands, but they have to pay close attention to how that nitrogen is released over the course of the season. University of California researchers have been conducting a number of studies over the past several years to determine critical levels of nitrate in the fresh sap of vegetables (as measured by hand-held selective electrode nitrate meters) to aid growers in making quick fertility decisions. These tests have proven to be useful in conventional production systems using chemical fertilizers. There is increasing evidence, however, that organic farms have lower soil and plant nitrate levels and yet are achieving yields comparable to conventional systems. Thus the applicability of these tests and established critical values may be of limited value in organic farming systems.

In order to determine the value of the fertility tests to organic growers, Smith set up a project to monitor nitrogen in four farms producing long day onions: two organic farms using compost, cover crops and feather meal; and two conventional farms. Soil nitrate and ammonium were monitored, as well as nitrate levels in the fresh sap of root tissue and the total nitrogen in the onion tops.

As found in other studies, there were dramatic differences in the levels of soil nitrate and ammonium between conventional and organic systems. Nitrate levels were similar at the beginning of the season (about 20 ppm), but by mid-June nitrate in the conventionally farmed soils increased to 76 ppm and remained significantly greater than in the organic system until the end of the season. Nitrate levels on the organic farms remained constant at about 15 ppm through the entire season. A similar pattern was found with soil ammonium. Nitrate in the onion plants (both roots and tops) was also lower in the organic system than in the conventional system, according to Smith. One of the organic farms had a severe pink root disease problem, so yields could not be considered in the final analysis. The yields from the other organic farm, however, were comparable to the yield from the two conventional fields, even though the soil nitrate and ammonium levels were low and the levels of nitrate-nitrogen in the roots and total nitrogen in the tops were much lower.

Smith said these results indicate that quick test technology measuring nitrate-nitrogen in the fresh sap may not be a useful diagnostic tool for organic farmers. The organic onions in this study obtained reasonably adequate supplies of nitrogen even though plant nitrate levels were low, so the question arises, how did they do this without the large pools of nitrogen in the soil? Smith is planning further research to help find an answer to this question and to determine whether revised critical levels are needed for organic systems.

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Technical Reviews

Comparison of 32 cover crops in an organic vineyard on the North Coast of California.

Robert L. Bugg, Glenn McGourty, Marianne Sarrantonio, W. Thomas Lanini and Ronald Bartolucci

Biological Agriculture and Horticulture 13:63-81. 1996

"In a replicated study conducted from 1990 to 1992, cover crops and a control (resident vegetation) were evaluated in an organic wine grape vineyard (cv. 'Chardonnay'), located at a valley floor site in Hopland, Mendocino County, Calif. The purpose was to assess plant phenology, stature, biomass production, competitiveness with resident vegetation, and second-year stand regeneration or persistence in an untilled vineyard. Legumes (Fabaceae) evaluated included nine annual and two perennial types of clover (*Trifolium* spp.), bell bean and three other types of Vicia, two types of cool-season annual medic (*Medicago* sp.), field pea (*Pisum sativum* ssp. Arvense), a mixture of biennial sweetclovers (*Melilotus alba* and *M. officinalis*), and broadleaf birdsfoot trefoil (*Lotus corniculatus*). There were six types of cool-season annual grasses (Poaceae) including three cereal grains. Native Californian perennial grasses included one sod-forming and five bunch types. The sole representative of Brassicaceae was black mustard (*Brassica nigra*). Unseeded, resident vegetation plots served as a control.

"In the first year after seeding, all cover crops except purple needle grass (*Nasella pulchra*) established stands. Observation of phenological state suggested particularly advanced seed maturity by early May for the annual grasses barley, rattail fescue, soft chess, and cereal rye, as well as for burr medic and 'Dalkeith' subterranean clover. By contrast, 'Austrian Winter' field pea, berseem clover, biennial sweetclovers, and perennial legumes had not begun flowering. Other entries were at various stages of flowering. Height was generally greatest for black mustard followed by annual grasses, perennial grasses, vetches, field pea, and was similar for annual clovers and medics. Eighteen cover crop regimes produced vegetational cover in excess of 90 percent. Particularly great percentages of vegetational cover were obtained for control (resident vegetation), common vetch (*Vicia sativa*), annual ryegrass (*Lolium multiflorum*), oat (*Avena sativa*) and berseem clover (*Trifolium alexandrinum*). Particularly small percentages of vegetational cover by cover crops occurred (in increasing order) for creeping red fescue (*Festuca rubra cv. 'Molate'*), broadleaf birdsfoot trefoil, and biennial sweetclovers. Particularly great biomass estimates were obtained (in decreasing order) for barley (*Hordeum vulgare*), oat, black mustard, purple

vetch (*Vicia benghalensis*), rye, 'Koala' subterranean clover (*Trifolium subterraneum ssp. Dasycarpa*), and common vetch (*Vicia sativa*). Especially low biomass production was observed (in increasing order) for creeping red fescue (*Festuca rubra*), biennial sweetclovers, strawberry clover, meadow barley, and the mix of ladino and strawberry clovers. Biomass for resident vegetation in the control plots was significantly greater than biomass produced by creeping red fescue.

