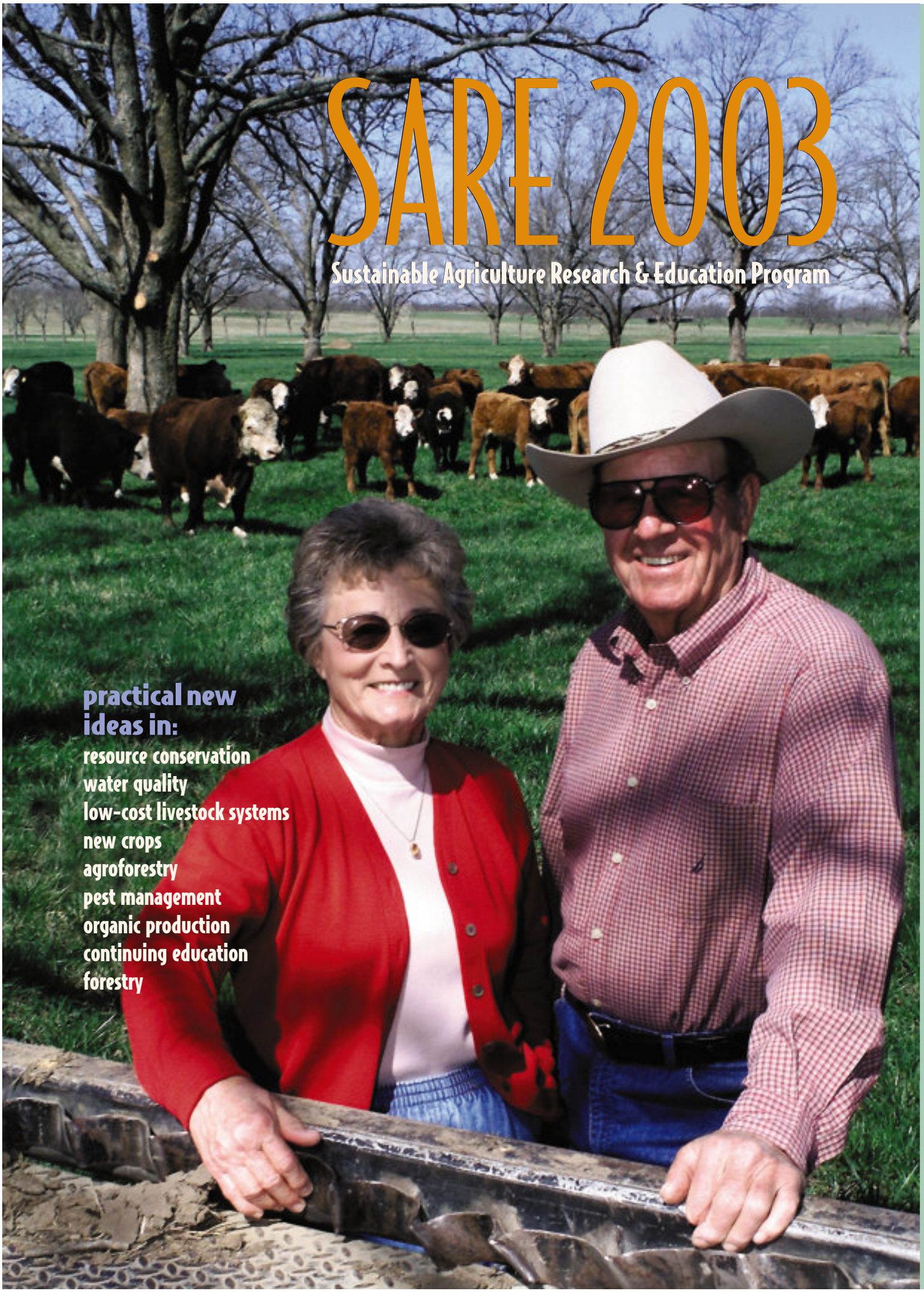
SARE 2003

Sustainable Agriculture Research & Education Program



practical new ideas in:

resource conservation
water quality
low-cost livestock systems
new crops
agroforestry
pest management
organic production
continuing education
forestry

Left: Co-funded with the Southern Rural Development Center, Southern SARE's Sustainable Community Innovation grants link sustainable farm and non-farm economic development through innovative partnerships. For example, Harvest for Humanity, a private charity, is partnering with the Immokalee Chamber of Commerce and Collier County to improve quality of life for farm workers in south Florida. Here, farm workers plant blueberries that they may own someday through an employee purchase plan at Harvest Farm, the largest blueberry operation in South Florida. (Project CS02-008). Photo by Richard Nogaj.

