

# SARE 2004

Sustainable Agriculture Research & Education Program



## **practical new ideas in:**

vegetable production / livestock systems  
community development / manure management  
crop improvement / organic farming / marketing



**Left:** Lucien Samuel, holding a cashew nut from one of his trees in Estate Bordeaux, St. Thomas, participates in the “We Grow Food, Inc.” cooperative—which grows and direct-markets tomatoes, kale, bok choy, papaya, mangoes, and more—and regularly attends workshops run by SARE’s state sustainable agriculture coordinator, Louis Peterson. Photo by John Mayne.

## How SARE works

The Sustainable Agriculture Research and Education (SARE) program works primarily through competitive grants, which are offered through four regions—North Central, Northeast, South, and West—under the direction of councils that include farmers and ranchers along with representatives from universities, government, agribusiness, and nonprofit organizations. Since 1988, SARE has funded more than 2,500 projects, including:

- **Research and Education Grants**—Ranging from \$60,000 to \$150,000 or more, these grants fund projects that usually involve scientists, producers, and others in an interdisciplinary approach.
- **Professional Development Grants**—To spread the knowledge about sustainable concepts and practices, these projects educate Cooperative Extension Service staff and other ag professionals.
- **Producer Grants**—Producers apply for grants that typically run between \$1,000 and \$15,000 to conduct on-site experiments and share the results with other farmers and ranchers.
- **Other grant opportunities**—Graduate students, community development practitioners, and educators conducting on-farm research can apply for grants in some SARE regions.

For requests for proposals, application deadlines, and other information, contact the regional offices. (See map on back cover for regional borders.)

### North Central Region SARE

(hosted by the University of Nebraska)  
[www.sare.org/ncrsare](http://www.sare.org/ncrsare)  
(402) 472-7081  
[ncrsare@unl.edu](mailto:ncrsare@unl.edu)

### Northeast Region SARE

(hosted by the University of Vermont)  
[www.uvm.edu/~nesare](http://www.uvm.edu/~nesare)  
(802) 656-0471  
[nesare@uvm.edu](mailto:nesare@uvm.edu)

### Southern Region SARE

(hosted by the University of Georgia and Fort Valley State University)  
[www.griffin.uga.edu/sare](http://www.griffin.uga.edu/sare)  
(770) 412-4787  
[sare@griffin.uga.edu](mailto:sare@griffin.uga.edu)

### Western Region SARE

(hosted by Utah State University)  
<http://wsare.usu.edu>  
(435) 797-2257  
[wsare@mendel.usu.edu](mailto:wsare@mendel.usu.edu)

■ SARE works in partnership with **Cooperative Extension and Experiment Stations** at land grant universities to deliver practical information to the agricultural community. Contact your local Extension office for more information.

■ **The National Agroforestry Center**, a program of USDA’s Forest Service and Natural Resources Conservation Service, co-funds SARE agroforestry grants.



**On the Cover:** José Aguiar, a University of California Cooperative Extension farm advisor, examines carrots at Grimmway Farms in Coachella, Calif. The carrots followed a cowpea cover crop, a cost-cutting, soil-improving strategy introduced by SARE-funded researchers and adopted widely. (See summary on p. 5.) Photo by Michael J. Elderman.

## from the director

**In 1988**, the Sustainable Agriculture Research and Education (SARE) program kicked off its innovative new grants program aimed at researchers who work closely with farmers and ranchers. As SARE—part of the Cooperative State Research, Education, and Extension Service, USDA—has grown, we are teaming with farmers, ranchers, and agricultural educators across the nation to better meet their needs. To research grants we added professional development for educators and on-farm producer projects. Today, our portfolio has become even more diverse, including community projects, creative partnerships between Extension and producers, projects led by graduate students, and more.

SARE's four regions fund grants, keeping a local eye on local needs. That structure helps us improve producer profits, enrich natural resources, and promote stable, healthy communities.

The best sustainable agricultural innovations encompass those three priorities. Likewise, in some of our most effective projects, our grant programs work together like well-oiled tractor gears. We see farmer/rancher grants spur ideas in the research community. Agricultural educators test their ideas on local farms. And community projects take the innovative work of SARE producer grant recipients one step further.

Consider just a few projects that illustrate that “team” approach:

■ In Kentucky, SARE farmer grantee Sara McNulty tested growing fresh beans for specialty food markets, then worked with University of Kentucky Extension educators armed with a sustainable community innovation grant to promote edamame. (See p. 9.)



■ Penn State University researchers have adopted a two-step approach to helping vegetable farmers extend the season using “high tunnels”—plastic-covered structures that shelter crops. One received a SARE research and education grant to study biological control practices in high tunnels, while his colleague is training extension educators with a professional development grant. (See p. 4.)



■ In Utah, an egg producer received a farmer/rancher grant to improve manure management by composting in his layer house. To perfect the system, he encouraged Utah State University faculty to apply for a SARE research and education grant. (See p. 11.)