"In the second May following seeding, cover crop stands were inspected visually and regeneration scored qualitatively and subjectively as: none, very poor, poor, fair, good, and very good. Percentage of vegetational cover by crops was also assessed visually. Stands scored as having good or very good regeneration were assessed for biomass as in 1991. The following entries attained good or very good regeneration: soft chess, California brome, annual ryegrass, both forms of blue wildrye, oat, cereal rye, crimson clover, four varieties of subterranean clover, and both the mixture of ladino and strawberry clovers and the sole seeding of strawberry clover. Particularly great biomass values were obtained for crimson clover and for 'Mt. Barker' and 'Trikkala' subterranean clovers. None of the three vetches attained high percentages of cover in the second year; these are thought to benefit from tillage, which was not used in this study. Biomass readings were, for the most part, lower than in 1991. This may have been due to low soil moisture during autumn as a result of a lack of irrigation and rain."

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DEC.541

Contributed by Robert L. Bugg

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Technical Reviews

Evaluation of five cover crop species or mixes for nitrogen production and weed suppression in Sacramento Valley farming systems.

Diana Friedman, Luciano Gristina, Miriam Volat, Steve Temple, Carol Shennan and Don Stewart

Ingels, Chuck (Editor). University of California Cover Crop Research & Education Summaries. University of California, Sustainable Agriculture Research and Education Program, Davis, CA. 1996.

Of particular concern in low-input and organic farming systems in the Sacramento Valley is selection of cover crops to follow tomatoes, which are generally harvested between late July and late August. A 30-ton harvest of tomatoes can leave as much as 100 pounds per acre of residual biomass nitrogen, which can be mineralized and lost over the winter if there is no crop to capture it. If the subsequent cah crop is corn or safflower (planred the following spring), then the intervening crop must also have vigorous fall growth in order to have substantial production by early spring and to compete successfully with weeds. To maximize economic returns, the cover must also be able to establish with minimal land preparation and supplemental water.

The objective of this particular research was to determine the best cover crop species or mix to follow a mid-summer harvested crop such as tomatoes and precede an early spring crop such as safflower or corn. Each species or mix was evaluated based on total biomass production, competition with fall and spring weeds and contribution of total nitrogen added in the cover crop biomass at incorporation.

Procedures

In the fall of 1993, five cover crop treatments were planted: 1) fava bean/Lana vetch, 2) Lana vetch, 3) purple vetch, 4) cowpea/Lana vetch and 5) sorghum-sudangrass. In 1994, the treatments were identical, except that berseem clover was seeded into the sorghum-sudangrass in late October. All treatments were established with supplemental irrigation. However, 1993-94 was a very dry year, while 1994-95 was one of the wettest years in recent history. Differences in the seasonal rainfall had a significant impact on cover crop growth.

Results and Discussion

In both years, all treatments had good germination and stands through the fall, until late November, when the sorghum-sudangrass and cowpeas died as

expected. In 1993, this allowed for large amounts of spring weeds to enter the sorghum-sudangrass plots. In 1994-95, the clover was able to emerge in the spring, although it never produced enough biomass to shade weeds, so in 1994 this treatment still had the highest quantity of weeds at incorporation (Table 1). Because the fall of 1993 was so dry, the sorghum-sudangrass only produced 1,000 pounds of biomass before winter killing. In 1994-95, however, which was considerably wetter, the hybrid produced almost 5,000 pounds of biomass by late November and captured more than 80 pounds of residual soil nitrogen. This strongly suggests that successful growth of this species is contingent upon adequate fall moisture, which can vary tremendously from year to year in this region.

The fava bean/Lana vetch mix produced the most total biomass (Table 1) in both years and provided a full cover in 1993-94 which was successful at controlling weeds. Good winter and spring growth of the fava bean provided a climbing structure for the vetch, allowing for further spring growth. This mix also contained the most nitrogen at incorporation (Table 1)in 1993-94. In 1994-95, incorporation was almost a month later due to late spring rains, and total N in this mix was considerably less than the previous year due to the reduced percentage of vetch in the mix. In 1993-94 the fava bean and vetch each consisted of about 50 percent of the mix, while the following year, the fava bean was more than 75 percent of the total biomass. A sampling from early March showed the fava bean/Lana vetch mix had almost 120 pounds of N and higher biomass than at the April sampling, indicating that there was probably some biomass reduction due to increased weed pressure, and that the mix had reached its peak N supplying capacity earlier in the spring.

In general, the Lana vetch mixes and the Lana vetch provided more effective weed control than the purple vetch in both years. In 1993-94, weeds were negligible in all Lana vetch treatments, while the weeds in the purple vetch treatment made up almost 35 percent of the total biomass (Table 1). We have observed in other experiments and other seasons that purple vetch is susceptible to early spring dieback, although the cause of this is still unknown. The death of the purple vetch clearly opened up the canopy and allowed for heavy weed growth. In 1994-95, the Lana vetch and fava/Lana vetch treatments were considerably more effective at choking out weeds than the purple vetch, although the cowpea/Lana vetch treatment was not more effective. In 1993-94, the vetch in the cowpea/Lana vetch treatment continued to grow after the cowpeas died, blocking the weeds until incorporation. In 1994, however, the vetch in this mix was unable to compete effectively with the heavy weed growth.

