



Apprenticeship Trains CSA Farmers

"I'm not worried about running out of wheat, corn, and soybeans. I am worried about running out of farmers."

Dan Glickman,
Secretary of Agriculture
July 1998

Late morning sunshine warms the UCSC Farm's row crop acreage, where David Oretsky is showing Environmental Studies student Jenny Pandol the trick to harvesting broccoli. In the shade of a nearby windbreak, Patrick Shindu of Kenya bundles carrots and beets, while local landscape gardener Thomas Witz packs chard into boxes. Nancy Vail weighs potatoes and summer squash as Rebecca Niggeman, a home gardener from southeast Alaska, checks the blackboard to see which of nearly two dozen crops still need to be harvested.

These budding farmers and their classmates have formed a partnership with community members – many of them campus employees – through the UCSC Farm & Garden's Community Supported Agriculture project. By evening, the produce they're harvesting will fill vegetable bins and salad bowls of eighty Santa Cruz households.

Community Supported Agriculture (CSA) has a simple premise: CSA farms and gardens link directly with local consumers who receive a weekly box of produce on a pre-paid basis throughout the growing season. The UCSC Farm & Garden adds a unique twist to the format: all of the produce is grown on the campus's farm by students and staff of the Apprenticeship in Ecological Horticulture, a six-month training program in organic farming and gardening. While CSA members enjoy locally grown, seasonal food, 35 students are learning what it takes to produce an array of fruits and vegetables using organic techniques – skills

that many hope to one day use on their own farms.

Each week from June through mid November, shareholders come to an historic barn on the 25-acre farm to pick up their portion of the harvest. A weekly newsletter offers recipe ideas and alerts members to the latest triumphs and challenges in the gardens and fields. CSA members are encouraged to bring their kids to visit the farm. Many take time to pick herbs and flowers from the CSA cutting garden, or wander through the fields to see how the crops are progressing. And although the shareholders may not have climbed aboard a tractor, talking with the people who grow their food has given them some insights into the challenges that farmers face.

CSA Model Attracts Apprentices

As the market for organic products expands, the industry is attracting more large-scale farmers. "Conventional growers are realizing that organics are a market to target," says Brian McElroy, certification coordinator for California Certified Organic Farmers. "They're coming in with lots of acreage and working on a conventional scale." Established organic growers are also adding to their operations, often focusing on two or three crops for the wholesale market.

But not all farmers – especially those just starting out – have the resources or desire to farm on a large scale. For them, CSA operations may be an ideal fit. "A lot of our students hope to some day own or manage small, diversified

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JON KERSEY

David Oretsky, an apprentice in 1997, now helps manage the UCSC Farm's row crop fields and instructs students in CSA production techniques.

farms," says Ann Lindsey, who coordinates the Apprenticeship training program through the Center for Agroecology & Sustainable Food Systems. "Many also want a more personal relationship with their customers than wholesale operations or even farmers markets can offer."

More than just an economic strategy, CSA projects work to bridge the gap between consumers and the people and land that provide their food. Says Lindsey, "Family farms and small farms in general are disappearing from our countryside and our culture. CSA projects are one way that community members can directly support a farm and keep it viable." Farm manager Jim Leap adds, "Education is a key component of CSA because, unlike at the supermarket, shareholders have the opportunity to learn first hand about local production systems, seasonality, and farming's perils as well as its beauties."

CSA member Jackie Hunt and her family have learned those lessons well. Says Hunt, "Being CSA members has taught us about seasons, crops, insects, and the good, the bad, the ugly and the wonderful of farming. And we've

become fans of new things, like swiss chard and sautéed beet greens."

Nancy Vail finished the Apprenticeship in 1997 and stayed on to help manage the Farm & Garden's CSA project. This year she's seen CSA members become aware of how events like El Niño can affect a farm operation. "Coming to the Farm and seeing some of the problems we've had, such as our delayed planting schedule, means the shareholders understand what it's taken to produce their shares each week," she says. "When we did our mid-season survey, many people commented about how the boxes are unbelievably bountiful, even with the weather we've been experiencing."

That type of direct feedback is one aspect of the CSA model that's especially attractive to Apprentices. Say Vail, "There's a close connection between yourself as a farmer and the consumers who are buying your produce. You're able to establish a really nice relationship with people, especially in situations where they can come to the farm to pick up their produce." Jackie Hunt agrees: "We love meeting the people who do the work — we like to see who's growing our food."

CSA Provides Benefits, Poses Challenges

Students are also attracted by the CSA model's potential economic benefits. Members are often asked to pay in advance for their share of the harvest, providing up-front capital for the farming operation. For a small-scale farmer, that type of guaranteed income and market can mean a measure of financial security.

Along with up-front payments comes a strong sense of responsibility to the shareholders. "In that way a CSA project is very different from a farmers market," says Leap. "You really feel obligated to provide a high quality box of produce with a lot of variety every week." Vail considers this the CSA



JON KERSEY

Apprentice Kim Ebry sorts potatoes for CSA boxes.

model's biggest challenge. "In our system, you have to manage more than three dozen crops, each with its own specific needs, and you have to make sure the right amounts are available each week," she says.

The Apprenticeship's CSA training prepares students to produce that type of diversity. Besides learning the basic skills of soil tillage, bed preparation, irrigation, weed control, and soil quality management, apprentices get lessons in crop planning, crop rotation, harvesting and post-harvest handling, and CSA administration, outreach and management. They take turns coordinating the weekly CSA harvests, making sure that the boxes contain an abundance of high-quality crops with enough diversity to keep shareholders happy. Apprentices also track payment schedules, produce a weekly newsletter, design shareholder surveys, and help put on potlucks and other on-Farm events.

Ann Lindsey would like to expand the existing CSA training, streamline the project's operation and create a model for other growers and consum-

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Live Earth Farm CSA

Tom & Constance Broz

Quail song and scrub jay calls mingle with the clucks of chickens at Live Earth Farm as farm owner Tom Broz talks with a group of students from the 1998 Apprenticeship course. "I was right where you are a few years ago," says Tom, who graduated from the Apprenticeship in 1995. Now Tom, his wife Constance, and a crew of six workers supply a 120-member Community Supported Agriculture (CSA) project, as well as four farmers markets and a small wholesale effort. Tom and Constance live and work on the six acre Watsonville farm, leasing an additional ten acres from nearby Pioneer Ranch.

Like many students in the Apprenticeship, Tom came to farming in a roundabout career move. "Neither of my parents were farmers, but I studied conventional agriculture in college and worked with farmers in the Peace Corps," he explains. After a six-year stint with the Environmental Protection Agency's groundwater protection program, Tom grew impatient with the "glacial" pace of change in government. "Then my son was born, and I realized I wanted a different way of life for him. The Apprenticeship provided the transition into farming."

With his Apprenticeship experience, a business plan in hand, and the support of family and friends, Tom and Constance purchased the Watsonville property. "It was an overgrazed old horse farm, with soil so hard I broke a pickaxe trying to take a soil sample," says Tom, "but it felt good here." The hillside acreage looks out across the Pajaro Valley's patchwork of small farms and orchards. "Being around other small-scale growers was part of the appeal of farming here," he adds. "There are a lot of other organic farmers and most of them are very supportive."