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
(402) 472-7081
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Northeast Region SARE
(hosted by the University of Vermont)
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(hosted by the University of Georgia and Fort Valley State University)
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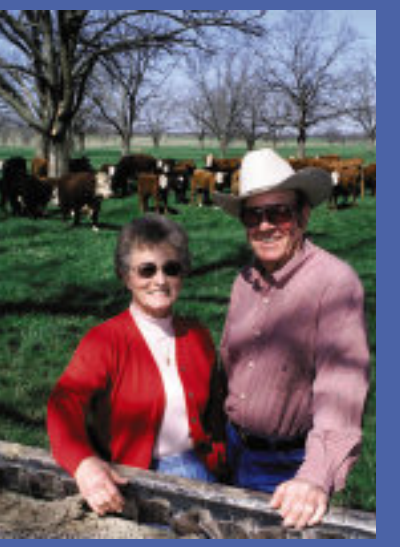
Western Region SARE
(hosted by Utah State University)
http://wsare.usu.edu
(435) 797-2257

- 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: Paul and Maxine Haydon of Okemah, Okla., cooperated with Oklahoma State University researchers who received a SARE grant to examine ways to improve integrated beef and pecan systems. The Haydons and their crew helped seed pastures, weigh livestock, and harvest pecans on a 50-acre study block. "They received information directly related to their farm," said project leader Dean McCraw, "while we got data that can get extrapolated to other farms." (See summary on p. 10.) Photo by Todd Johnson.

from the director

As interest in profitable alternatives in agriculture continues to build, so does the Sustainable Agriculture Research and Education (SARE) program. 2003 marks SARE's 15th anniversary, and in that time, we have seen tremendous response from producers wanting to know more about agricultural systems that promote profits, good stewardship of the land, and prosperous rural communities. SARE has grown, too. The program, part of USDA's Cooperative State Research, Education, and Extension Service, today funds projects and conducts outreach to the tune of $18.5 million a year. SARE's projects, designed to improve agricultural systems from farm to consumer, range from university research on integrated systems, to professional development opportunities for educators, to crop, livestock, and marketing innovations tested by producers on and around their farms and ranches.

Results from SARE's research are directly applicable to farms, ranches, and rural communities across the nation. Many farmers and ranchers cooperating on SARE grants have realized new ways to make money—while protecting the environment and improving quality of life in their communities. Consider just a few of those benefits, excerpted from the 12 SARE projects highlighted in the pages that follow:

- With fewer start-up costs and financial risks, goat and sheep producers in Virginia can maximize profits by creating pasture-based systems—and improve parasite management. (See page 7.)

- Adding a small fruit that packs a strong niche appeal diversifies marketing options in New England, while better connecting producers with food buyers. (See page 9.)

- Introducing sheep to grain systems in Montana improves pest management, boosts grain yields and creates an extra income stream. (See page 4.)

- Learning how to raise a certified organic crop or animal in Ohio can broaden marketing opportunities and net profits. (See page 6.)

- Reducing tillage in Colorado cropping systems can reduce tractor trips, translating to fewer expenses, less erosion, and improved organic matter in the soil. (See page 12.)

- With a sound rotation strategy, growers in Maryland outfox nematodes while adding profitable vegetable crops. (See page 5.)

SARE's national outreach arm, the Sustainable Agriculture Network (SAN), combines the results of SARE-funded research with other valuable information to produce award-winning publications. Last year, SAN produced a guide for educators who work with limited-resource farmers (see www.sare.org/bulletin/limited-resource). Soon, SAN will release a new book that will help agricultural entrepreneurs develop business plans to map out strategies that take advantage of new opportunities such as on-farm processing, direct marketing, organics, and rural tourism. Similarly, SARE's regional communications staff produces newsletters, Web resources and other material for their constituencies.

Our program's growth is reflected in the number of funded projects—some 2,500 since 1988—and by the newly minted grants programs adopted by SARE's four unique regions: North Central, Northeast, South, and West. (See map on back cover for regional borders.) From a new community innovation grants program in the South, to sustainable farmer-educators in the Northeast, to graduate student awards in the South and North Central regions, to "partnership" grants that foster the collaborative efforts of extension educators and producers in the West and other regions, the SARE program continues to flex to meet agriculture's quest for new, better ways to farm.