■ On a South Dakota Indian reservation, an educator has received three SARE grants, all targeted at improving quality of life in the community through community gardening. (See p. 8.)



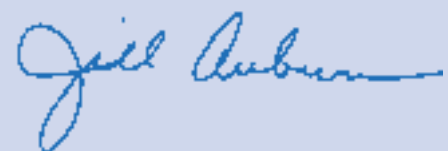
SARE's national outreach arm also works to advance sustainability throughout U.S. agriculture. In 2003, SARE staff worked with USDA and CSREES colleagues to create a program about

SARE for “Partners,” the CSREES video magazine. The program features four successful grants projects. See [www.sare.org/about/sarevideo](http://www.sare.org/about/sarevideo).

In 2004, SARE will unveil a new Web site redesigned for easy navigation among the program's national database of projects, grant opportunities, full texts of Sustainable Agriculture Network publications, and more. See [www.sare.org](http://www.sare.org). We also invite you to check out the newly designed Web site of SARE's parent agency, CSREES, at [www.csrees.usda.gov](http://www.csrees.usda.gov).

New SAN publications in 2003 include bulletins about diversifying cropping systems, transitioning to organic production, and a Spanish-language version of alternative hog production systems. As always, our communications colleagues in the regions perform outreach using newsletters, Web sites, conference attendance, and more.

We're proud of the spread of our program, from the Caribbean to the Pacific Islands—and the continent in between. We're similarly proud of our diverse portfolio of projects. To learn more, read on!



*SARE Director  
Cooperative State Research, Education,  
and Extension Service, USDA*



BILL LAMONT

## High Tunnels: Extending the Life of Crops in Cool Climates

Extending the growing season has become a popular endeavor for farmers as consumers seek locally produced food from sources they trust. Northeast farmers trying to grow beyond the typical season are turning to “high tunnels”—simple, plastic-covered structures that warm and shelter crops—from which they can market their crops directly to customers.

“People like to look farmers in the eye and talk to them about what they’re producing,” said Bill Lamont, a horticulturist at Penn State University who received a SARE professional development grant to inform extension educators and vocational agriculture teachers about high-tunnel technology.

High tunnels resemble greenhouses but cost much less to erect and operate. To construct a high tunnel, a farmer stretches a layer of clear plastic sheeting over a galvanized metal pipe frame, typically 21 by 96 feet. One of the high

tunnel’s most useful features is its versatility: the plastic sides can be rolled up for ventilation. Using a high tunnel, farmers can add weeks, if not months, to the growing season.

Lamont conducted his first workshop at the Penn State High Tunnel Research and Education Facility, where educators have built 36 research/demonstration high tunnels. Participants learned both about tunnel construction and growing tips for fruit, vegetables, and cut flowers. The training also covered transitioning to organic production and how to raise crops without agri-chemicals. Following the workshop, all of the 15 participants held training sessions in their counties about high tunnels and several have helped growers in their area to construct them, Lamont said. One participant, a county extension educator, built a high tunnel in Clinton County to train master gardeners.

**Above:** Mike Orzolek, a Penn State University researcher, studies biological pest management strategies for strawberries and other crops grown in high tunnels—increasingly popular structures for season extension.

Lamont also aims to interest future farmers in the new technology. Working with vocational agriculture teachers, he has encouraged three tunnels to be built in high schools, including one in Philadelphia. High tunnel production is ideal for urban agricultural settings, he said.

In a related SARE grant project, a Penn State researcher is testing biological control practices in high tunnels. By releasing insects that prey on pests inside high tunnels, researchers are determining whether they can control vegetable pests like spider mites, aphids, and whiteflies. [For more information about this Northeast Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for ENE03-076.]

## Cover Crop Adds Fertility, Boosts Desert Vegetable Yields



MICHAEL J. ELDERMAN

Growers producing most of the nation's winter lettuce in the desert along the California-Arizona border enjoy a hot, dry climate but contend with soils low in organic matter. To help growers improve soil quality, SARE-funded University of California-Riverside researchers tested cowpea and sorghum-sudangrass cover crops, which they substituted for the typical summer fallow following a lettuce-cantaloupe rotation.

Cowpeas, which fix nitrogen, and sorghum-sudangrass, with its plentiful biomass, also minimize erosion and dust, a significant problem during the windy summer. Cowpea proved a clear winner, significantly increasing yields of fall-planted lettuce and the subsequent cantaloupe crop. Comparing bare ground to cowpea incorporated into the soil—as well as cowpea used as a mulch and two treatments of sorghum-sudangrass—researchers found the highest net returns for cantaloupe and lettuce following cowpea incorporation. This was primarily due to a reduced need for commercial nitrogen. Returns improved even more if the system was run organically.

The project found that lettuce, for example, could net as much as \$2,417

per acre if grown organically, with price premiums—compared to \$752 per acre grown conventionally in 2000. The economic good news interests both organic growers seeking alternatives to commercial fertilizer and farmers seeking to sidestep rising fertilizer prices.