Tom jumped into the CSA operation his first season. "It was clear to me from working with the CSA during the Apprenticeship that it was a very powerful concept. CSA is more than a marketing tool – it's a way to connect with the people buying your food," he says. Twenty-five shareholders, many of them other parents from his son's day-care facility, signed on with the fledgling operation. "I was honest with them – I told them this was our first year of farming and what our plans were." During the fall and winter, Tom, Constance and three workers hand-dug two acres of beds, built hoopouses for raising seedlings, and

installed the irrigation system. "It was intense, but we pulled it off that season."

Live Earth Farm's CSA membership now stretches from Salinas to San Jose, with most members clustered in the Aptos and Santa Cruz area. Some shareholders come to the farm for their produce, but most members pick up their weekly shares at local drop-off sites. San Jose members visit Live Earth's Saturday farmers' market stand at Willow Glen to get their weekly box of produce. On-farm events centered on seasonal changes – including spring equinox, summer solstice, and fall harvest festivals – draw shareholders to the farm. "Those gatherings put people in touch with the place where their food is grown and make our members more aware of the seasons," says Tom. "It gives them the idea that things are changing – that it's time for chard to replace tomatoes in their boxes."

Live Earth Farm strives to include plenty of variety for its shareholders, but Tom has also learned the importance of providing an abundance of "the basic crops" in season – including potatoes, onions, garlic, lettuce, greens, beets, carrots, cabbage, broccoli, tomatoes and fruit. Asked how he decides what to put in the box, he says, "I judge it by thinking, 'What would a family of four need and like?' Right now, we're including about twenty items in a box."

Creating that type of diversity drives the farming system. "We grow a lot of crops because of the CSA – when one crop starts to fade out or doesn't mature as quickly as we'd planned, something else always kicks in. Working with that many crops means you'll always have a good box," explains Tom. The Apprenticeship course helped convince him that growing a range of crops was not only desirable, but possible. "I got to see that type of system in action at the Farm & Garden – it showed me that it could be done."



ers. "Right now, our efforts to expand the training are focused on raising funds for a CSA manager and instructor to take the project to a new level," says Lindsey. The first step toward this goal came in the form of a \$30,000 challenge grant from the Foundation for Deep Ecology. This was followed by a \$15,000 grant from the Arkay Foundation. "We'll continue to seek additional funding to expand and improve the CSA component of the Apprenticeship course," she says.



CINDY RICHTER

Training apprentices to start their own CSA projects will help meet the need for new farmers who can teach consumers about the value of local food production and the critical role that farmers play. Says Vail, "So many people who get interested in organic farming want to be part of a sustainable food system and want to strengthen their connection to the community – the CSA brings those things together."

– Martha Brown

For the Farmer

California Growers and Researchers Consider Tillage Options

till: to work (the soil) by plowing and planting, for raising crops

Tilling the soil is as old a practice as agriculture itself, but concerns over tillage's impacts on soil organic matter levels and soil quality are prompting researchers and farmers to consider new ways of farming. In many parts of the U.S., no-till, low-till and other minimum or conservation tillage (CT) techniques are widespread. In no-till systems, growers plant directly into the residue of a previous crop or a killed cover crop without first tilling the field or turning under the residue. In minimum or CT systems, part of the residue may first be incorporated into the soil before planting.

Some of the potential benefits of minimizing tillage may include higher soil organic matter levels, less soil compaction and erosion, improved water infiltration, gas exchange, and nutrient cycling, and lower fuel and labor costs. Minimum tillage may be especially appropriate for organic systems – long-time CT researcher Ron Morse of Virginia Tech has noted the paradox between organic farming's goal of building the soil by increasing soil organic matter, while at the same time losing organic matter through aggressive tillage.

Although most CT has been done in grain crops, recent equipment advances have brought broader applications of the technique, including its use in vegetable row crop systems. In April, growers, researchers, and consultants

gathered in Five Points and Davis to consider tillage options for California farms. In meetings organized by Jeff Mitchell, a Vegetable Crops Specialist with UC Cooperative Extension, participants discussed the relationship between tillage, soil organic matter and soil quality, and the pros and cons of reduced tillage as it might be applied to California production systems.

Tillage Affects Organic Matter Levels

Most California vegetable growers rely on tillage operations to incorporate plant residue and cover crops, level fields, prepare beds, and control weeds. In areas such as the Salinas Valley, where tillage is frequent year-round, California soil scientists are finding that each tractor pass incurs both environmental and economic costs.

A report presented at the meetings by Louise Jackson, a professor in UC Davis's Vegetable Crops Department, notes that in the Salinas Valley, "There are serious problems with water and soil quality. Nearly half the wells in the upper aquifer exceed the public health drinking water standard for NO₃-N [nitrate]... Levels of soil organic matter have decreased by half since the area was dry-farmed at the turn of the century. Intensive management undoubtedly contributes to these problems."¹

Jackson has found that tillage may trigger loss of soil organic matter and the release of nitrate from the soil system. Based on her study of the "pulses" of microbial activity that immediately follow tillage, she believes that soil microorganisms use available carbon freed up from soil organic matter by the tillage process. Although microbial activity may briefly increase following tillage, the burst of activity quickly declines, as does the organic carbon and nitrogen content of soil organic matter. She found that tillage's long-term effects include a drop in

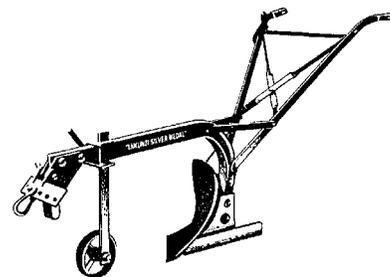
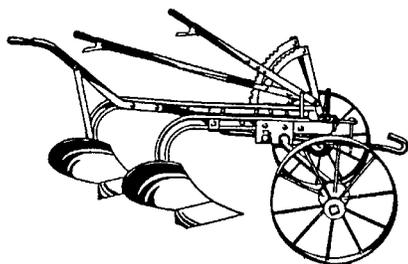
overall levels of soil organic matter and an increase in NO₃-N accumulation, which "... consequently increase losses by leaching and denitrification when subsequent rainfall or irrigation occurs."

Don Reicosky, a soil scientist with the U.S. Department of Agriculture in Morris, Minnesota, has also studied the effects of tillage on carbon loss. He reported that moldboard plowing fractures and inverts the soil, opening it to rapid CO₂ and oxygen exchange. Incorporating residue into the soil feeds a microbial population explosion, which in turn "burns up" organic matter. According to Reicosky's presentation, "The large gaseous losses of soil carbon following moldboard plowing compared to the relatively small losses with no-till have shown why crop production systems using plowing have decreased soil organic matter and why no-till or direct seeding crop production systems are stopping and reversing that trend."²

CT System Studies Underway

Despite their apparent advantages in terms of protecting and improving soil quality, no-till and CT have only recently been studied in California vegetable row crop systems. In describing such applications, Jeff Mitchell says, "The concept of no-till mulch systems makes use of off-season or in between season cover crops that are sown on pre-shaped beds. Just before vegetable crop transplanting, the cover crops are

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From the Director

I am writing these notes from a hotel room in Beijing, China, where I am participating in what is called the "Asia-Pacific High-Level Conference on Sustainable Agriculture." It is a small gathering organized by AAAS (American Association for the Advancement of Science) and CAST (Chinese Academy of Science and Technology) that has brought together representatives from 11 different countries from Asia and the Pacific Rim.

Two days were spent hearing presentations from each of the participants on a variety of aspects of sustainable agriculture. Yesterday, we ended the conference by developing an action plan and resolution to push an agenda for increased multilateral collaboration in sustainable agriculture research and application across the region. This resolution will be taken back to the respective governments and professional societies for further action. I will be one of a planning team working to finalize the action plan and begins its implementation.