To learn more, read on. And be sure to visit SARE at www.sare.org

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

PHOTOS BY LINDA KEDDINGTON

Integrating Sheep into Grain and Alfalfa Systems Knocks Back Pests

In Montana, two crop-damaging insects—the wheat stem sawfly and the alfalfa weevil—have found comfortable winter refuge in wheat and alfalfa stubble. The insects raise huge problems for crop farmers, causing grain to tip over and alfalfa yields to fall. However, introducing managed grazing of sheep on crop residues after fall harvest disrupts the insects' lifestyles, SARE-funded research has found. Moreover, adding sheep brings multiple benefits to crop producers. By suppressing insects, sheep save farmers the costs of control measures like burning, tillage, and insecticides. Sheep also crimp weed populations, which reduces costly tillage or herbicides during fallow management. Meanwhile, sheep feed on low-cost crop residues and do their work without compacting the soil. Pat Hatfield, a Montana State University animal scientist, found through his SARE research that grazing sheep reduced over-wintering wheat stem sawfly larvae by 67 percent compared with tillage (51 percent) and burning (48 percent). In a related study, Hatfield and Sue Blodgett, MSU integrated pest management coordinator, found that sheep grazing alfalfa re-growth in winter and spring reduced over-wintering alfalfa weevil populations by 70 percent without compromising the yield or nutritional value of ensuing alfalfa harvests. There's more than enough sawfly-infested stubble in Montana's billion-dollar grain industry to go around, and integrating sheep into grain- and alfalfa-production systems could add an extra income source. Hatfield says sheep producers, encouraged by grazing research now being conducted on commercial-size plots with economic analysis, could work alone or in groups through partnership with grain or alfalfa producers to treat insect-infested fields. He sees ruminant grazing of crop residues—in Montana and around the world—as an economical and sustainable method of producing protein like lamb while allowing people to enter agriculture without a large outlay of capital. However, achieving the benefits will require patience. "Historically," says Hatfield, "farmers have been able to see immediate results from technological advances like fertilizer, pesticides, and genetically altered plant varieties. Our program, although less costly, progresses more slowly, requiring long-term commitments—but we ultimately anticipate success." [*For more information on this Western Region project, go to www.sare.org/projects and search for SW00-015.*]

Above: *In an alternative to traditional wheat stubble management, SARE-funded researchers are using sheep to control pests and improve soil nutrient cycling.*

Cover Crops Deter Root-Damaging Nematodes in Vegetable Systems

When Maryland growers added potatoes to their standard cropping rotations, they discovered a curious, unwanted result. Following potatoes with soybeans, a major commodity grown on Maryland's Eastern Shore, they experienced more problems with crop-damaging nematodes than ever before. They approached their Dorchester County, Md., extension agent, who connected them with University of Maryland scientists who began SARE-funded research into nematode control methods. The researchers focused on the troublesome root knot nematode that was affecting local yields. "The growers didn't want to give up potatoes as a crop because it fit well in their rotation, but they wanted to know what they could do, culturally, to reduce nematode levels," said Kate Everts, a University of Maryland plant pathologist and project leader. "They were having problems they had never had before." The treatments, co-designed and tested by area farmers and at a research station, focused on planting cover crops and adding organic soil amendments. Everts found that planting two years of a summer cover crop—sorghum sudangrass— combined with poultry litter soil amendments was effective in stemming nematode populations. The "winning" rotation: a winter small grain, followed by potatoes or cucumbers, then a summer cover, and back to a small grain. After two years, farmers planted soybeans following the spring potatoes. In that third year, researchers saw a reduction in nematodes, followed by improvements to soybean yields. When extension specialist and collaborator Bob Kratochvil tested similar treatments, the sorghum sundangrass also worked to cut the nematodes' presence in the soil. "If you interrupt a host species with a non-host species, you diminish the population so they're more manageable," he said. At least one farmer plans to continue planting summer cover crops to deter the pest. "It's learning in progress, and we're still experimenting with cover crops," said David Andrews, who farms 2,600 acres in Dorchester County. "We've noticed a difference in the nematode populations—not 100 percent reduction, but we're getting there." [*For more information about this Northeast Region project, go to www.sare. org/projects and search for* LNE00-131.]

Below: *Dorchester County, Md., Extension Agent Betsy Gallagher takes soil samples as part of a* SARE*-funded project seeking to reduce root-damaging nematodes in potatoes and soybeans.*

BOB KRATOCHVIL

Organic Workshops Shine Light on Grain, Livestock Enterprises

With commodity prices stagnant, many Ohio crop farmers, like their counterparts across the country, are eagerly weighing the profit potential of transitioning to organic production. After Ohio State University Extension and other state educators reported an increase in organic farming inquiries, the nonprofit Ohio Ecological Food & Farm Association (OEFFA) held a series of SARE-funded workshops and farm tours for agricultural professionals illuminating some of the key strategies for successful transition from conventional to organic production. Spanning two years, the educational effort focused on organic grain and livestock production, two key systems in Ohio. Organic is "a growing business here, and more and more people are interested," said Margaret Huelsman, an OEFFA educator who planned the professional development project. "Extension agents can be the bridge for people thinking about organic and actually implementing it on their farms." Workshops with scientific presentations were augmented by tours featuring some of the state's most successful organic producers. More than 80 people, including area farmers, attended a tour at the Spray grain farm near Mount Vernon, and more than 50 enjoyed a day of multiple farm stops throughout central and northern Ohio. The tours had a great impact, Huelsman said. "You can talk and read about things, but once you see, feel, and touch something, it becomes more real," she said. "A lot of these [educators] have never been on an organic farm, and to see that they actually do work is very important." The comprehensive information was put to good use by Mike Hogan, an Ohio State University extension educator who presented his own set of farmer-oriented workshops a year after the OEFFA experience using many of the same materials. Some 40 growers attended the university training, and at least two grain farmers from Carroll and Stark Counties have begun transitioning acres to organic. Their switch "came from the workshop we taught, and we were able to teach it because of the professional development workshop we participated in," Hogan said. [*For more information on this North Central Region project, go to www.sare.org/projects and search for ENC 99-040.*]