In 1994-95, all treatments with Lana vetch had reduced biomass production relative to 1993-94, while the purple vetch actually had slightly more. Although this did not translate to a significant difference in added nitrogen, data showed that the purple vetch biomass almost doubled between the March and April sample date. This strongly suggests that purple vetch put on the bulk of its growth later in the season and thus may be better suited as a cover crop for a later spring-planted crop.

There did not appear to be any benefit to planting cowpeas with vetch in either year, quite possibly because in both years planting date was beyond optimal for cowpeas. New lines of cowpea species bred for biomass production rather than seed, may prove to be more effective in this mix. The

Lana vetch treatment was the most consistent producer over two very climatically distinct years and although it provided slightly less nitrogen than the fava/Lana vetch mix in 1993-94, total nitrogen production was sufficient to supply a subsequent safflower crop with nitrogen.

For more information contact: Steve Temple, Department of Agronomy and Range Science, University of California, Davis, CA 95616.

DEC.539

Contributed by Diana Friedman

Table 1. Total cover crop biomass and nitrogen, and weed biomass at incorporation.

Cover Crop	Cover Crop Biomass	Cover Crop Nitrogen	Weed Biomass
		--lb/acre--	
1993-94			
fava bean/Lana vetch	5453	159	129
Lana vetch	3752	132	67
purple vetch	2161	75	1025
cowpea/Lana vetch	3384	116	165
1994-95			
fava bean/Lana vetch	4547	71	750
Lana vetch	3257	128	821
purple vetch	2639	82	1553
cowpea/Lana vetch	2400	85	1232
clover	1225	33	2621

Spring incorporation dates were March 1 7, 1 994 and April 11, 1995 for all species and mixes except cowpea and sorghum-sudangrass. Total plant biomass was 971 and 5343 lb/acre and total plant nitrogen 17.1 and 87.9 lb/acre, for sorghum-sudangrass in late November 1993 and 1 994, respectively

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Technical Reviews

The industrial reorganization of U.S. agriculture: An overview and background report.

Rick Welsh

Policy Studies Report No. 6, Henry A. Wallace Institute for Alternative

Agriculture, Greenbelt, Md. 1996

This concise, 48-page report examines the nature and consequences of the industrialization of U.S. agriculture. The author provides definitions and primary statistics, and reviews competing interpretations of recent trends. This careful and objective work is the first part of a larger study of structural change in the agricultural sector being conducted by the Henry A. Wallace Institute for Alternative Agriculture.

For the author, industrialization

> refers to the interactive processes of coordination, concentration and globalization. Coordination is the degree of control an actor has over the various links in a commodity system-from production inputs to marketing to end users. Concentration includes the scale of an agricultural operation, as well as the ability to wield market power. And globalization refers not only to international trade linkages but coordination and concentration on a global scale (page 6).

Welsh gives equal attention to two competing explanations for why agriculture is industrializing, one of which emphasizes accommodation to consumer demands for convenience, safety, and good nutrition; the other the increased profit potential for businesses who must manage risk given high debt loads, unpredictable markets and stringent financing requirements. He then contrasts how observers from these perspectives view the implications of industrialization for consumers, farm households, rural communities, agricultural labor, and the environment.

In addition to this overview of the literature, Welsh interviewed agricultural stakeholders to understand the meanings they ascribe to structural changes in agriculture. The interviews were conducted in four focus groups, one each in New York, Iowa, California and Georgia. Participants included representatives from processing firms, farmers, local government officials, environmentalists, farm labor advocates, farm input suppliers, persons involved with direct marketing, and family farm advocates. The report quotes extensively from these group interviews, enabling the reader to sample a

wide range of opinion on what concentration means and what, if anything, should be done about it.

While deep disagreements persist, Welsh finds a broad consensus that two discrete agricultural production systems are emerging in the U.S.:

> One system will consist of large-scale corporate enterprises and contract production dominated by a few buyers, often MNC's [multinational corporations]. This system will be characterized by capital intensive technology development and adoption, proprietary control of some information enableing production, as well as worldwide marketing and distribution. . . . The other system will consist of smaller scale farms which employ strategies of onfarm diversification of enterprises, as well as limited off-farm input use to control costs and minimize environmental impacts. This system will be characterized by the development of markets backed on locality of production, production practices, consumer health concers, farm structure, and the production of diverse varieties of crops and/or livestock.

Readers will find this report a useful compendium of statistics and concise guide to the debates surrounding industrialization. As the author intended, the work succeeds in illustrating key questions for future inquiry, and the need to draw on a variety of disciplines in developing information-based policy reforms.