A number of things struck me during this meeting. Most notable was how influential the 1992 United Nations Conference on Environment and Development (the Rio Summit) has been in shifting the awareness of many Asian countries to the severity of the environmental problems facing the region and the pressing need to develop more ecologically sound agricultural systems. And secondly, how the present economic crisis in Asia has caused many countries to re-prioritize food self-sufficiency and reduced reliance on imports. To achieve this in many cases will require re-prioritizing national support for agriculture and food systems research and development, much of which had been lost over the past 10-20 years.

I learned a great deal from the ideas and approaches presented by the other delegates, many of which have relevance to issues of sustainability in the U.S. and California, in particular. I look forward to the Center for Agroecology & Sustainable Food Systems (the Center) and UC Santa Cruz continuing

to be key participants in the development of collaborative ventures that will emerge from this conference.

As you can see from the articles in this issue of The Cultivar, staff of the Center have continued to carry out a wide range of activities focused on moving us towards more sustainable agriculture and food systems. Having just completed my first year anniversary as the Center's Director, I continue to be impressed by the amount and quality of work done by the Center, and in collaboration with other individuals and organizations. Nonetheless, I am also keenly aware of the need to improve our resource base and facilities to enable us to be more effective and at less personal cost to the staff.

In the next issue of The Cultivar, I will describe the outcome of the strategic planning process we have undertaken, and highlight areas we will be targeting for future resource development. Overall, it has been a busy, challenging, and exciting year for me at the Center, and I look forward to year two with great anticipation.

– Carol Shennan

killed mechanically and/or chemically to provide as thick a surface mulch as possible."

Mitchell and other UC researchers are studying no-till and CT in a variety of crops and settings (see table at right). Results of their work on processing tomatoes, although preliminary, have shown that yields comparable to a standard herbicide/cultivation program were achieved with the rye/vetch, triticale/vetch and snail medic mulches. They also found significantly higher numbers of earthworms in the second consecutive season of no-till management. Researchers are also evaluating the weed control, water conservation and long-term potential benefits to soil quality of mulch practices in the processing tomatoes field trial and in other crop trials at UC's West Side Research and Extension Center in Five Point, CA. Strip tillage (in which a small area on top of the bed is tilled and planted while the rest of

UC Studies on No-Till and CT Practices Currently Underway		
Crop	Location	UC Contact
Processing tomatoes	Central San Joaquin Valley Sacramento Valley	Jeff Mitchell Tom Lanini Gene Miyao Steve Temple
Fresh market tomatoes	Central San Joaquin Valley	Jeff Mitchell
Bell peppers	Hollister, CA	Richard Smith
Broccoli	Central San Joaquin Valley	Jeff Mitchell Michelle Le Strange
Mixed vegetables	Coachella Valley	Jose Aguiar Milt McGiffen Jeff Mitchell

the bed is undisturbed) and direct-seeding practices are also being investigated.

Based on UC studies and on CT

research done on the East Coast, the following components have been identified as key to successful no-till mulch production:

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Center Notes

☺ Center members hit the road this spring and summer, giving talks and organizing symposia at local, national and international conferences. In June, Center extension specialist Sean Swezey helped coordinate an Organic Apple Production Short Course offered through UC Davis's University Extension program. This two-day program, which attracted more than fifty apple growers and apple industry members, was one of the first University of California programs to focus on organic production.

Patricia Allen, the Center's senior agricultural issues analyst, made several presentations at the 1998 Joint Annual Meeting of the Association for the Study of Food and Society, and the Agriculture, Food, and Human Values Society in San Francisco this June. Other Center participants at the meeting included Swezey, faculty affiliates Margaret FitzSimmons and David Goodman, and research associate Erle Ellis.

In July, Center faculty affiliate Steve Gliessman organized and spoke at a symposium on Agroecology & Sustainability at the INTECOL meeting in Florence, Italy, an event organized every five years by the International Association for Ecology. The symposium brought together an international group of researchers to discuss their studies on the sustainability of specific agricultural practices, and to develop a strategy for helping farmers make the transition to sustainable farming systems. Center research associates Joji Muramoto and Erle Ellis, and graduate students Laura Trujillo and Carlos Guadarramas-Zugasti also chaired sessions and gave talks at the symposium (for more information on the INTECOL meeting, see <http://www.agroecology.org>).

In August, Allen and Swezey were invited to participate on a panel on new developments in the political ecology of food and agriculture at the Rural Sociology Society's Annual Meeting in Portland, Oregon. At the end of the summer, Allen gave the keynote address at the Agri-Food VI Conference

at Central Queensland University in Australia. Her presentation was on issues of sustainability, sustenance, and resistance in the U.S. agri-food system

☺ Santa Cruz community members turned out in force to hear about "The Community Connecting with Sustainable Agriculture," an event organized by Center outreach coordinator John Fisher and members of the Community Alliance with Family Farmers (CAFF). Patagonia hosted the gathering at its downtown store, where members of the many Santa Cruz area groups involved with sustainable agriculture presented information on their organization's work. Besides the Center and CAFF, participating groups included the California Certified Organic Farmers, the Homeless Garden Project, Committee for Sustainable Agriculture, and the California Sustainable Agriculture Working Group. Mark Lipson of the Organic Farming Research Foundation and the Molino Creek Farming Collective updated the audience on alternative agriculture research and on the latest developments in the USDA's effort to establish rules that will create a national definition of the term "organic" and a set of standards for organic farming (see below).

☺ Keith Jones, head of the US Department of Agriculture's National Organic Program, joined members of sustainable agriculture and organic certification groups at an informal lunch meeting held this summer at the UCSC Farm. Jones spoke about the enormous public reaction to the USDA's proposed organic rules and outlined the department's next steps in addressing the more than 250,000 comments received. Jones's goal is to develop a rule that is "... clear, concise, and stringent so that when we go to the marketplace we'll have something we can stand behind. That's what we've heard from the public - they want stringent standards."

According to Jones, if he has his way the new draft of the rule will look "totally different" from the original. Says Jones, "Two or three years from now we'll look back and say that this controversy over the proposed rule is the best thing that has happened to the organics industry. It has unified the industry and consumers."

☺ John Farrell, a long-time Center staff member, has accepted a position as land manager at a private property in Santa Cruz County. Initially hired to run the Center's research fields, John has been a key member of the Apprenticeship training staff and manager of the Farm's raised-bed garden area for the past five years. John helped develop the Farm's experimental windbreak and the nutrition garden, and has been responsible for the ever-growing assemblage of medicinal herbs, dye plants, and other special collections on the Farm. Most of all, he has been a remarkable colleague, teacher, and horticulturist, whose patience, knowledge, and wisdom have enriched the lives of hundreds of students through the years. He will be very much missed, and we wish John the best in his new career.

The Center is now developing plans to staff the apprenticeship training program position. If you're interested in being notified when the official job announcement is made, please send your mailing address to Ann Lindsey, CASFS, 1156 High St., Santa Cruz, CA 95064, or send an email message containing your mailing address to alindsey@cats.ucsc.edu.

☺ The Center recently received a \$15,000 grant from the Monterey, California-based Arkay Foundation in support of the Apprenticeship in Ecological Horticulture's CSA Training and Demonstration Project (see cover story). The funds will help match a challenge grant to the Center made by the Deep Ecology Foundation in support of the CSA project. Many thanks to president Stephen Kaun and other members of the Arkay Foundation.