Above: *Ed Snavely, an organic grain and livestock farmer in Fredericktown, Ohio, raises hogs primarily on pasture. His Curly Tail Farm was one stop on a multifaceted tour for Ohio extension educators wanting to learn more about organic systems.*

PHOTOS BY SEAN MCGOVERN

JOE TRITSCHLER

Improving a System: Sheep, Goat Farmers Explore State of the Rumen

It's easy to see why small-scale farmers or those looking for new enterprises swell the ranks of the rapidly expanding meat goat and sheep industry. "Small ruminant systems offer greater flexibility to diversified small farms, and start-up costs are considerably lower than they are for a cattle operation," said Joe Tritschler, small ruminant extension specialist at Virginia State University. Moreover, slaughter-age lambs and kids can be raised on the farm, a more profitable venture than selling weaned calves. So many producers joining a fast-growing industry translates into a learning curve that's as wide as it is steep. Two SARE grants in Virginia are helping them maneuver the curve without crashing. With a SARE producer grant, Martha Mewbourne organized a hair sheep festival that attracted more than 150 to an event combining workshops on selecting, maintaining and marketing hair sheep with music, sheep dog demonstrations, and grilled lamb. "It was such a success that we're having a bigger one this year," said Mewbourne, adding that so many people want to attend that she's received funding from the Farm Bureau, the Virginia Sheep Industry Board and others. "Thanks to SARE's confidence in me last year, we've initiated a project that's good for the farmers and the economy." One of the topics addressed at the Scott County, Va., fair—internal parasite management—garnered particular notice. "The most serious problem we have encountered, indeed the limiting factor to our profitability, is intestinal worms in our goats," said Tony Burgess, owner of Holly Oaks Goats in Crewe, Va. Those intestinal worms are adult nematodes, and fighting them is a protracted battle, Tritschler said. While the lack of effective de-wormers designed specifically for small ruminants is an obstacle, so is not removing treated animals from heavily infected pastures, a practice that can result in re-infection. Using a Southern SARE on-farm research grant (a new grant program), Tritschler and technician Michaela Dismann are interviewing small ruminant producers about their parasite management programs and collecting fecal samples from their herds to determine which conventional and alternative methods are most effective. With more than 50 producers interviewed and data collected from about a dozen herds, Tritschler found that parasites have developed resistance to the most popular anthelmintics, and that no "magic bullet" has turned up in the alternative treatments. Instead, "a combination of lower stocking rates and annually rotating small ruminants with cattle, hay or other crops provides the best environment for keeping nematodes in check," he said. Information developed by the project will be used to train producers and extension agents in sustainable parasite control practices. [*For more information about this Southern Region project, go to www.sare.org/projects and search for FS02-154 and OF02-007.*]

Above: *With most internal parasites of small ruminants acquiring resistance to popular controls, SARE-funded researchers are testing new ways to manage nematodes in goats and sheep. The best solution: rotating small ruminants with cattle, hay or other crops.*

KEN SCHNEIDER

Ozark Herbs: Building a Profitable Enterprise One Root at a Time

With demand for medicinal herbs in the United States showing no sign of peaking, but little production information available, would-be herb farmers often struggle to produce economically sustainable yields. Understanding the forest and garden ecology of her 500-variety terraced herb farm in the Missouri Ozarks remains key for Lavinia McKinney to meet her profit, environmental, and educational goals. With a SARE producer grant, McKinney sought to increase her production and marketing of astragalus (*Astragalus membranaceus)*, a plant used in traditional Chinese medicine to boost the immune system. SARE funds helped maintain a new astragalus planting and collect root harvest information on five plots. Though the astragalus root harvest was low in the first year, McKinney was able to sell the dry root to an herbal product manufacturer at $17.50 per pound. By extrapolating the income from sales, McKinney determined that, with lowered labor costs, the root and seeds would be a feasible crop. She also plans to increase the soil's alkaline content to meet the needs of the base-loving plant. "The data we acquired from our astragalus is very important to us," McKinney said. "This is a very rewarding plant to grow, and one we would like to see in everyone's herb garden." McKinney's Elixir Farm has more than a decade's experience in cultivating medicinals, with a large collection of rare and unusual plants, the seeds of which she sells to producers across the country. Her continuous research into medicinal plants has brought more than 100 new species into cultivation in the last five years, many of them shown off at her nonprofit botanical garden. With a background as a master herb grower and researcher, McKinney was an ideal candidate to lead workshops at Elixir Farm on growing medicinal herbs. She conducted two three-day residential herb-growing workshops during her SARE grant period, attended by 25 farmers and gardeners. Those workshops are now annual events attracting about 40 participants each. [*For more information about this North Central Region project, go to www.sare.org/projects and search for FNC98-215.*]

Above: *Herb grower and researcher Lavinia McKinney tested production and marketing of astragalus, a medicinal herb, to improve profits and stewardship on her Missouri farm.*