Adding a cover crop to the rotation can bring many other benefits, from out-competing weeds to moderating the desert's extreme soil temperatures. Growers were so impressed with the findings that about 10 of them in the Coachella Valley and more throughout the state have begun growing cowpeas each summer. “We have changed the way producers look at things and provided them with new tools,” said research leader Milt McGiffen, estimating that farmers now grow cowpeas on more than 3,000 acres.

**Left:** Todd Brendlin and Ted Nishikawa inspect carrots grown after cowpea on one of about a dozen southern California farms that changed their rotations after SARE-funded research identified soil benefits on lettuce (below) and other crops.

Cover crops are not just for lettuce growers, either. Date and citrus orchard owners have added cowpeas as a direct result of the UC-Riverside research. Grimmway Farms, one of California's largest organic carrot growers, now uses cowpea in its rotation. “It knocks down weed populations and provides nitrogen and organic matter, so they're very happy with the system,” said José Aguiar, who collaborated on McGiffen's project. [For more information about this Western Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for SW98-044.]



CANDY HUTCHINSON



DONALD D. NELSON

## Sheep, Goats Manage Rangeland Weeds in Multi-Species Systems

Adding livestock like sheep and goats to rangeland can help ranchers manage noxious weeds and reduce the fuel that can prompt out-of-control Western fires, two crucial goals that were the focus of a SARE professional development project based in Washington. Project leader Don Nelson introduced new grazing concepts, from holistic management to multi-species grazing, to some 30 agricultural professionals and ranchers from Washington, Idaho, Oregon, and California. His series of workshops resulted in at least five new range enterprises featuring diverse herds and flocks to control unwanted vegetation. “Most ‘noxious’ weeds are not the problem—they’re a symptom of how the land has been managed,” Nelson said. Cattle like to graze on grass, but sheep also dine on forbs and goats prefer woody “browse” material. “If you know these preferences, you can

inventory a site and create a future landscape using them as tools,” he said.

Introducing new livestock species provides a lower cost, potentially more effective strategy than spraying herbicides, he said. Another benefit is the market potential, as goat meat is a staple of some segments of America’s culturally diverse population. After the training, one of the participants teamed up with a nearby rancher to introduce sheep and goats to reduce knapweed and potentially hazardous undergrowth on a property in Dallesport, Wash. Marty Hudson, coordinator of a Washington weed control board, contracted with rancher Max Fernandez to run sheep, lambs, and goats on property designated as an industrial park. Grazing about 20 acres per day, the flocks cleaned about 600 acres. To manage the site, which is sandy and exposed to wind, Hudson used the land monitoring

**Above:** Ray Holes grazes goats in a forest near White Bird, Idaho, as part of a multi-species grazing project that reduces brush to help young trees regenerate.

system he learned in Nelson’s training to not overgraze the property.

Other SARE projects have evolved from the professional development workshops, including grazing goats in a tree plantation to reduce unwanted “understory” vegetation in Clearwater County, Idaho; and introducing goats and sheep to slow the invasive Russian Olive tree on a West Richland, Wash., ranch.

Some of the goat producers with whom Nelson has worked have found new markets through California wholesalers. “There’s an untapped market potential,” Nelson said. [For more information about this Western Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for EW01-006.]



KEN SCHNEIDER

## Win-Win-Win: Managed Grazing Improves Profits, Soil, Water Quality

When Ray Meismer took stock of his central Illinois crop and livestock farm, characterized by steep slopes along the Illinois River, he thought he could improve his profitability and lessen his impact on the watershed. He wanted a more intensive grazing system for his cow/calf herd to make better use of the land, even if that meant taking crops out of production. With a SARE grant and help from USDA's Natural Resources Conservation Service (NRCS) and Illinois Extension, Meismer designed a new grazing system reliant upon nutritious forages and a "ram" pump to power water to his pasture in an electricity-free system.

Now, on some of the most challenging 56 acres of his 300-acre farm, Meismer manages a five-year rotation of corn, soybeans, and forage. He divides the forages into grazing paddocks for his cattle. "Some of my ground was rougher and not as productive for cash cropping, but was suitable for grazing," Meismer said. "After I pushed the

pencil, I thought I could get more dollars per acre grazing and selling feeder calves than on corn and soybeans."

His hypothesis played out as expected: Meismer increased his stocking density from 32 cow/calf pairs to 37 because he had better pasture, and those animals gained more weight, bringing better returns. Meismer's net return in 2000 from the calves was \$65 per acre compared to \$59.70 an acre for soybeans and \$55.73 per acre for corn. "The increased revenue from calf sales more than offset the decrease in revenue from cash crops," he said.