Readers: Please Take Note

- ✓ Please fill out and return the Renewal Form and Reader Survey on page 15. You must return this form in order to remain on *The Cultivar's* mailing list.
- ✓ The Santa Cruz area code has been changed from 408 to 831.

Community Food Security and Federal Food Programs: Finding Common Ground

Food and agriculture are enduring moments of social organization... We all have to eat.¹

More and more, the term “food security,” comes up in the world of ideas and practice dedicated to developing sustainable food and agriculture systems. What does it mean and why are we hearing about it now? The Community Food Security Coalition² defines food security as: “all persons obtaining at all times a culturally acceptable, nutritionally adequate diet through local non-emergency sources.” Community food security focuses on the food needs of low-income people on the one hand and the need for local food production, sustainable agriculture, and local/regional food systems on the other.³ These are not always compatible and may even be contradictory. The Community Food Security coalition is struggling with the question of whether community food security should be defined as a low-income security of food strategy or primarily concerned with developing sustainable approaches to local food production and distribution with less regard for the needs of low-income populations. This article describes the approach of community food security and raises some questions about how the movement can meet its own goals of simultaneously meeting the food needs of low-income people and developing local food systems.

The Path to the Present

While some anti-hunger efforts were initiated during the Depression, contemporary food programs date to the late 1960s, when hunger was “discovered” in America. Programs such as food stamps, school lunches, and supplemental food for women, infants, and children (WIC) have comprised the primary effort toward food security in the United States. For a time, these programs made significant improvements in food security for low-income people. Eventually, however,

the slowdown of the postwar economic boom, the breakdown of the political contract between capital and labor, and the upsurge in movements of the right combined to create a new food-security crisis.

In the 1980s many people’s economic conditions worsened; low-income people lost gains they had made and many middle-class families became newly poor. Simultaneously, policymakers began cutting safety-net food programs. In nearly every advanced industrialized country the state has been shedding its responsibilities for social welfare. In five of these states – the U.S., the U.K., Canada, Australia, and New Zealand – governments have been changing welfare systems while neglecting the growing issue of hunger and food insecurity.⁴ In the United States, the 1996 changes in food programs represent the largest cutbacks since they were first established in the U.S. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (welfare reform) made substantial cuts to the three largest social welfare programs in the U.S. – Aid to Families with Dependent Children, Supplemental Security Income, and the Food Stamp Program. Fully half of the projected budget savings from the 1996 welfare bill will come from reduced expenditures for the food stamp program,⁵ which has been the primary source of food assistance for the poor. Another \$2.9 billion in savings is realized by cuts to child nutrition programs. Policymakers have elevated the role of the private emergency food sector, extolling volunteerism and charity, expecting them to fill the gaps caused by the cuts. Private sector emergency food programs stepped up efforts to try to fill the increasing food needs.

Recognizing deteriorations in food security and too few efforts to combat it, activists developed the new approach of community food security in 1994. The concept and practice of community food security has spread

quickly throughout the country. During discussions around provisions for the 1995 farm bill, community food security emerged as the conceptual basis for advocating changes in the food system. The proposed 1995 Community Food Security Empowerment Act was endorsed by more than 125 anti-hunger and sustainable agriculture organizations, among other groups.⁶ While they were reducing funding for traditional federal food programs, policymakers authorized funding for a new community food security program in the 1996 farm bill. Despite the climate of “fiscal crisis,” this legislation established a competitive grants program for community food projects, authorizing \$16 million over seven years. The national Community Food Security Coalition was formally established in February of 1996, and by summer of 1998 the organization had more than 400 members and a newsletter mailing list of over 4000.

Local vs. Low-Income Food Needs

The differences between traditional anti-hunger and community food security approaches have been summarized by Winne, Joseph, and Fisher,⁷ who are among the founders of the community food security movement (see table, next page). This comparison reveals different basic orientations of the two movements which, in turn, prescribe quite different strategies for achieving food security. As opposed to the concept of hunger, which measures an existing condition and is defined in terms of an individual’s insecurity, community food security has come to represent a community-based and prevention-oriented framework. “It seeks to evaluate the existence of resources, both community and personal ... to provide an individual with adequate, acceptable food.”⁸

Traditional food programs are based on the idea of food entitlements, while community food security emphasizes food self-reliance. For the community

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Comparison of Community Food Security and Anti-Hunger Concepts

	Anti-Hunger	Community Food Security
Model	treatment; social welfare	community development
Unit of Analysis	individual/household	community
Time Frame	shorter-term	longer-term
Goals	social equity	individual empowerment
Conduit System	emergency food, federal food programs	marketplace, self-production, local/regional food
Actors	USDA, HHS	community organizations
Agriculture Relationship	commodities; cheap food prices	support local agriculture; fair food prices for farmers
Policy	sustain food resources	community planning

Adapted from Winne, Joseph, and Fisher (1997:5)

food security movement, traditional programs such as food stamps and food banks are seen as stop-gap, failing to address the need for developing long-term approaches to food security. While anti-hunger programs have been necessary precisely because the market has failed to ensure food security, community security activists see the market as essential for achieving food security. "Community food security projects emphasize building individuals' abilities to provide for their own food needs rather than encouraging dependence on outside sources such as food banks or public benefits."⁹ These priorities are reflected in the projects funded by the USDA Community Food Projects Grants; of the projects funded, 88 percent contained a substantial entrepreneurial development component. Thirty-eight percent had a component that focused on public education and planning, (i.e., developing a community or regional food council and/or educational projects). Providing food for people outside of the market system through local self-reliance was featured 19 percent of the projects. Working with existing Federal food programs was on the agenda of only one of the projects funded.

Part of the impetus for the focus on entrepreneurial activities is providing relief from the vagaries of food assistance programs. Rules change, funds are cut, volunteers tire. These fluctuations profoundly affect the food security of the poor, yet they have no control over the changes. Community food security activists want to reduce this vulnerability by creating opportunities for low income people to define

and create food security for themselves. While most everyone would champion the idea of self-determination, there are reasons to be cautious about the degree to which the scope and depth of food security problems can be ameliorated through community-based, entrepreneurial efforts.

Community Food Systems

Community food security works to build a community-based food system grounded in regional agriculture and local decision-making. The vision of community food security is based on "the need for a fundamental change in the food system and the recognition that communities need to be empowered to become food secure."¹⁰ Poppendieck¹¹ writes:

If hunger and undernutrition are a function of people's lack of control over the food production and distribution system, then it is essential that empowerment strategies are developed in order to reassert ownership. Community development and locally based solutions are fundamental to the process of change.

The community food security movement is focused less on large-scale state action, emphasizing decentralization, community action, local decision making, and finding a sense of place. The movement seeks to re-link production and consumption and embed them in a local framework. The ideas that "place matters" and "scale matters" have been crucial to the community food security approach.¹² As to where

food should come from, the definition of community food security substitutes the words "local, non-emergency sources" for "normal channels" in traditional definitions of food security. Traditional anti-hunger programs generally have not focused on how or where food is produced¹³ and most major food program decisions have been made at the federal level.

A major innovation of the community food security movement has been its insistence on a whole-systems approach to food security. Community food security is at its core an interdisciplinary, integrated approach. It critiques traditional approaches to food security as being fragmented and lacking an overarching vision and coherence, asserting that these pose a major obstacle to the development of long-term food security and sustainable food systems.¹⁴ In opposition to this approach, community food security is based on a food systems approach to comprehensive problem identification and solution, and the linkages among them. This is a significant departure from the highly scientized and statistical approaches to hunger, nutrition, and toxicology.