Copies of the report can be obtained by sending $5.50 per copy to: Henry A. Wallace Institute for Alternative Agriculture, 9200 Edmonston Road, Suite 117, Greenbelt, MD 20770.

For more information contact: Rick Welsh, Henry A. Wallace Institute for Alternative Agriculture, 9200 Edmonston Road, Suite 117, Greenbelt, MD 20770.

DEC. 542

Contributed by David Campbell

Fall, 1996 (v8n4)

Technical Reviews

Working together: Strategies for Bay Area greenspace groups

Larry Orman

Greenbelt Alliance, San Francisco, Calif. 1996

This report is a concise summary of the assessment and shared strategy for the future of more than 300 Bay Area greenspace citizen groups. The pressures of suburban sprawl, redevelopment in cities and slashed local budgets pose challenges to the future of the San Francisco Bay Area's greenspace. Instead of resting hopes on state and local government or the actions of local groups alone, this study was initiated to find out how cooperation and collaboration among greenspace groups throughout the region could offer new opportunities for the 1990s and into the next century. Many of the key issues, obstacles and needs identified are common to the broader sustainable agriculture movement. The process used in this study for gathering information and synthesizing data offers a good model for the sustainable agriculture movement as it works toward building public and political understanding and support.

Ranging from sites as small as community gardens to crop and grazing lands beyond the urban fringe, greenspaces form a regional system of natural land resources that are currently under pressure. This report was developed to examine the status of the region's greenspaces and to identify collaborative opportunities among the Bay Area's 300-plus greenspace groups. Funded by the USDA Forest Service State and Private Forestry Branch, the San Francisco Foundation and Greenbelt Alliance, the report summarizes the key issues facing each of seven "clusters" of greenspace interests: urban creeks and watersheds, urban forests, trails, parks and other public lands, urban farms and gardens, greening and restoration sites, and public lands. It then examines what could be done within each cluster and also what could be done to work across boundaries of cluster interests. The report emphasizes how citizen greenspace groups can improve their effectiveness through collaboration using three broad strategies: work together regionally to be more effective locally, improve coordination and collaboration within greenspace clusters, and create a marketplace to link up individual greenspace groups having similar needs.

Cluster Group Assessments

The report is divided into five sections. The first section describes the seven cluster groups in the nine-county San Francisco Bay Area. The rationale for this project is that a "green infrastructure" in the Bay Area can improve public and political understanding and support, and lead to useful collaboration among greenspace groups. Although the groups have many

different operational goals and missions, the report emphasizes and explores three major linkages that create a metropolitan framework for greenspace groups: 1) ecological and geographic interdependence, 2) social, cultural and economic linkages, and 3) the growing void of state and federal resources, coupled with the inability of many localities to provide adequate resources to meet greenspace needs.

The second section of the report describes the findings from surveys of each greenspace cluster. Cluster leaders were invited to identify the pressing issues for their cluster and to offer assessments of what they needed to move ahead more effectively and what opportunities they saw for the future. After listing the issues and needs for each cluster, the third section of the report synthesizes the primary issues facing all greenspace groups. The nine key issues common to all groups were: funding shortfalls,public support focused on other issues, the need for increased ethnic diversity in leadership and support bases, changes or threats to key state and federal environmental laws,debate over the balance of public and private rights, the challenge of ensuring vigorous and effective volunteer and staff leadership, keeping pace with changes in information technology, pressures for development both in cities and at their edges, and building linkages between greenspace and economic improvement.

Strategies for the Future

Section four of the report outlines the three strategies greenspace groups identified to overcome the obstacles to their goals: 1) clusters can work together regionally, 2) within clusters, coordination and collaboration can be improved and 3) individual greenspace groups can create a "marketplace" to help organizations ally with those who share their needs. To assess these three strategies more thoroughly, each greenspace cluster was surveyed as to which types of collaborative projects would be of interest. Although most groups had a history of working with diverse partners on specific, immediate projects and a few had the beginnings of a regional coordinating framework, there was relatively little multigroup cooperation on more general needs such as fundraising, training, organizational development, public education or policy development. The report discusses how these needs could be met through the three collaborative strategies.

Strategy #1: Work together regionally to be more effective locally. The report makes nine specific suggestions including: building coalitions around funding opportunities, building coalitions around policy issues; creating programs aimed at increasing leadership and other skills among board, staff and key volunteers; developing public education campaigns; developing legal resources; improving the ability to use emerging computer technology; coordinating joint briefings for public officials; making joint funding requests for specific needs; and developing seed grant funds for smaller organizations.

Strategy #2: Improve coordination and collaboration within greenspace clusters. Several of the clusters came up with specific ideas for collaborating more effectively. Ideas included forming a regional organization for a network of trails, holding a Bay Area creeks workshop, coordinating legislative and public education within the Greenbelt cluster, and continuing the Bay Area Open Space Council. Other ideas included sharing operations equipment (machinery, tools, etc.), producing joint special events, having

joint training seminars for fundraising staff, organizing joint public opinion polls, operating a clearinghouse for preferred service vendors, having shared speakers bureaus, developing a regional internship program and coordinating actions alerts.