Meismer worked with NRCS and Extension to install a water-powered pump and a watering system that reaches 1,200 feet from a spring to the farthest paddock. He moves a storage tank on a wagon among three steep sites, then, using gravity, moves water to a tank he rotates among paddocks as he shifts his herd. By covering the soil with vegetation, Meismer has reduced erosion. Moreover, he set up his watering system

**Above:** Ray Meismer's cow/calf herd, run in a managed grazing system on his sloping Illinois farm, is now more profitable than his crops—and protects the soil and water.

to keep cattle away from the spring itself, protecting water quality.

Rotating the herd every several days is a fine example of what Illinois agricultural educators are trying to promote throughout the state, said Jay Solomon, an extension specialist who worked with Meismer. Rather than running herds on pasture for a month or more, farmers might mimic historical patterns. "Traditionally, buffalo herds came to a watering hole, grazed it all, then went to the next one—giving the forage a chance to re-grow during the rest period," he said. "We're trying to get them to run the cattle the same way in more of a managed situation." [For more information about this North Central Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for FNC00-309.]

## Reservation Gardeners Earn First Profits at Fledgling Market

Residents of the Rosebud Lakota Reservation in south-central South Dakota, facing more hurdles than most growers, nonetheless have embraced family gardening. With help from three SARE grants, many beginning Rosebud gardeners not only grow enough food for their families and neighbors, but also supply a budding gardeners' market in a rural area devoid of many healthy food choices.

Overcoming poor soils, a lack of agricultural traditions, and an average annual rainfall of just 12 inches—as well as widespread diabetes and pov-

**Below:** Participants in a new gardeners market at the Rosebud Lakota Reservation in South Dakota earned a \$10,000 profit in 2003.

erty—the Lakota gardeners did well enough in 2003 to earn a \$10,000 profit.

The reservation's community health care providers and Ann Krush at the reservation's Center for Permaculture as Native Science in Mission, S.D., recognized that quality of life had deteriorated. They and community members were galvanized to do something. "Diabetes is a terrible problem here," said Krush, the SARE project coordinator. "So we started encouraging food gardens. Getting out in the fresh air is good, but exercise and eating the fresh food you grow is even better."

With the first two grants, Krush and community leaders helped spread knowledge about gardening and bee-keeping through informal get-togethers.

Intended to help novice growers establish gardens, the SARE funding was more successful than they could have hoped. "Ten years ago, you never saw a garden," Krush said. "Now it's common and accepted. Now it means doing something healthy for your family, your community, your elders."

The harvest from several families' table-sized garden plots, developed with help from SARE-funded program assistants from within the community, was bountiful enough to share with neighbors. To spread the gardeners' success to the rest of the community, Krush and others received a third SARE grant to organize the gardeners' market at the reservation's traffic light, the only fresh market for hundreds of miles. Eight vendors served the market in 2003, earning their first profits.

From a background of poor nutrition, partly because of scarce food options, many kids now choose fresh fruit and vegetables over junk food. Locally grown fruit, honey, and vegetables became part of Elderly Nutrition, a federal program that provides food for seniors who need it. And the Center for Permaculture as Native Science buys overflow from the Rosebud gardeners to distribute to the federal Women, Infants, and Children (WIC) program—thus helping to establish healthy eating habits that will last a lifetime. [For more information about these North Central Region projects, go to [www.sare.org/projects](http://www.sare.org/projects) and search for LNC00-163, ENC98-037 and ENC97-022.]



ANN KRUSH





STEPHEN BRATTON

## Keen on Beans: Nutritious Fresh Soybean a Community, Farmer Favorite

A soybean that can be eaten fresh and is best known as a snack with a nutritional punch is at the heart of an effort in western Kentucky to improve health and diversify farmer options in the wake of declining tobacco prices. The edamame soybean, imported from Asia, leads the appetizer menu of some urban restaurants—herbed, steamed, and served in the pod. Kentucky grower Sara McNulty, with help from the University of Kentucky (UK), has changed that upscale perception to make it a popular, healthy meal ingredient, with support from two SARE grants.

McNulty stumbled onto the bean's potential when she was growing a test plot on her 1,700-acre crop farm for a company that wanted dried beans for

soy-based products. "The kids and I were out in the field and we got hungry and started eating them green," she recalled. "They were delicious." Since that day in 1996, McNulty has made edamame a main focus. She received a SARE producer grant to test growing fresh beans and marketing them.

After McNulty approached them, University of Kentucky Extension educators received one of Southern SARE's first sustainable community innovation grants to promote edamame as a profitable crop with great health potential. The UK project focused on creating production guidelines—such as seed sources and optimal planting times—and developing markets based on soy health claims.

**Left:** Kentucky grower Sara McNulty helped spark interest in edamame. University of Kentucky educators received one of SARE's first community innovation grants to develop awareness of the healthy product.

News of soy's low-fat, low-cholesterol, and high-protein characteristics helped fuel UK's nutritional message to heart patients and health care workers. Beyond those groups, they worked with nutrition educators to target consumers, especially teens. In all, UK held 24 educational programs in Kentucky, Indiana, and Illinois. "We wanted to put it on the map, and it surprised us how well it was accepted in the community," said Tim Woods, a UK marketing specialist.