The approach of community food security has the potential to completely revise urban planning approaches, which have never focused on food provision. While cities and counties have departments that address basic needs such as water, housing, health, and transportation, no municipality in the U.S. has a department of food.¹⁵ Community food planning and community development are integral to the projects of community food security. Often a key step in a community food security project is conducting an assessment of the food system. Using a foodshed analysis approach¹⁶ can have profound educational as well as prescriptive value. Community food security provides people with an opportunity to participate in projects in which they feel they can make a difference; to make concrete change in time and space that can be realized and seen.

At the same time, the focus on local action may also distract attention from the larger-scale dynamics of food insecurity. While problems of food insecurity are manifest at the local level, they are not necessarily caused at the

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Research Updates

☉ Nitrogen is often the limiting factor in crop growth and yield, but overcompensating with heavy applications of nitrogen-containing fertilizers can lead to groundwater pollution and health risks. Plants take up and store nitrogen as nitrate, concentrating the compounds in leaf and stem tissues. In the body, nitrate is metabolized to nitrite, a compound which at high levels can trigger “blue baby” syndrome (methaemoglobinaemia) and can combine with various amines to create potential carcinogens (N-nitroso compounds).

Although drinking water in the U.S. is often tested for nitrate, Europeans have long recognized that high nitrate levels in food can also pose health risks. Most European governments have set limits for nitrate levels in leafy green vegetables and are now establishing European Community standards for nitrates. The U.S. public health service has recommended limits for nitrates in some vegetables, but there are as yet no standards in place nor any testing program to monitor nitrates in U.S. crops.

Because nitrogen fertilizer inputs are a major factor influencing nitrate contents of vegetables, Center assistant researcher Joji Muramoto is interested in how different farming and fertilization practices affect nitrogen uptake in plants. Ideally, a cropping system would produce an optimum yield of vegetables containing low foliar nitrate levels; identifying farming practices which strike that balance is one of the goals of Muramoto’s work. Studies in Europe have shown that organically grown crops have lower nitrate levels than those grown with conventional fertilizers. However, overfertilization with any input, including those approved for organic systems, can lead to high nitrate levels in crops and groundwater.

Funded by a grant from the Organic Farming Research Foundation, Muramoto is comparing lettuce and spinach crops produced both organi-

cally and conventionally. The study analyzes nitrate levels in samples purchased from natural food stores, farmers’ markets, and mainstream grocery chains. Muramoto is also collecting crops and information directly from organic and conventional farms. He is particularly interested in how fertility regimes affect foliar nitrate levels, and has set up an experiment this fall on the UCSC Farm to test the effects of different types and amounts of organic inputs (bone and feather meals, compost, Chilean nitrate alone or in combination) on spinach crops.

Muramoto began collecting data in January of 1998, and plans to complete his analyses this winter. Results from the study will appear in an upcoming issue of The Cultivar.

☉ This cotton season was, in Center extension specialist Sean Swezey’s words, “the weirdest cotton weather year on record” for the San Joaquin Valley. Late spring rains delayed planting by a month and a half, and cold weather slowed the crop’s early growth, leading to a very late-developing and smaller-than-normal crop.

Swezey, research assistant Polly Goldman, and lab assistant Janet Bryer have been monitoring the cotton crop’s development as part of their work with the Biological Agriculture Systems in

Cotton (BASIC) project. The BASIC group includes Madera, Merced, and Fresno county organic growers and growers using minimum pesticide inputs; their fields are compared with “check” fields being managed with conventional methods.

The Center research team has been monitoring pest and beneficial abundance in both BASIC and check treatments. Although aphid and thrip numbers have remained low in all treatments throughout the season, the researchers found higher numbers of mites in the BASIC fields, as well as somewhat higher numbers of lygus bugs. Beneficial insect numbers (mostly big-eyed bugs, *Geocoris* spp., and minute pirate bugs, *Orius tristicolor*) have been higher in BASIC fields throughout the 1998 season. Despite the higher numbers of pests, development of plants from the BASIC fields closely paralleled that of plants from check fields in terms of node number, plant height, and number of fruiting branches. However, plants in the BASIC treatments have maintained fewer bolls in the plants’ bottom five fruiting positions.

Weed control is one of the most challenging aspects of organic cotton production. At a BASIC field day held this spring, David Vradenburg Sr. of Bezerides Brothers, Inc. demonstrated

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JON KERSEY

Researchers Janet Bryer (left) and Polly Goldman collect data on cotton plant development as part of the BASIC project’s field studies.

Bezzlerides and Texas rod weeding tools on young (2.5" tall) cotton plants. Based on the demonstration, Swezey believes that these mechanical weeding implements could be very effective in organic cotton systems, "although learning to use them is tricky," he says.

Now in its third season, the BASIC project will continue for another two years, by which time the research group hopes to develop a clear picture of the impacts of reduced pesticide input and organic production methods on cotton yields and pest and beneficial populations.

☺ The garden symphylan, also known as the garden centipede, is a tiny, active soil pest which feeds on developing plant roots, sapping the plant of nutrients and stunting or killing germinating seeds and transplants. For the past several years, farm manager Jim Leap has battled these pests at the UCSC Farm, discovering that the same conditions that plants thrive on – moist soils high in organic matter – seem to encourage symphylan populations.

Late-season El Niño rains exacerbated the symphylan problem this year. Leap and his staff had to turn under an overly mature cover crop of bell beans, vetch and oats into very moist, cool soil. Forced to plant before the cover crop had fully broken down, Leap found that the symphyllans moved directly from feeding on the decomposing cover crop to feeding on the germinating seeds and young transplants, particularly those of cucurbits, spinach, beets, and broccoli. Even weed seeds were a target – where symphylan populations were high, the ground was left bare. Leap also noticed that symphylan pressure is greatest where root crops had been left in the soil over the winter. In contrast, a field that had been left to dry fallow in order to control field bindweed showed little symphylan pressure. A piece of ground heavily infested with symphyllans was left in dry fallow this summer to see whether the same control occurs next season.

Based on responses to last issue's information request (The Cultivar, Vol. 16, No. 1, page 8), Leap has also planted small patches of sudan grass and sordan (and sudan/sorghum hybrid) in heavily infested areas, then turned it under and planted sweet corn. He also plans to plant vetch and annual

rye as a winter cover crop. Says Leap, "The reason I'm looking at those two crops is that I can mow them in the winter or early spring to minimize biomass production, and they will continue to grow. I think there is a direct link between cover crops and symphyllans, and I think it is important to incorporate the cover crop early enough in terms of C:N ratio to get rapid decomposition." He is also interested in exploring minimum-tillage as a possible symphyllans control (see tillage article, page 4). If you have information on symphyllans control, contact Leap at (831) 459-3375, 459-2799 (fax), or send email to leap@zzyx.ucsc.edu. Our thanks to those who responded to our earlier request for information.

☺ Striking a balance between the needs of farmers and those of wildlife is the goal of Center director Carol Shennan's ongoing research efforts in the Tulelake National Wildlife Refuge on the California-Oregon border. One of the country's critical waterfowl habitats, the Tule Lake region is also home to potato, sugar beet, and horseradish farms, many of which are located on leased land within the refuge.