Strategy#3: Create a marketplace to link up individual greenspace groups. The report admits that the challenge is now how to enable those with common interests to find each other. The Greenspace Project will make this information available to all groups surveyed. However, the next step suggested was to jointly fund an annual intern position charged with finding matches between groups with similar interests.

The report ends with a discussion of several principles for carrying out the strategies. It suggests identifying "quick results" projects-those that are high return in the short-run and require low effort. Voluntary and collaborative efforts should result in quick rewards in order to encourage further investment of time. Developing partnerships with some existing resource groups that are already engaged in collaborative work would be helpful. However, there needs to be a unifying theme to drive any new collaboration. Finally, all of these beginning efforts need to be coordinated by some "umbrella" entity using the top needs identified in this report and other opportunities as a starting point. The practicalities of implementing the projects are left up to the greenspace groups themselves. This report offers the reasons for groups to get involved, the key issues, directions and strategies that will build a more effective greenspace movement. It is now up to individual leaders in the greenspace groups to start the journey.

For more information: Greenbelt Alliance, 116 New Montgomery Street, Suite 640, San Francisco, CA 94105. Phone:
(415) 543-4291. E-mail: greenbelt@igc.apc.org
URL: http://www.greenbelt.org/gba

GWF.896 Contributed by Gail Feenstra

Sources of Funding

USDA-SARE Western Region

Calls for proposals are out for the U.S. Department of Agriculture's Western Region Sustainable Agriculture Research and Education (SARE) program.

- The competitive research grants portion of SARE includes a joint USDA/US-EPA effort called Agriculture in Concert with the Environment, ACE. SARE and ACE research grant proposals are due October 29, 1996. SARE continues to target funding to whole-farm/ranch systems projects that increase understanding and adoption of sustainable agriculture practices. ACE grant funds are aimed at research on agricultural practices that minimize environmental effects and hazards.

- SARE's professional development grant proposals are due on November 26, 1996. This effort supports grants to develop materials and approaches to help Cooperative Extension Service, Natural Resource Conservation Service and other professionals expand their understanding of sustainable agriculture. Projects can be designed for agents working in production agriculture, 4H/youth development or other areas.

Additionally, a call for research and development projects directed by area farmers and ranchers is set for release the first week of November 1996.

- Farmers and ranchers residing in the Western U.S. can compete for grants of up to $5,000 each to identify, evaluate and test sustainable agriculture practices and challenges through Western SARE's farmer/rancher research grant program. This effort gives farmers and ranchers direct access to research and education funds authorized by the U.S. Congress to further the adoption of sustainable agriculture. A call for proposals is set for release the first week of November 1996. The deadline for proposals will be January 14, 1997.

To get on the mailing list for calls for proposals, call the host office at Utah State University at (801) 797-3537.
For other information, contact Kristen Kelleher, communications specialist at (916) 752-5987; e-mail: kkelleher@ucdavis.edu. 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.

Organic Research Grants

The Organic Farming Research Foundation is offering funds for research on organic farming methods, dissemination of research results to organic farmers and growers interested in making the transition to organic production, and

consumer education on organic farming issues. Projects should involve farmers in design and execution, and take place on working farms when possible. Proposals of $3,000-$5,000 are encouraged. Matching funds and/or in-kind contributions are recommended. Proposals are considered twice a year; the next round of proposals must be received by January 15, 1997. To receive copies of grant application procedures and the OFRF Research and Education Priorities describing target areas, write Grants Program, Organic Farming Research Foundation, PO Box 440, Santa Cruz, CA 95061; (408) 426-6606.

Fertilizer Research Awards

A Request for Proposals will be out in January 1997 from the California Department of Food and Agriculture's Fertilizer Research and Education Program. Funding will be available for projects directed toward the environmentally safe and agronomically sound use and handling of fertilizer materials. For details and to be put on the mailing list, contact Casey Walsh-Cady or Trina Anderson at CDFA, (916) 653-5340; e-mail: ccady@smtp1.cdfa.ca.gov.

Department of Pesticide Regulation

The California Department of Pesticide Regulation (DPR) is requesting proposals from California public and private entities to encourage the formation of groups interested in investigating/adopting innovative pest management practices leading to the development of reduced-risk pest management systems. The program intends to provide support for groups of innovators to work with university researchers, private industry, and consultants to set up demonstration projects of new IPM systems. Based on DPR's legal mandates and regulatory concerns as well as pest management needs in California, projects that address the protection of surface and ground water quality and/or involve integrated management of mites, insects, or plant diseases in the agricultural and nonagricultural sector will be given high priority in 1997. Equal consideration will be given to new projects or existing projects that wish to expand. Awards will range from $10,000 to $30,000 per year. Proposals are due by 4:30 p.m., November 27, 1996.

For information, contact Jenny Broome, Tel: (916) 324-4100; Fax: (916) 324-4088, e-mail: jbroome@cdpr.ca.gov; 1020 N Street, Room 161, Sacramento, CA 95814-5624. Please request either the one-page Request for Proposals general specifications or the full application package.