The bean's popularity encouraged about a dozen farmers to start growing edamame. They sell the fresh product at local farmers markets and at health food stores, where people buy them by the "bunch"—about two pounds of beans in pods on stems—for between \$3 and \$5. McNulty still grows them on a small scale to eat at home and supply her local health food store, which she says constantly sells out. "The key to this project has been networking with others—not thinking I could do it all myself," she said. "It has been a real grassroots, team effort." [To learn more about edamame, including recipes, see [www.edamame.org](http://www.edamame.org). For more information about the Southern Region SARE grants, go to [www.sare.org/projects](http://www.sare.org/projects) and search for CS02-006 and FS01-137.]



DON VIETOR

## Growing Sod with Manure Teams Two Texas Commodities

Fertilizers such as phosphorus, which may run off into streams and rivers, continue to raise environmental concerns. Texas researchers are promoting a crop that can, literally, take phosphorus away from livestock operations. SARE-funded Texas A&M University researchers grew high-end sod with manure on two large dairy operations and, when they harvested it, removed the phosphorus from the area.

Growing sod with dairy manure both reduced phosphorus loads and potential runoff from the dairies—up to 77 percent of applied phosphorus was removed in a sod harvest—and eliminated phosphorus fertilizer inputs used to grow conventional sod. Since manured fields, particularly when located near streams, create a phosphorus runoff hazard, “we hatched the idea that we could capture more nutrients with sod than any other crop,” said principal investigator Don Vietor of Texas A&M.

Vietor and his collaborators grew recent releases of warm-season and

cool-season perennial grasses—high-end sod prized by developers—established in soil topped with raw manure or composted manure, which reduced odor concerns. They also seeded lower-end “sports” turf on sloping soils to study phosphorus runoff. The benefits were clear: They captured much of the phosphorus that would otherwise run off or leach from manure in a value-added product—a far more profitable alternative than hauling manure. When the sod was replanted or used in commercial settings, phosphorus runoff was reduced 9 percent compared to sod grown with commercial fertilizer. Moreover, manure improves water infiltration during turf establishment.

Using an economic model, collaborator Darrell Bosch at Virginia Tech estimated that a dairy farmer who used manure to grow 50 acres of sod could earn an additional \$46,000 per year. That new profit was based on returns from sod minus the cost of buying corn silage, a new input for the farmer who

**Above:** A farm crew harvests Tifway bermudagrass sod grown with manure in an experimental field in Texas. Manure-grown sod can reduce phosphorus runoff.

took 50 acres of silage out of production to raise sod.

Vietor publicized the sod/dairy project at Texas grower meetings and will also reach out to extension educators. One dairy operator who collaborated on the project has already adopted the new crop, growing sod on part of the waste field for his large-scale replacement dairy heifer operation.

Vietor hopes that sod producers will consider forming partnerships with dairy farmers. “Sod producers now haul high-end sod to Dallas from as far as the Texas Gulf Coast,” he said. “Central Texas is a lot closer to Dallas. As sod producers look for new land, we’re encouraging them to look in these areas where dairies are concentrated.” [For more information about this Southern Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for LS00-117.]

# Composting Manure in Layer Houses Transforms Problem to Product

Egg production is on the rise in the West, particularly in Utah, where the number of laying hens reached 3.6 million in 1999. While the product is welcomed, the byproduct—manure—can be problematic, especially as Utah's non-farming population grows. Spurred by one of the state's largest egg producers, who received a SARE farmer/grower grant to better manage manure, researchers and extension educators at Utah State University (USU) began studying how to compost manure inside layer houses. That process, which turns chicken manure into a valuable, almost odorless soil amendment, is better for egg producers than land-spreading raw manure. "Not only are farmers running into a lack of land to spread

**Below:** Dean Miner sifts through composted poultry manure, which not only alleviates neighbor concerns but also becomes a value-added soil amendment, held by Utah egg producer Mike Shepherd (above).



PHOTOS BY GARY NEUBISVANDER

manure, but odor and fly complaints are starting," said project leader Rich Koenig, a former USU soils specialist.

Koenig, along with USU Extension County Agent Dean Miner, began studying in-house composting at the urging of Spanish Fork, Utah, producer Mike Shepherd. Shepherd's Eggs, a 60-year family operation with 325,000 layers, was seeking to placate new neighbors and comply with environmental regulations about manure. "Our initial experiences with indoor composting show great promise for reductions in odor and flies," Shepherd said. The composted manure became a value-added product he distributed to farmers and others.

Successful in-house composting requires a recipe, with the nitrogen from poultry manure balanced by carbon supplied by straw, sawdust, or wood chips. Following Koenig's research, project leaders recommended a mix of

straw to manure to generate enough heat to both compost the material and kill flies. If they turned their windrows two to three times a week, egg producers could collect material for up to three months, helping them through the winter when there is no market for compost.