In the 1980s, wildlife refuge managers began to notice a drop in wetland productivity and a concurrent decline in bird populations using the refuge. Years of flood control management had curtailed the natural ebb and flow of water which occurs in a pristine wetland. As a result, the refuge's marshes have stagnated, leading to a drop in plant and animal diversity, and limiting the food supply and habitat for wildlife. At the same time, the region's growers face their own problems. Buildup of weeds and pests, particularly disease-causing nematodes, as well as declining levels of soil organic matter and fertility have forced growers to invest heavily in nematicides, fertilizers, and other inputs.

Shennan hopes to address these issues by having farms and wetlands trade places, either every few years or every 20-30 years. The long rotation is designed to allow mature marsh to develop in the wetland phase and to provide extended periods of crop production. The short cycle rotation is designed to create early stages of marsh succession with a rapid transition into farming possible given the absence of

significant perennial vegetation. In this way, wetlands benefit from periodic disturbance in the form of crop production, enabling marsh succession to begin again upon reflooding and habitat diversity to be increased.

Conversely, croplands are expected to benefit from flooding cycles through suppression of soil pests and diseases and increased fertility and organic matter from the decomposition of wetland vegetation.

Working with area farmers, refuge managers, environmental groups, UC Cooperative Extension and Federal agencies, Shennan is studying pilot sites undergoing either transitions to/ from long-term cropland to long-term wetland, or a short-cycle rotation of 3-4 years in each phase. To date, excellent seasonal wetlands have been successfully established in 1-3 years following conversion from cropland, and even a single season of flooding has been found to eliminate nematodes from badly infested fields.

Furthermore, bird use of the newly created wetlands has been high, both during fall and spring migration and by summer residents. It appears, however, that water quality could be negatively impacted by drainage/flooding cycles, depending on the timing and methods of drainage used.

Shennan and others are currently collating information from the pilot sites, and for the basin as a whole, to create an assessment framework to determine the benefits and disadvantages of different refuge management scenarios. Data collection will continue for another two years and help in the development of future refuge management plans.

☺ Annual and perennial non-crop species which attract beneficial insects or "trap" pests may be one tool growers can use to limit the need for synthetic insecticides. In November of 1998, Center researchers Sean Swezey and Polly Goldman initiated a "farm-scaping" study using non-crop plantings at three strawberry operations. Both perennial and annual native and non-native species were planted to test their effects on populations of the strawberry pest *Lygus hesperus* and on beneficial insects. The project is funded by the California Environmental Protection Agency's Department of Pesticide Regulation.

The farmscape design varied slightly from site to site: at the Santa Cruz farm, perennial hedgerows of native species and a strip of annual native and non-natives ("good bug blend") were planted along the field edges. At the Elkhorn Slough and Prunedale sites, the perennial borders were planted along the field edges, with the good bug blend included in the strawberry field, parallel to the crop rows.

During the spring, summer, and early fall, Goldman, field assistant Janet Bryer, and UCSC interns John Batley and Amy Griggs collected insect samples from the perennial borders and from the rows of good bug blend. They also sampled strawberry plants located 1, 5, and 20 rows from the farmscapes in order to see how the farmscaping plants affected pest and predator populations in the strawberry crops. At each site, control areas and strawberry rows that had not been farmscaped were sampled for comparison.

Swezey and Goldman found that lygus numbers were higher in the perennials and in the good bug blend than in the control areas at each site. Lygus numbers in the strawberry rows immediately adjacent to the farmscape plantings were significantly higher than those from the same rows in the control sites. Based on this result, Swezey and Goldman feel that good bug blend might be an effective trap crop for

lygus; growers could concentrate lygus in the farmscaped areas, then treat the farmscapes with natural enemy releases, mowing and plant removal, or conventional or organically acceptable insecticides, thereby cutting back on the need to treat the crops themselves. The researchers also found that populations of some beneficial species, including spiders and parasitic wasps, were higher in the farmscapes than in the unplanted control sites.

Swezey and Goldman plan to continue the farmscaping research next season, and hope to add additional sites to the study. Goldman would like to release *Anaphesiole* (a parasitic wasp of *Lygus* eggs) regularly throughout the season as an additional lygus control.

Resources

Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control, by Mary Louise Flint and Steve Dreistadt of UC's Statewide Integrated Pest Management Project, covers the basics of understanding and using biological control, as well as offering detailed information on natural enemies of a variety of pests. Thoroughly illustrated with line drawings and color photographs, the 164-page guide addresses ways to integrate biological control with other control techniques, including chemical, cultural, mechanical, and physical pest control practices. Chapters cover the natural enemies, parasites and predators of plant pathogens, nematodes, weeds, and arthropods, and suggest strategies for monitoring, enhancing, and conserving natural enemies. A "Quick Guide" enables readers to easily match specific natural enemies to specific pests. This guide will be a useful resource for gardeners, farmers, landscapers, pest control advisers, and students. *Natural Enemies Handbook* (DANR Publication 3386) is available for \$35 (soft cover) or \$50 (hardbound) from the University of California, DANR Communication Services – Publications, 6701 San Pablo Ave., Oakland, CA 94608-1239, or call 800/994-8849 or 510/643-5470(fax). Send e-mail inquiries to danrcs@ucdavis.edu.

Managing Cover Crop Profitably (2nd edition), produced by the USDA's Sustainable Agriculture Network (SAN), details practical, field-proven cover crop practices based on the latest field trails, lab tests, and on-farm experiences from every region of the U.S. It includes management details such as seeding rates, as well as broader considerations of how to design rotations to maximize benefits. The 212-page book includes comprehensive chapters and range maps on the 18 most promising cover crop species, as well as lists of seed suppliers, expert contacts, and other cover crop publications. *Managing Cover Crops Profitably* is available for \$19.00 from Sustainable Agriculture Publications, Hills Building, University of Vermont, Burlington, VT 05405-0082. Call 301/504-6425, or send email to san@nal.usda.gov for information.

On Good Land: The Autobiography of an Urban Farm, by Michael Ableman, describes the author's relationship with a unique organic farm. Surrounded by urban development in suburban Santa Barbara, Fairview Gardens is a remnant of the small farms and orchards that dominated the landscape just twenty years ago. Ableman chronicles his efforts to preserve this reminder of the area's agricultural roots, in the process creating a valuable source of healthy food, outdoor education and community pride. He addresses the importance of sustainable agriculture and of preserving our fast-disappearing agricultural heritage. *On Good Land*, produced by Chronicle Books, is available for \$18.95 in bookstores.

Worm Digest, a project of the Edible City Resource Center, provides the latest information on worm composting and worm technologies for organic waste utilization and soil enrichment. This 32-page quarterly newsletter includes practical information on integrating worm composting into home gardens, school recycling programs, and farm settings. Columns include Bookworm Review, Kids' Corner, CyberWorm (websites), Worm Workers, International Worm News and more. Subscriptions for \$12 per year are available by check payable to Worm Digest, PO Box 544, Eugene, OR 97440, 541/485-0456.

JON KERSEY



Janet Bryer collects insect samples as part of a strawberry farmscaping study.