Heritage Plant Holds Promise for Northeast Growers

The wild beach plum, a gnarly shrub that grows on sand dunes between Maine and Maryland, offers the potential to both diversify Northeast farm operations and give growers a financial boost. Beach plums, about the size and color of purple grapes, make a tasty, unusual jam and, for many New Englanders, conjure up summers spent on Cape Cod. The fruit's popularity and historically based appeal—beach plums have been harvested and processed into spreads by locals for more than a century—translate into a highly marketable new commodity. SARE-funded researchers at Cornell University planted beach plum stock on research stations and 12 farms in 2002, and their field day and resulting publicity encouraged 22 more farmers to request beach plum plants. Participating farmers in Massachusetts and New York, many of them vegetable, berry and cranberry producers looking to diversify, are interested in this niche crop that lends itself so well to value-added products. "It's something unique," said Rick Uva, a Cornell project cooperator. "People like that it has a local history and mystique." The plant, hardy enough to grow a heavy fruit crop in its native harsh dune environment, performed well on research stations even during 2002's summer drought. Growers, who will wait three or four years for plants to bear fruit, may be able to shore up dry years and attract new customers. "There's a tremendous local interest historically," said Ron Smalowitz, a Falmouth, Mass., vegetable and berry grower who has grown a plot of beach plums since 1996 and improved and expanded his stock to 300 with help from the Cornell team. Smalowitz processes his own plum jam for sale at his farm stand. While his berry business remains brisk, beach plum jam retails for $1 more per jar and "we can't keep it on the shelves," he said. Project leader Tom Whitlow predicts that restaurant chefs seeking unique and regional products will pay top dollar for the little plums. "It has a local panache," Whitlow said. [*For more information about this Northeast Region project, go to www.sare.org/projects and search for* LNE01-153.]

Left: *Beach plums hold a heritage appeal for many New Englanders, and New York and Massachusetts farmers are rising to the challenge. "We see it as a crop for small farms with diversified operations," said Rick Uva, a Cornell researcher.* **Middle:** *The beach plum's pale, pink-white flowers in spring decorate coastal sand dunes from Maine through Maryland, a harsh native habitat that bodes well for the shrub's success during summer drought.* **Bottom:** *For centuries, coastal residents have produced jam, jelly, relishes, and wine from tart beach plums.*

PHOTOS BY RICK UVA

Good Bedfellows: Cattle, Pecan Trees an Environmentally Sound Mix

DEAN MCCRAW

Oklahoma ranks second in the nation for native pecan production and third for its forage-based beef industry, so it's no surprise that cattle and pecans coexist on about 50,000 acres. They make good companions. Cattle gain weight on grass that otherwise would require mowing, return nutrients through manure, and prune the lower limbs of pecan trees. In return, orchard shade encourages cattle to graze and gain weight in hot weather. There's room for improvement in that symbiotic relationship, however, says Oklahoma State University (OSU) extension horticulturist Dean McCraw, who is using a SARE grant to refine the system. While most pecan/beef cattle operations use commercial fertilizer and follow a "typical" orchard spray program, "research has shown that profits and environmental impacts can be improved by replacing the purchased nitrogen with legume pastures and developing a customized pest management system based on scouting and weather monitoring," he said. "We are looking at how all these components interact on real farms." Legume pastures planted in the orchards increased daily weight gain for the steers, improved soil health by reducing grazing compaction, reduced nitrogen runoff and increased habitat for beneficial insects. Over the three-year project, native pecan trees in plots with legume pastures averaged nearly 700 pounds of pecans per acre and over 250 pounds of beef gain per acre without any added nitrogen fertilizer. The result: a savings of nearly $30 per acre in fertilizer cost while essentially eliminating fertilizer runoff potential. The benefit of legumes was most dramatic in flood-prone plots, where legumes prove tough enough to withstand excessive water and outcompete other vegetation. While the orchard/beef combo proves useful in eastern Oklahoma, with its 100,000 acres of native pecan trees, another SARE project is helping ranchers find the system that best suits their own resources. Damona Doye, OSU extension economist, used case studies of cow/calf operations to identify management strengths and weaknesses in animal science, forages, financial management, and herd health. During the course of the multi-state project, more than 100 ranchers in three states identified potential cost-saving measures of about $3,000 annually each. Doye shared case study findings with other producers during information exchange forums and offered training to veterinarians and accountants so they can better assist their farm clients to improve resource management practices. [*For more information about these Southern Region projects, go to www.sare.org/projects and search for LS99-102 and LS96-074.*]

Above: *Workers take a break from harvesting pecans at the Haydon Farm in Okemah, Okla., where SARE-funded researchers are studying better pasture management and pest reduction strategies in pecan and cattle systems (below).*