Reducing flies translated to a savings of



\$15,000 in pesticide use over nine months. Moreover, producers could sell compost for about \$15 a cubic yard. Those savings and the extra income offset the costs of new compost turners and other equipment in about three years, said Miner, who was Shepherd's adviser on his SARE farmer/rancher grant. Challenges remain, including avoiding dangerous ammonia buildup inside the layer house. One option is better ventilation; another is to apply aluminum sulfate to acidify the manure. Meanwhile, egg producers have adopted the new manure management strategy—three in Utah and others in Idaho and Arizona. "Within Utah, those egg producers are a tight-knit group and they communicate with one another," Koenig said. [For more information about this Western Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for SW00-040.]

## Growing Own Seed Cuts Farmer Costs, Opens New Markets

Developing high-performing varieties of hybrid corn for the less productive agricultural zones of the northeastern United States, characterized by cool, wet summers and a short growing season, poses challenges for plant breeders. But Cornell University researchers investigating open-pollinated (OP) varieties of corn hope to enable Northeast farmers to grow and select seed for their environment and market conditions.

“Producing open-pollinated corn not only keeps control over the seed supply close to the grassroots, but also tailors varieties to local environments, which is essential to more sustainable production systems,” said Margaret Smith, co-project leader.

By planting OP corn in areas with lower yield potential, farmers can decrease costs by growing and saving their own seed. “Since the cost of hybrid seed is the same whether you harvest 150 or 100 bushels per acre, it represents a much larger proportion of total costs for farmers in marginal areas than it

does in the Corn Belt,” said Jane Mt. Pleasant, co-project leader. Moreover, “reduced yields from OP corn may be more than offset by the reduced cost of the seed.”

Some OP varieties proved competitive with conventional hybrid varieties grown in control plots, especially for silage. However, most OP varieties produce lower grain yields than the hybrids, and may tip over in the field, hampering harvest. After two years of trials, the researchers found that the best OP grain yields were about 75 to 80 percent that of commercial hybrids.

Growers looking for niche market opportunities could raise multi-colored OP seed. Moreover, OP corn is attractive to organic growers, who must certify that their seed does not contain genetically engineered material.

The researchers will publish information about promising OP varieties and seed sources in a catalog targeted at small dairy farmers, seed producers, and Native American growers who want

to preserve traditional varieties.

Another Northeast SARE project helps farmers integrate seed production and crop improvement into their farming systems. “Seeds grown by New England organic or sustainable farmers can thrive without reliance on chemicals,” said Eli Kaufman, co-coordinator of the nonprofit Restoring Our Seed. “Season by season, farmers are learning how to select for exactly what we want: superior flavor, early maturity, resistance to local pests and disease, and reliability in our cool climate.”

The team of Extension educators, farmers, seed-savers, and breeders from Maine, Vermont, Massachusetts, Connecticut, and New Hampshire are conducting field days on seed selecting for local adaptability and disease resistance; hosting workshops on harvesting and cleaning; and building local networks with farmers, chefs, and seed companies to encourage direct marketing of farm-bred varieties and seed. The project team is also working to improve heirloom tomatoes, preserve Native American and rare vegetable varieties, and develop a disease-resistant cucumber that makes a tasty pickle. [For more information about these Northeast Region projects, go to [www.sare.org/projects](http://www.sare.org/projects) and search for LNE 02-171 and LNE 02-160.]

**Left:** Planting open-pollinated corn in cool areas of the Northeast can improve profits by allowing farmers to grow their own seed and market unusual varieties.



JANE MT. PLEASANT



ERIC ZAMBORA

## Growth in Organic Markets Helps Launch Florida Research Center

In the last decade, organic production has grown by 20 percent per year nationwide. Florida farmers lead the way in the South, growing organic crops on more acres than any state in the region. With that in mind, Marty Mesh received a SARE producer grant to educate diverse groups about Florida organic production at farm tours, workshops, and meetings. The get-togethers took on more of a focus when group leaders—from farmers to university faculty—decided to officially encourage University of Florida (UF) officials to prioritize organic research to address a bevy of needs. Mesh's year-long collection of activities developed partnerships among participants and, with support from UF administrators, galvanized the establishment of The Center for Organic Agriculture, which now provides cohesion to organic research conducted throughout the state.

A unique aspect is the center's

built-in farmer input. One of its two co-directors is a Gainesville vegetable farmer—the other is a UF faculty member—and its board of directors has an equal number of university personnel and farmers. According to Mesh, the farmer involvement in the administration of the center appeals to growers throughout the state. “True collaboration produces positive results that farmers will trust,” he said.

Started in 2003, the center now supports such projects as evaluating leguminous ground covers in organic citrus production and teaching extension educators the ins and outs of the National Organic Standards.