Food Safety Net

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local level but are rooted in larger, even global, political economic structures. To the extent that problems are not caused at the local scale, they cannot be completely resolved at that level. In addition, localism can become a very conservative goal that allows people to concentrate social and economic problems in particular places and not take responsibility for problems of those in other geographic places.¹⁷ Anti-hunger activists have struggled against this trend by working to stop block granting of federal food programs in the 1996 welfare legislation because they believed local support for food assistance would be lessened and provided more sporadically or preferentially. Yet in the U.S. Secretary of Agriculture's announcement of the Community Food Project grants, he said, "These grants will enable 13 communities to implement their own ideas for helping their neighbors." This sounds very much like how hunger relief was supposed to happen pre-federal food assistance programs. At that time the "American way of relief was exemplified by self-reliant communities of neighbors taking care of their own."¹⁸

The notion that communities will make better decisions about food systems is based on an expectation of cooperation among groups with different material interests. But it is unclear how the "community" decides what its priority issues are. A community can never be completely homogeneous in its goals, since social actors have different material and cultural interests as a result of the social spaces they occupy as producers or consumers, men or women, rich or poor. The community food security model, for example, places great emphasis on protecting local agriculture and building links between farmers and consumers. But one cannot assume that these groups have interests in common, no matter how much we wish they did. Bringing groups with different material interests together in community food security coalitions can be extremely difficult. For example, Dahlberg¹⁹ found that local food policy councils with too much emphasis on hunger issues tended to not be successful.

It is also unclear how reducing the scale of decision-making will give

excluded people voice and power they have not had at higher levels. Those with resources have greater power. But the hungry are those with the least political power. They are the poor, mostly women, children, ethnic minorities, and the elderly.²⁰ Local communities embody the same power asymmetries present at the national level, and may even magnify them. In addition, the presumption that everyone can participate (much less equally) is a magician's illusion. At all scales of decision making, the audibility of people's voices is modulated by cultural relations of power. People whose perspectives, ideas, and proposals get heard are often the most aggressive, loudest, and most confident, not necessarily those with the best ideas. Cultural traditions have rendered women relatively silent.

Working only at the local level is not only insufficient to rectify power imbalances that cause material inequity, it may actually be counterproductive. The disenfranchised have turned to the federal government for relief often precisely because progressive change was impossible at the local level or because local elites persisted in denying them rights. The only substantial gains achieved against hunger are the result of actions at the federal level. In the South it took national legislation to overcome local preferences for racial segregation. "The realities of southern power dictated that organizers had to do more than promote salience and efficacy at the grassroots. Change necessitated intervention from the North."²¹ As Lewis²² points out, local politics are just as likely to be dominated by "grasping oligarchies" as by "equality-minded citizens' councils."

Alternative Food Production and Distribution

Community food security projects often include the development of practical economic alternatives to the current food production and provisioning system. Community-based production and distribution are seen as creating "new economic spaces" that establish new kinds of alternative models to the transnational and corporate food system.²³ These new economic forms include farmers' markets, urban agriculture, food-based microenterprise, organic produce, and

community-supported agriculture.²⁴ Farmers' markets, for example, have expanded quickly in recent years, increasing by almost 40 percent between 1994 and 1996. Consumers have reported that their primary reasons for going to farmers' markets is fresh food and direct contact with farmers, reflecting desire to both improve their diets and reconnect with their food sources.

Urban agriculture is an innovative approach to food production that provides a way for people to take "control of the resources that they need for their own livelihoods."²⁵ Urban agriculture can be either a form of self-provisioning or production for market. In urban agriculture, food is produced in residential plots, on public or vacant land, balconies, or rooftops. In the U.S., one-third of farms are in metropolitan areas. These farms account for 16 percent of farmland and produce 25 percent of crop and livestock sales. In Cuba, where 26,000 hectares are cultivated within the city, urban agriculture is credited with playing a big part in recovery from Cuba's food crisis brought on by the collapse of the Soviet Union and the U.S. embargo.²⁶

Gardening has many benefits, ranging from harvests of fresh produce to horticultural "therapy," nurturing living things in the outdoors. An estimated \$38 million worth of food is produced from urban plots.²⁷ Community gardening also provides sites for socializing and community organizing. Often community gardens have turned blighted abandoned spaces into lush spaces of relief in the harsh inner city. They can provide safe spaces and arenas for multigenerational and multicultural interactions.

At the same time, community gardens can be ephemeral. The gardens are built either on land owned by the municipality or a private entity who is not using the land at the time. This land can be reclaimed at any time and on short notice. Changes in land-holding patterns will be required for community gardens to be stable sources of food production. At a minimum, municipalities must make commitments to reserve land for urban agriculture. Often, however, the trend is in the other direction as many cities are opposed to the informal use of public lands for agriculture or need the

economic return from the land for city budgets. In Santa Cruz, California, the city sold the land of the highly acclaimed Homeless Garden Project. The city was caught in a revenue squeeze brought on in part by reductions in local revenues caused by lowering of property taxes years earlier. The only way to ensure a community garden's survival is for it to either become a land trust (i.e., permanent open space) or receive permanent site status with the protection of the municipal parks department.²⁸

Of course, urban agriculture is not a total solution to urban food security problems. The poorest residents have little access to production possibilities and urban agriculture will do little to improve income distribution.²⁹ These are the kinds of inequities that are the cause of food insecurity in the first place. Urban agriculture is an addition to rather than a substitute for "regular" production. Mostly fruits and vegetables can be grown on small urban plots, produce which cannot begin to meet people's complete food needs. Yet, they can be an important source of nutrients crucial to overall health. While fruits and vegetables provide only eight percent of food energy in an American diet, they are a primary source of vitamin C and carotene.³⁰

Community Supported Agriculture (CSA) is an innovative approach to food distribution. In a CSA, consumers (usually urban) pay a fee to a grower and expect to receive in return a weekly share of fresh produce. The ideal of Community Supported Agriculture is for farmers and nonfarmers to work together to support each other and build strong community-based economies. Consumers get fresher produce, and the producer has a ready market and cash flow. A wide variety of crops are grown which also reduces risk of crop failures.

The first CSA farm was established in 1985. Since that time, the idea has grown quickly; there are now over 500 CSAs in the country with more getting started all of the time. While CSAs are a nice idea for people who have the time and the cash flow to participate, there is some evidence that CSA shareholders tend to be a rather select crowd. In a 1995 survey of California CSA members, 71 percent had annual incomes of \$40,000 or more; in a 1992 study, only

10 percent of the farms members were people of color (who constituted only five percent of the overall membership).³¹ Studies have found that CSA members tend to be predominantly upper-income, highly educated, Caucasians.^{32,33}

Although the CSA format might help address food security issues by bringing fresh food directly into areas which often lack supermarkets, there are some potential problems with the CSA arrangement for low-income people. Some CSAs require up-front payments to help cover start-up costs, a payment which many facing food insecurity cannot afford. CSAs are prohibited from accepting food stamps because by providing up-front payments to farmers, members are actually speculating on the crop rather than purchasing food. While there are examples of CSA efforts to subsidize shares or deliver produce to inner city residents, the fact remains that there is a contradiction between making food affordable and providing a decent return for the farm unit. Charity efforts cannot overcome this contradiction in the long run.

Many CSA projects also encourage their members to take part in work days as a way to make a closer connection to their food source, and some offer discounts to those who help out with harvesting and other farm work. Unfortunately, most middle- and low-income people are already overwhelmed with the demands of productive and reproductive labor in their own jobs and households, leaving little time to take part in farm activities. Wage rates have declined in non-supervisory jobs and many people are having to travel farther and farther to their jobs. Thus the time required to for shopping to supplement the CSA share, and preparing and storing the items from a fresh box of produce each week – tasks which often fall to women – may also make the CSA arrangement problematic for the poor.