TODD JOHNSON

Mississippi-Led Workshops Create Opportunity for Forestland Owners

Mississippi State University faculty are broadening profit-making options for forestland owners, many of whom assume timbering is the only way to make money from their land. More than 3,000 private, non-industrial landowners in Mississippi attended a series of workshops to learn to better manage their forestland. With help from a SARE grant, which included co-funding from USDA's National Agroforestry Center, the successful educational effort is moving to Arkansas, Louisiana, and Tennessee. That expansion will build upon the program's successes since 1998, when the Mississippi State University Extension Service started conducting what would become 39 workshops for people who own 10 or more acres of forestland. Thus far, participants estimate the economic value of what they learned about managing their woodlands to exceed $27 million, says project leader Glenn Hughes, a forestry specialist. "The environmental benefits are also significant, as we highlight the value of best management practices in protecting soil and water quality," Hughes said. "When you consider that about 1 million private forestland owners live in the four south-central states, the environmental and economic implications are tremendous." To expand beyond Mississippi, researcher Marcus Measells surveyed 6,000 landowners in the four states. Responses to those surveys, along with focus groups, indicate that most of the private owners lack forestry knowledge and are not aware of government programs that could help improve their management skills. Hughes designed workshops around the needs revealed by the surveys. For example, the surveys indicate a prevalent view that timbering is the only way to make money with forestland. The workshops provide information to participants about other potential profit makers, such as pine straw, hunting leases, and agroforestry enterprises. The agroforestry element is crucial since farmers own 20 percent of the private forestland in Mississippi. "Historically, farmers clear-cut the forests and turned it into cropland," said Measells. "A prime example was the Mississippi Delta, where hardwoods were cut right up to the streams causing erosion, sedimentation, and water pollution. The workshops introduce the concept of using riparian areas to filter the water and hold the soil." If all forestland owners were to become active managers, Hughes projects that the increase in timber production value alone would exceed $4 billion annually in the four states. Using best management practices would enhance wildlife habitat, reduce soil erosion, and maintain or improve water quality. [*For more information about this Southern Region project, go to www.sare.org/projects and search for LS01-129.*]

GLENN HUGHES

Above: *Forestland owners in the south-central region of the U.S. gained multiple opportunities to learn more about profitable and sustainable land use, thanks to a SARE-funded project.*

Conservation Tillage in Western Crops Boosts Profits, Cuts Erosion

In western Colorado, as in other arid Western farming regions, most farmers irrigate in furrows between crop rows plowed clean to facilitate water flow. Using a moldboard plow, however, accelerates the erosion that, in windy Colorado, can blow unprotected soil like dust. Aided by a SARE farmer/rancher grant, Randy Hines, a crop farmer in Delta, Colo., was determined to find a better way. Hines built a new tillage tool that leaves vegetative residue on the soil, ripping the earth simultaneously to create irrigation furrows every other 30-inch row. Not only did Hines save soil, thanks to the blanket of corn stalk residue he left on the surface, but he also reduced by half his number of tractor passes before planting corn, saving between $35 and $50 an acre. Corn yields remained similar to the previous year's crop grown under con-

WAYNE COOLEY

ventional tillage. In 2001, Hines planted yellow beans in the corn stalks, using the same minimum tillage practices, comparing conventional plowing on an adjacent field. Hines noticed fewer weeds, used less water, and experienced no yield reduction in his bean harvest. In fact, in just two years, Hines doubled his soil's organic matter. Hines' efforts have sparked interest among other area farmers, who have planted winter wheat in minimum-till corn, onions in hay, and other combinations. "Before our project, there was little minimum tillage done in our valley," Hines said. After other farmers saw his results, every year "there are more acres not being plowed." Converting farmers who prefer clean tillage practices is indeed becoming an easier sell, thanks to research by Hines and others, said Wayne Cooley, a soil and crop extension agent at Colorado State University. "We've worked together with producers, trying to promote reduced tillage wherever we can make it work for this area," he said. "Randy is an innovative producer looking for ways to save money." [*For more information about this Western Region project, go to www.sare.org/projects and search for* FW00-012.]

Above, below: *Randy Hines' self-designed tillage tool enabled him to preserve soil with crop residue and combine tractor passes, saving him $35 to $50 an acre.*