Resources

Organic Farmer's Survey
Final Results of the 1995 National Organic Farmers' Survey, coordinated by Erica Walz, 40 pages, June 1996, $10. The Organic Farming Research Foundation (OFRF) has completed a survey of 945 certified organic farmers from throughout the U.S. OFRF's intention was to determine growers' research priorities to help set the direction of agricultural scientists' research. OFRF is interested in matching organic growers' needs for practical information with scientists interested in conducting on-farm systems research. Respondents' highest research priorities spanned a wide range of topics with the relationship of growing practices to crop quality and nutrition taking the lead. Crop rotations for fertility and pest management, and consumer demand for organics ranked second and third. Other high priority topics for study include the relationship between plant nutrition and pest resistance, cover cropping, green manures, and animal preventive health. Lowest priorities included export and trade issues, greenhouse production methods, post-harvest handling methods, and organic export opportunities. Other information from the survey includes a break-down of the crops organic farmers grow, information on how they manage inputs, water issues, challenges to production, farm labor and demographics, and economic data. The survey was funded by the Charles Stewart Mott foundation, the Flow Fund and Farm Aid. For a copy of the complete survey results, send $10 to Grower's Survey 95, OFRF, P.O. Box 440, Santa Cruz, CA 95061; (408) 426-6606; e-mail: research@ofrf.org.

Sustainable Directory
Sustainable Agriculture Directory of Expertise, 3rd Edition, 1996. Produced by the Sustainable Agriculture Network (SAN) of the USDA's Sustainable Agriculture Research and Education program, compiled by Appropriate Technology Transfer for Rural Areas. Lists 1,000 individuals and more than 200 groups involved in sustainable agriculture throughout the U.S., with detailed descriptions of each entry. Designed for those seeking information about alternative approaches to achieving farm profitability, resource enhancement and strong rural communities, it includes seven indexes that provide access by state, individual, organization, crop and livestock enterprise, area of expertise, product or service available, and management method. For more information about the content, contact Andy Clark, Alternative Farming Systems Information Center, Room 304, National Agricultural Library, Beltsville, MD 20705-235 1; (301) 504-6425; e-mail: san@nal.usda.gov. To order the Directory in paperback or 3.5-inch floppy disk, send $18.95 (postpaid) as a check,
money order or purchase order payable to Sustainable Agriculture Publications, Hills Building, Room 12, University of Vermont, Burlington, VT 05405-0082. For bulk orders call (802) 656-0471.

Hardwood Guide
Guidelines for Managing California's Hardwood Rangelands, 180 pages, University of California Integrated Hardwood Range Management

Program/California Department of Fish and Game! California Department of Forestry and Fire Protection, 1966 (UC DANR Publication 3368), $15. A revision of The Preliminary Guidelines for Managing Hardwood Rangelands (1986), this book provides a variety of management strategies for owners and mangers of hardwood rangeland properties that maintain the profitability of the properties while sustaining ecological values. More than 80 percent of California's 11 million acres of hardwood rangelands are in private ownership; the most costeffective form of their conservation is maintaining sustainable economic enterprises. The rangelands are characterized by an overstory canopy of hardwood tree species (predominantly oaks), with an understory of annual grasses, forbs and native perennial grasses. These areas are some of the richest wildlife habitats in the state; they also preserve water quantity and quality, provide erosion and sediment control, and outdoor recreation. To order the publication, send checks payable to "UC Regents" to **Joni Rippee**, Integrated Hardwood Range Management Program, 163 Mulford Hall, University of California, Berkeley, CA 97420; Tel: (510) 643-5429; Fax: (510) 643-5438; e-mail: rippee@nature.berkeley.edu.

Organic Directory

1996 National Organic Directory, produced by Community Alliance with Family Farmers (CAFF), $34.95. Includes farmers of organic commodities throughout the U.S., food wholesalers, farm suppliers, updated federal and state organic laws, businesses serving the organic industry, certifications groups, cross-referenced organic commodities (buyers/sellers). Contact: CAFF, P0 Box 464, Davis, CA 95617; (800) 852-3832 or (916) 756-8518 ext. 17. Add $6 shipping/handling (CA residents add $2.75 sales tax).

Pesticide Report

Pesticide Use in California: Strategies for Reducing Environmental Health Impacts, by William Pease, James Liebman, Dan Landy, and David Albright, April 1996, 136 pages, $15. This UC Environmental Health Policy Program Report from the California Policy Seminar provides an accessible summary of data from the state's Department of Pesticide Regulation, which tracks pesticide use by pesticide, crop and region, and on particular pieces of land. The authors rank 150 pesticides in use in California, illustrating how available data can be used to target highhazard pesticides for usereduction programs. They also analyze assessment and management issues related to successful strategies to prevent adverse environmental impacts of pesticide use, identify use reduction strategies, and analyze barriers affecting policy efforts to implement use reduction. To order, send a check for $15 (includes postage! handling) payable to "UC Regents" to the California Policy Seminar, 2020 Milvia St., #412, Berkeley, CA 94704; (510) 642-5514.