“Organic farmers are one more industry group that we need to address,” said Center Co-Director Mickie Swisher, a professor of consumer sciences at UF. “The organic market is growing every year, and consumers, too, need science-based information about this.”

**Above:** Kevin O'Dare of Indian River Farm in Vero Beach, Fla., shows off organically raised onions during a farm tour designed to showcase research needs to University of Florida officials.

Mesh and others had found it hard to find research-based production information about organic systems unique to Florida. Mesh's project—to facilitate a statewide discussion on organic research needs spanning disciplines and institutions, including Florida A&M University—was meant as a model. Others seem interested, too. At the 2004 Southern Sustainable Agriculture Working Group conference, a session about the creation of the center received high marks from participants, who Mesh hopes might emulate the successful partnership in their states. [For more information about this Southern Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for FS01-138.]



TRUCK FALTER

## Farmer Network Creates “Heritage Acres” Highway to Missouri Stores

When commodity prices tumbled in the late 1990s, a diverse group of Missouri farmers began to look beyond the traditional marketing channels. With help from a SARE grant, they developed a far-reaching distribution network to deliver sustainably raised products to independent grocers and retailers. Now, some 200 Missouri producers send their harvest under their “Heritage Acres” label to 42 stores throughout the state.

“We realized, no matter how smart, hard-working or efficient we were, there were external forces beyond our control,” said Russ Kremer, Missouri Farmers Union president. “We decided to create a cooperative type of marketing and distribution system where we could pool our resources and get food to a new marketplace.”

The farmers raise everything from beef, poultry, pork, and dairy to fruit, vegetables, and value-added products. Their label carries the assurance that livestock is raised by Humane Society “certified humane” standards—animals

are provided with more room, fresh air, and a diet without additives—and that vegetables and crops are grown sustainably with few synthetic chemicals.

Network leaders calculating potential farm profits for Heritage Acres farmers identified savings in production costs as well as a steady sales price. For example, the 29 “natural” pork farmers in the network should save about \$10 per hog produced while netting about \$45 more than average conventional prices. Most farmers sell about one-third or one-fourth of their harvest to network warehouses and processing plants. The network itself, which rents a central warehouse, should break even in 2005, its third year, Kremer said.

Heritage Acres products have helped 32 rural groceries and 10 independent St. Louis-area retailers, which were largely left out of mainstream distribution channels, keep their doors open.

Now, the stores and restaurants use Heritage Acres food to “differentiate ourselves,” Kremer said.

**Above:** Third- and fourth-generation farmers John and Chris Stegeman of Loose Creek, Mo., sell pork to Heritage Acres, a network that emphasizes sustainable Missouri-grown products for independent groceries.

The SARE grant helped the project leaders study successful models in other states, identify and test potential markets, and run consumer focus groups. They were struck by the unanimous support for family farms. “They wanted food grown by farmers in their community,” Kremer said.

Community development has been a major focus of the network, which has created new jobs with better wages in rural communities, both at the network’s three offices and cooperative grocery stores. “We believe family-farm agriculture and community-based processing are the foundations of sustainable communities,” Kremer said. [For more information about this North Central Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for LNC00-178.

## Season-Long Harvest: Cooperative of Community Farms Serves 200

A group of New Hampshire organic vegetable growers seeking to pool their resources and expand their retail reach organized a cooperative marketing enterprise with help from a SARE farmer/grower grant. The eight-farm cooperative—which follows the community-supported agriculture model of providing a “subscription” service of weekly fruit and vegetables—was welcomed by Concord area families. The growers originally hoped to recruit 60 families to pay up front for a season’s worth of vegetables, but reached 140 in their first season. In 2004, they will deliver to about 200 shareholders.

“It was wonderful to get two big bags of vegetables every week—it revolutionized our diets,” said David Frydman, a Concord resident who joined the Local Harvest CSA in 2003. “We liked the idea of having locally grown,

organic produce and supporting small farmers in our community.”

CSA farms, which have operated in the U.S. for more than a decade, create partnerships between consumers and farmers. Consumers share some of the risks by paying in advance, then reaping the harvest for months. While a CSA enterprise usually is run by an individual grower, the New Hampshire cooperative brings other farms into the mix, allowing them to produce what they grow best or substitute for others’ crop losses, said David Trumble, the co-op’s production manager. The farmers grow a wide range of vegetables, herbs, and flowers and include an option for shareholders to receive fresh bread.

The SARE grant helped the farmers incorporate as a cooperative, set rules, and promote the CSA in the Concord community. The 14-month process

allowed the growers to work through myriad business details, from setting pricing—\$425 a single share to \$779 for a family share plus fresh bread—to co-op voting procedures. While time-consuming, incorporating was valuable, Trumble said. “Rather than the customer suffering through our mistakes, when we got going, we knew what we would do,” he said.