Strategies in community food security often are directed toward increasing demand and outlets for local produce, providing security of markets for local agricultural producers, and creating product differentiation based on region of production. Yet the industrialized food system has reduced class differences in food consumption, a

leveling that the new organic, designer foods threaten to break down. Historically, the food system has been two-tiered, with cheap, mass-produced foods to meet basic needs of the masses on the one hand, and highly elaborated, individually tailored goods produced for a powerful fraction of the population on the other.³⁴ Distinctions between luxury and basic foods began to disappear as the industrialization of the food system allowed for the expansion of range of products provided and convenient packaging and transportation of those foods.

As fresh fruits and vegetables become "branded" by place or differentiated by method of production, prices increase. For example, in the United States, organic food prices can be 25 to 50 percent higher than those for nonorganic food. With poor people already paying higher prices for their food and spending a higher percentage of their incomes on food than do middle-income people, organic food may be beyond their reach. Local food systems projects based on provincialism may tend to serve the status needs of the privileged more than the material needs of the poor. The community food security movement may be unwittingly recreating a two-tiered food system differentiated by class.

Reweaving the Safety Net

While the appeal and promise of localism is significant for the empowerment goals of the community food security movement, there are aspects of community-based food systems that may limit their practical relevance for meeting the food needs of the poor. In working toward food security, some actions will need to be local; others will need to be national or international. We will need to clarify what types or levels of food security can realistically be understood, addressed, and achieved at each level.

Both traditional food programs and community food security projects contain promise for meeting people's food security needs. Achieving food security requires both a process of developing self-reliant food systems and a political effort to achieve justice and equity. Building on the relative strengths of each approach, the traditional food programs and community

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food security projects can work together to overcome the forces that have produced food insecurity. Together these approaches can mend the tattered strands of the remaining safety net against hunger.

– Patricia Allen

¹Friedmann, H. 1995. Food politics: New dangers, new possibilities. In *Food and agrarian orders in the world-economy*, ed. P. McMichael. Connecticut: Praeger.

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^{9, 15} Fisher, A. 1997. What is community food security? *Urban Ecologist*, 3-4.

¹¹ Poppendieck, J. 1997. The USA: Hunger in the land of plenty. In *First world hunger: Food security and welfare politics*, ed. G. Riches. London: Macmillan.

¹⁴ Fisher, A. and R. Gottlieb. 1995. Community food security: Policies for a more sustainable food system in the context of the 1995 Farm Bill and beyond. Working Paper #11. The Lewis Center for Regional Policy Studies. School of Public Policy and Social Research, UCLA.

¹⁶ Kloppenburg, J. J., J. Hendrickson, and G. W. Stevenson. 1996. Coming into the foodshed. *Agriculture and Human Values* 13 (3): 33-42.

¹⁷ Weir, M. 1994. Urban poverty and defensive localism. *Dissent*: 337-342.

¹⁸ Poppendieck, J. 1986. Breadlines knee-deep in wheat: Food assistance in the Great Depression. New Brunswick: Rutgers University Press.

¹⁹ Dahlberg, K. 1994. Food policy councils: The experience of five cities and one county. Unpublished paper.

Conservation Tillage

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✓ Obtain a dense, uniformly distributed, weed-free cover crop prior to transplanting. According to Ron Morse, "Recommended cultural practices include selecting the most adaptive and compatible cover crops, obtaining a uniform dense stand by drilling high seed rates at close between-row spacing, and providing adequate growth inputs and growing time to maximize cover crop biomass."³ Sparse, uneven ground cover generally leads to serious weed problems and negates many of the advantages of no-till systems.

✓ Kill cover crops prior to transplanting, leaving a uniformly distributed heavy mulch. Continued growth or regrowth of cover crops after transplanting often becomes "weeds" which seriously decrease crop yields. Uneven distribution of killed cover crop residues may lead to patchy weed problems resulting in yield and quality losses.

✓ Establish transplants with minimum disturbance of surface residues and surface soil.

Applications to Organic Systems

"In terms of taking care of the soil the best way we know how, it doesn't make sense to till it," says Jim Leap, who manages the UCSC Farm for the Center for Agroecology & Sustainable Food Systems. "You lose so much carbon and organic matter, use so much fuel, and it's so labor intensive, especially in an organic system where you're having to incorporate huge amounts of biomass in the form of cover crops. You end up beating up the soil and destroying the habitat for earthworms," he says.

Yet like most conventional growers in California, organic farmers rely on tillage for a variety of operations. Organic growers also face the challenge of trying to control weeds without chemical herbicides – a problem often dealt with via mechanical tillage.

Leap sees weed control as one of the biggest hurdles to implementing CT in organic vegetable production; one of the drawbacks of no-till in conventional systems is that it often requires increased herbicide use. Plant residue left on the soil surface can also keep the soil

cool and damp, delaying planting dates and slowing plant growth, and may attract slugs and snails. Yet despite these challenges, Leap is intrigued by no-till and CT systems and plans to conduct trials with squash, pumpkin and dry-farmed tomato crops at the UCSC Farm next spring.

Jeff Mitchell has begun working with San Joaquin Valley organic growers interested in alternative tillage systems, and hopes to expand his work in organic production beginning next year. Mitchell has specialized transplanting equipment available for use or demonstration as well as a growing body of research results from field trials. Says Mitchell, "I'm eager to share my experiences with CT with anyone who might be interested, and would welcome all opportunities to work with growers on issues they face in trying to reduce tillage."*

Mitchell admits that there are many hurdles to overcome in implementing no-till and CT systems in California. However, with concern growing over soil quality, erosion, water use, groundwater pollution and other environmental issues, alternative tillage should receive a closer look by the state's farmers and research community.

– Martha Brown

*Jeff Mitchell can be reached at 209/646-6565, 209/646-6593 (fax), or by email at mitchell@uckac.edu. His mailing address is Kearney Agricultural Center, 9240 South Riverbend Ave., Parlier, CA 93648.

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² Reicosky, D.C. Conservation tillage and carbon cycling: soil as a source or sink for carbon. In *Proceedings, Emerging Soil Management Options for California*. UCCE: Kearney Agricultural Center. 1998.

³ Morse, Ronald. Affordable small-scale equipment for production of transplanted vegetables in high-residue, no-till farming systems. In *Proceedings, Emerging Soil Management Options for California*. UCCE: Kearney Agricultural Center. 1998.

The Cultivar Renewal Form and Reader Survey

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Attn: Cultivar renewal

We would like to continue to make The Cultivar as widely available as possible. However, rising production costs have strained the limits of the Center's publications budget. We would appreciate your support in helping offset printing and mailing expenses. A donation of \$5.00 would cover the cost of two issues per year; every additional \$5.00 donation would help us make free copies available to low-income individuals and non-profit groups. If you choose to make a donation, please make your check payable to UC Regents and send it with this form to the address listed above.

We'd appreciate your taking the time to fill out the reader survey form –

1. What section(s) of The Cultivar do you read?

- | | | | |
|-------------------|---------------------------------|------------------------------------|--------------------------------|
| Main Features | <input type="checkbox"/> always | <input type="checkbox"/> sometimes | <input type="checkbox"/> never |
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| Center Notes | <input type="checkbox"/> always | <input type="checkbox"/> sometimes | <input type="checkbox"/> never |
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2. The level of technical information in the articles is:

- not enough about right too detailed

3. What topics would you like to see covered in The Cultivar?

4. What is your primary / secondary occupation?

5. We plan to post future issues of The Cultivar to our Web site (<http://zzyx.ucsc.edu/casfs>) . Would you prefer to read the newsletter on the Web and drop your name from the mailing list, or continue to receive a paper version? (For the present, we will continue to send a paper version to all respondents.)

- would read on Web prefer paper version



Thanks very much for your help.

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