Videos

We All Live Downstream, 30-minutes, Oregon State University, $30. Information about urban and rural runoff. Contact: Publications Orders, Agricultural Communications, Oregon State University, A422 Administrative Service Building, Corvallis, OR 97331-2119; (503) 737-2513.

Vegetable Farmers and Their Weed Control Machines, 75-minutes, Produced by **Vern Grubinger** and **Mary Jane Else**, with University of Vermont videographers, $10. Funded by USDA's SARE program. From sweeps and rotary hoes to flame weeders and home-made tools, this video demonstrates

many of the available cultivation implements, and explains some of the weed control strategies being used effectively by nine New England vegetable farmers in three states. Tools demonstrated include: Buddingh basket and finger weeders, Lely tine weeders, rotary hoes, rolling cultivars, Bezzerides implements, various sweeps, as well as backpack and tractor-mounted flame weeders. Some home-made tools for cultivating the edges of plastic mulch are also described. While the video focuses on New England growers, the information presented is applicable to smaller-scale vegetable farms in many parts of the country. It shows how the implements work and how producers adapt their use for production goals and site-specific conditions. To order, make checks payable to "UVM Extension" and include a note with your name and mailing address. Send to:
UVM Center for Sustainable Agriculture, 590 Main Street, Burlington, VT 05405-0059.

WEB SITES:

SAREP WEB Information:
http://www.sarep.ucdavis.edu/
In addition to its print publications, UC SAREP offers access to SAREP-funded research and education projects, its quarterly newsletter, its new Progress Report 1 993-1995, and information databases through its World Wide Web server.

SAREP Covercrops Database:
http://www.sarep.ucdavis.edu/sarep/ccrop/
SAREP has developed an on-line resource for cover crop information which features a searchable database, several articles, and references to other sources of information on cover crops. The database contains hundreds of pages of useful information and color pictures of more than 40 cover crops used on farms in California. The resource page will be periodically updated as new information is developed.

SAREP Calendar:
http://www.sarep.ucdavis.edu/
SAREP offers a regularly updated sustainable agriculture calendar on our World Wide Web site. You may add your own sustainable agriculture events on the SAREP Web site calendar.

Other Related Sites...
Visit the website of the Cornell Cooperative Extension publications and video listing at:
http://www.cce.cornell.edu/publications-catalog.html

Recent publications include "Integrated Pest Management of (plant) Disease," and "Strategies for Managing Pests in and around the Home," which offer strategies to reduce pests in the home, garden and public landscapes for gardeners and homeowners. These are the introductory fact sheets of a new series from the Cornell Urban IPM (Integrated Pest Management) Program, which extends 1PM beyond farm uses, making it available for multiple public applications. Hard copies of "Strategies for Managing Pests in and around the Home"(1O2UIPM1) and "Integrated Pest Management of Disease" (1O2UIPM2) are available for $1.00 each from the Cornell University Resource Center, 8 BTP, Ithaca, NY 14850. U

Calendar

SAREP offers a regularly up-dated sustainable agricul-ture calendar on our World Wide Web Site at: http://www.sarep.ucdavis.edu/ Please feel free to add sustainable agri-culture events on our Web site calendar.

MONTHLY MEETINGS

Lighthouse Farm Network The Community Alliance with Family Farmers Foun-dation sponsors informal monthly meetings for grow-ers to discuss issues related to pesticide use reduction. Breakfast or lunch meetings take place in agricultural communities throughout California. Contact: Jill Klein, CAFF, 916-756-8518.

OCTOBER

2-3 *Community Food Sys-tems: Sustaining Farms & People in the Emerging Economy*, Alumni Center, UC Davis, Davis, CA. Sponsor: UC SAREP; co-sponsors: Community Food Security Coalition, Community Alli-ance with Family Farmers, California Communities Pro-gram at UC Davis. Speakers: Pulitzer-prize winning poet Gary Snyder; Missoula, MT mayor Daniel Kemmis; Co-lumbia University nutrition professor/author Joan Gussow. Contacts at SAREP: Dave Campbell, 916-7S2-7541 ,dave.c.campbell@ ucdavis.edu or Gail Feenstra, 91 6-752-8408, gwfeenstra@ucdavis.edu

12 *Landscaping & Garden-ing Sustainable Ag Produc-tion Techniques*, Mann County, CA. Sponsor: Com-mittee for Sustainable Agri-culture. Contact: Tel:
Tel: 408-763-2111408-; Fax: 408-763-2112.

16 *4th Annual Fertilizer Re-search & Educ. Program (FREP) Conference*, Red Lion Hotel, Modesto, CA. Spon-sor: Calif. Dept. of Food & Ag, Calif. Fertilizer Assoc., Stanislaus County Coopera-tive Extension. Topics: future of nitrate in ground water, diagnostic tools for crop pro-duction, laboratory quality assurance program, preview of orchard nutrient manage-ment video. Presentations of FREP-sponsored projects on fertilizer management strat-egies. Aimed at: agricultural supply & service organiza-tion reps, pest control advi-sors, certified crop advisors, growers, farm advisors, re-searchers, public officials. $35. Contact: Kertrina Anderson or Casey Walsh-Cady, FREP, 916-653-5340.