The Local Harvest CSA farmers helped each other, sharing information about production issues like seed varieties and fencing options. Moreover, they diversified their income and improved their profits. “We get a guaranteed market and know ahead of time what we’ll grow, with prices negotiated beforehand,” Trumble said.

After the first season, two more farmers joined the group. One of them had worked previously for one of the co-op farmers and leased land to grow crops for the enterprise.

Frydman signed up for the Local Harvest CSA again in 2004. Not only did he relish the fresh food, but he and his kids also liked greeting their neighbors in the church parking lot, where they picked up their share every week. “We reconnected with people,” he said. [For more information about this Northeast Region project, go to [www.sare.org/projects](http://www.sare.org/projects) and search for FNE02-444.]

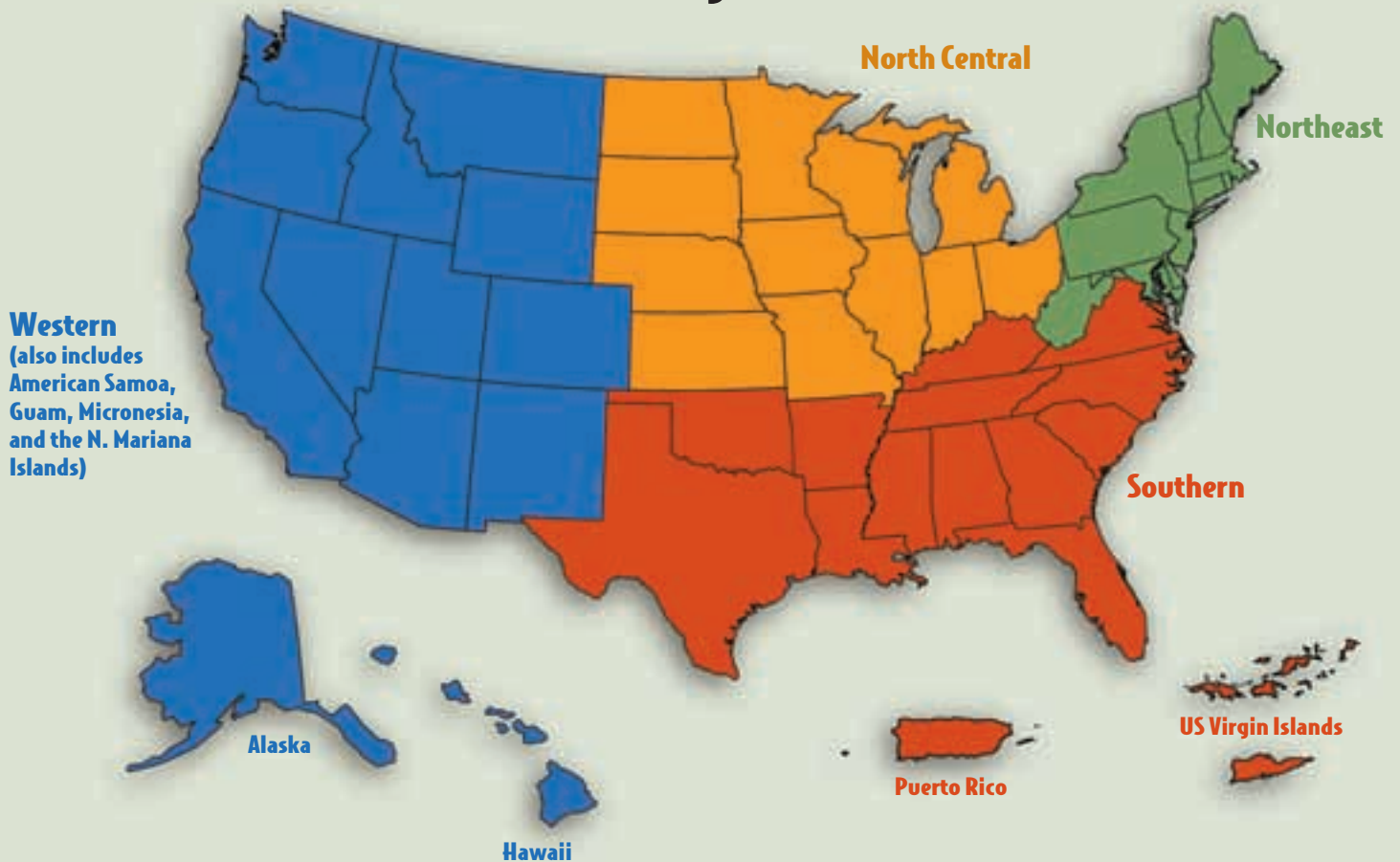
**Left:** From left, Betsy Gibberson, Bob Bauer, and Jennifer Ohler prepare to deliver vegetables to shareholders who joined their New Hampshire community supported agriculture enterprise, a cooperative of eight farms.



SCOTT FRANZBLAU

**S**ARE works to increase knowledge about—and help farmers and ranchers adopt—practices that are profitable, environmentally sound, and good for communities.

## SARE Regions



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