CHERYL HINES

SUSAN DONALDSON

Living on the Land: Improving Education for Small-Acreage Farmers

Over the past several decades, agricultural land use patterns in the West have changed dramatically. For example, in Nevada, most ranches were greater than 100 acres in the early 1900s; today, more than half of the state's farms comprise less than 10 acres. Increasingly, those small-acreage landowners seek help in managing their livestock and natural resources. To respond, Sue Donaldson, a University of Nevada water quality education specialist, used a SARE professional development grant to develop a wide-reaching curriculum for agricultural educators focusing on growing plants and animals on small properties in environmentally sensitive areas. "People acquire properties, but they've never managed 2½ acres with flood irrigation before," Donaldson said. "People leave horses on pasture 365 days a year and the grass never has an opportunity to recover its vigor. They don't understand how grass grows or how much they're damaging it." The curriculum, dubbed "Living on the Land: Teaching Small Acreage Owners to Conserve Their Natural Resources" (co-developed with extension educators in California, Colorado, Utah, Oregon, Washington, Idaho, and Montana), covers the basics of goal-setting, soils, water, vegetation, and animals, and answers such questions as how to maintain healthy pastures and protect household drinking water. Initially, the project trained close to 50 educators in eight western states, including representatives from extension, the Natural Resources Conservation Service (NRCS), and local conservation districts. Since then, Donaldson has distributed about 900 copies of the program on CD-ROM across the country. In Idaho, educators are in their second year of teaching "Living on the Land" to a group of eager students. "No one offers anything similar to this," said Kevin Laughlin, an extension educator who adapted the program to a hands-on Idaho focus. "They want to be better stewards of the land and they have a stewardship ethic, but they just don't know how." After 18 lessons, the first group emerged with a better understanding of managing natural resources on their ranches, said Laughlin, who has seen new fences and pastures springing up across the seven-county area. "I have been doing small-acreage programs since 1981, and this is the first program where we're seeing the actual outcomes within a year's time," he said. [*For more information on this Western Region project, go to www.sare.org/projects and search for EW99-003.*]

Above: *Teaching small-acreage landowners how to better manage livestock and natural resources on their ranches was the focus of a new SARE-funded curriculum designed for extension educators.*

Grass-Based Dairy Systems Prove a Water Quality Winner

Pasture-based dairy farmers report increased profits, a more relaxed lifestyle, and a host of environmental benefits not found in systems that require rearing field crops for animal feed and confining cows in barns. SARE-funded research at the University of Wisconsin bears out at least one of those claims: Management-intensive grazing (MIG) is better for groundwater quality than conventional dairy/crop farms. Scientists often attribute groundwater contamination in central Wisconsin to nitrates from agricultural practices, but SARE-funded research on two grass-based dairy farms in the area showed that groundwater was not seriously affected by grazing. Researchers Nancy Turyk, Michael Russelle, and Bryant Browne launched a study to determine if denitrification might be responsible for protecting the groundwater. The study is taking place on three MIG farms and a conventionally cropped dairy farm in three central Wisconsin counties. In a typical crop farm, nitrogen—most often applied as commercial fertilizer—is converted into nitrates that move through the soil profile and can pollute groundwater and nearby streams and rivers. Preliminary results from the Wisconsin grazing systems study show that some of the nitrogen on MIG farms is changed into nitrogen gas, which is released into the atmosphere as a benign component of air. Other studies suggest that the denitrification occurs thanks to higher levels of bacteria in grassland soils. Moreover, the researchers attribute the greater gas conversion to bacterial food from animal waste. "Denitrification occurs more readily with animals on the grassland because they add more carbon and bacteria to the system," Turyk said. Moreover, the dense and deep root systems formed by the roots of perennial grasses and legumes can absorb excess nitrogen, in stark contrast to most annual crops. "In crop farms, farmers usually fertilize at planting when there are no roots" to capture excess nitrogen, Turyk said. Wisconsin dairy farmers are interested in the findings; four of them volunteered to help monitor their herd movements in and out of pasture paddocks. Paul Onan of Portage County converted his 50-cow herd to grass-based dairying in 1994 and was eager to learn if his aim to be more environmentally friendly was paying off. "We're still adding nitrates to the groundwater, but not nearly as much as under a cropping situation," Onan said. "We need to try to fine-tune our system." [*For more information on this North Central Region project, go to www.sare.org/projects and search for LNC01-181.*]

SHANNON HAYES

Above: *Bob and Karen Brenneman, who run a grass-based dairy farm in Rio, Wis., helped SARE-funded researchers test water quality by tracking the movement of animals in the study site.*