16 *Turf & Golf Course Man-agement Sustainable Ag Pro-duction Techniques*, Seal Beach, CA. Sponsor: Com-mittee for Sustainable Agri-culture. Contact: Tel: 408-763-2111408-; Fax: 408-763-2112.

17 *Strawberries & Vegetables Sustainable Ag Production Techniques*, Carlsbad, San Diego County, CA. Sponsor: Committee for Sustainable Agriculture. Contact: Tel: 408-763-2111408-; Fax: 408-763-2112.

18 *On-Farm Composting Workshop*, Hollister, CA. Funded by UC SARER Con-tact: Jill Klein, Community Alliance with Family Farm-ers, 916-756-8518.

21 *Genetics, Disease and the Environment: A Public Sym-posium Concerning Genetic Susceptibility, Toxic Expo-sure & Disease*, sponsored by National Institute of Envi-ronmental Health & Safety Center for Environmental Health Sciences, UC Davis, Buehler Alumni Center, UCD. National speakers, panel of occupational health/state regulatory agencies. C.M.E. credit. $60 registration. Contact: Beth Wettergreen, 916-752-4251, bmwettergreen@ucdavis.edu.

22 *Sustainable Agriculture Education Workshop and In-formation Fair*. Buehler Alumni Center, UC Davis. Workshop designed to in-crease communication and cooperation among organi-zations and individuals in-volved in sustainable agri-culture education in Califor-nia. Featured topics address how to integrate sustainable agriculture into mainstream curricula and programs, sus-tainable ag education for non-English speakers, BIOS/ BIFS as a model for exten-sion education, decision cases. $15. Contact David Chaney,dechaney@ucdavis.edu

25-27 *Practical solutions for Restoring the Earth*, Bioneers, Fort Mason Center, San Francisco. Sally Fox, Ralph Paige, Wendy johnson, Fred Kirschen-mann, Bill McKibben, Allan Savory, Deborah Madison, others. Contact: Bioneers, 369 Montezuma #334, Santa Fe, NM 78501; Tel: 505-986-0366; Fax: 505-
986-1 644; bioneers@ net.com.

26 *Controlled Grazing Re-search & Extension Open House*, UC Sierra Foothill Research & Extension Cen-ter, Browns Valley, Calif. Speakers: Dick Diven, Dave Pratt, Roger Ingram. Tour of new controlled grazing re-search site. $15. Contact:
Roger Ingram, (916) 889-7385.

30 *Sustaining Production and Profitability of Tree and Vine Crops. Pea Soup Andersen's*, Selma, CA. Sci-entific forum on specific is-sues affecting the future of permanent crops in Califor-nia. Featured speakers in-clude: Len Richardson, Chuck Ingels, Frank Zalom, Charles Crabb. Contact: Mark Freeman (209) 456-726 5.

NOVEMBER

4-15 *Community Supported Agriculture Course*, NEWFARMS/Rural Develop-ment Service Group, Manuelitas, New Mexico. For growers considering converting part of all of farm into a CSA, those who have been apprentices, & indi-viduals wishing to start a CSA. $500. Contact: NEWFARMS, HC 69 Box 62, Rociada, NM; Tel: 505-425-8431/5457; Fax: 505-425-8520.

4-6 *3rd Annual Research Conference on Methyl Bro-mide Alternatives*, Orlando, Fla., Clarion Plaza Hotel. Concurrent sessions on al-ternatives to methyl bro-mide for preplant, postharvest, and structural uses. Contact: Methyl Bro-mide Alternatives Outreach, 209-244-4710. Hotel: 407-352-9700.

13-15 Mapping The Future, 7th Annual Composting Council Conference, Arling-ton, VA, Sheraton National Hotel. New products/tech-nology, organics recovery! composting, processing, marketing, equipment selec-tion. Progress reports USEPA, USDA research programs. Panel, plenary, breakout ses-sions. Contact: Composting Council, Alexandria, VA 703-739-2401

DECEMBER

6-7 *California Sustainable Agriculture Working Group (SAWG) annual meeting*, Ben Lomond, Santa Cruz Moun-tains. Focus on organizing collaborative actions to pro-mote a sustainable food sys-tem , access to quality food for all. Contact: Calif. SAWG, P0 Box 1599, Santa Cruz, CA 95061; (408) 457-2815;
casawg@igc.apc.org

JANUARY

22-25 *17th Annual Ecologi-cal Farming Conference*, Asilomar, CA. Bus tour Wed.; workshops, speakers Thurs.-Sat. Contact: Com-mittee for Sustainable Agri-culture, 406 Main St., Watsonville, CA 95076; Tel: 408-763-2111, Fax: 408-763-2112.

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