Farmers as Educators: New Program Sends Information Peer to Peer

NANCY KASPER

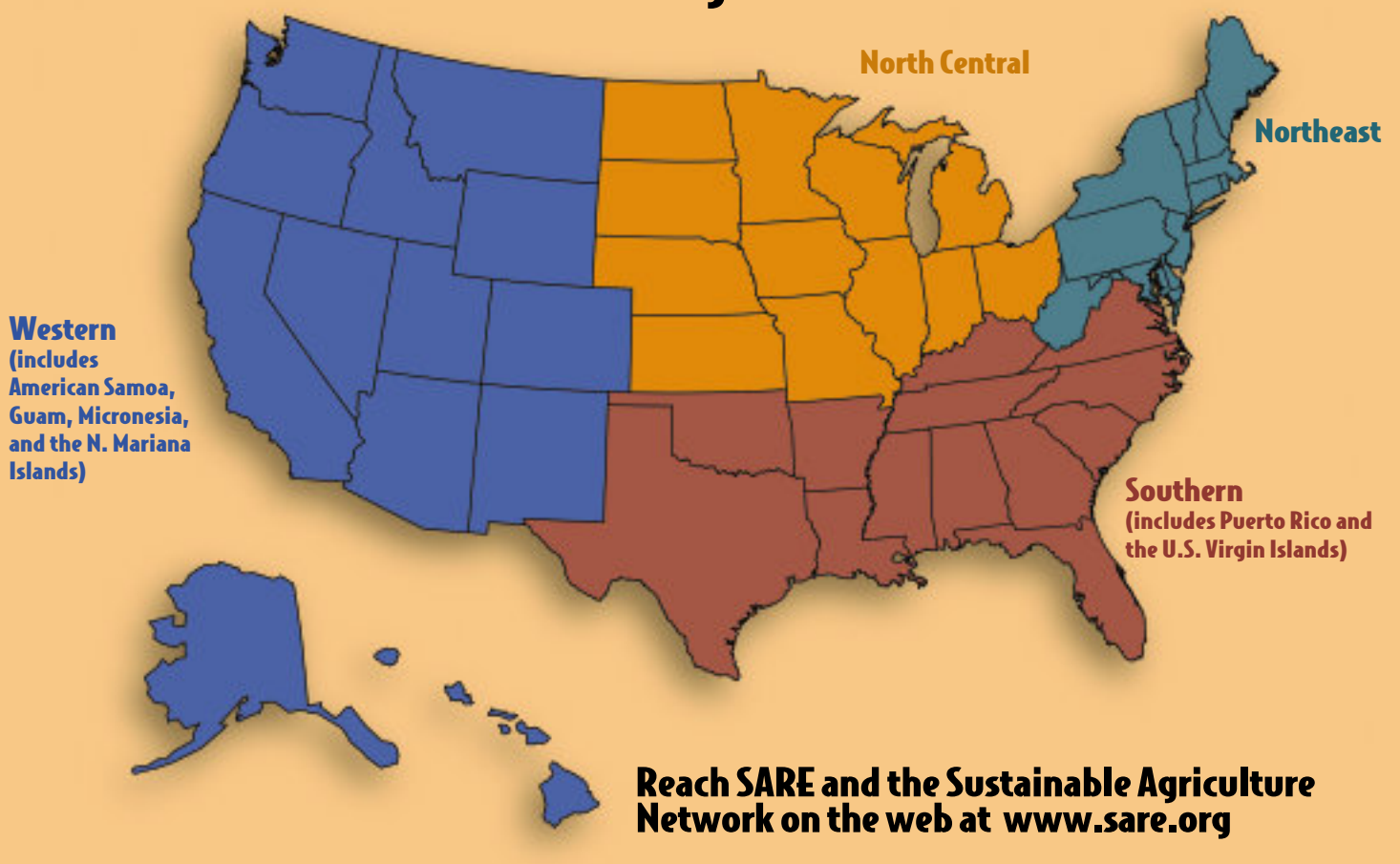
Producers successful at improving profits and meeting stewardship goals on their farms often are asked to share their knowledge with others, as their personal experience and connections to programs like SARE turn them into hot information sources. Rarely, however, are they compensated for their time. In 2002, Northeast Region SARE launched a sustainable farmer-educator (SFE) program to compensate three farmers for their educational efforts. Educator Steve Groff, who has virtually eliminated erosion on his Lancaster County, Pa., crop and vegetable farm thanks to innovative cover cropping and no-till strategies, is a frequent speaker at conferences and hosts a popular annual summer field day. In 2002, he made contact with some 400 interested individuals. "I feel I've made good impact with almost every contact I've made," said Groff. "I try to make people think about why they are using certain practices on their farms." Groff fields numerous questions about no-till pumpkins, which he grows on cover crop mulch to produce a cleaner fruit. When he spoke to the Northeast Society of Agronomy, he appreciated the opportunity to interact with researchers and extension educators "who can amplify my message to many others." Educator Elizabeth Henderson, an author and long-time organic vegetable producer and community-supported agriculture (CSA) operator in New York, spends much of her off-season presenting talks. A memorable meeting in 2002 was her visit to a New Hampshire CSA board of directors struggling with limited land and financial resources. Henderson provided a list of successful CSA farms and "helped them assess the opportunities they enjoy by living in an area that is inundated by visitors with money to spend," she recalled. "I left them with suggestions that can help them develop a short-term plan for getting through the next season and a longer term plan to solve their need for more land." Educator Larry Shearer, a long-time grass-based dairy producer in Vermont, received many more invitations to speak when he became a SARE educator. A New York county extension agent asked him to be a source at a series of dairy farm meetings throughout the state. The meetings were packed with interested would-be graziers. "With the low price of milk, there is more interest about managing resources to reduce expenses," Shearer said. Northeast SARE will expand the program to represent more farming systems and marketing strategies in future years. [*To learn more about this Northeast Region project, go to http://www.uvm.edu/~nesare/news_sferel.htm.*]

Above: *Elizabeth Henderson, a community-supported agriculture (CSA) farm owner in Newark, N.Y., and vegetable farmer Steve Groff of Lancaster County, Pa. (below)—designated as SARE "educators" in 2002—were compensated for their outreach efforts.*

PHOTO COURTESY OF THE GROFFS

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

SARE Regions



Reach SARE and the Sustainable Agriculture Network on the web at www.sare.org

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