NORTH CENTRAL REGION

Sustainable Agriculture Research & Education

FIELD NOTES



Iowa Farmers Seek Sustainability with Cover Crops and No-Till

In 2002, a \$6,500 SARE grant funded an idea for a new tool at the Rodale Institute in Kutztown, Pennsylvania. The tool was a rollercrimper, a steel drum with blades that was mounted to a tractor and used to roll down cover crops. The idea was that the mat of dead cover crops would act as mulch, which researchers hoped no-till farmers could use to suppress weeds. Fast forwarding to 2018, an increasing number of farmers are using roller-crimpers as an approach to terminate cover crops. Two neighboring farmers in west-central Iowa, Billy Sammons and George Naylor, have been experimenting with sustainable farming practices for decades. Sammons operates a 120-acre no-till farm with non-GMO corn, conventional soybeans, and alfalfa. Naylor has been raising non-GMO corn and soybeans for 40 years on his 400 acre farm. Both farmers have been transitioning acres into organic production. In 2016, Sammons and Naylor teamed up and received a \$14,893 NCR-SARE Farmer Rancher grant to experiment with cover crops and notill to improve the sustainability of their corn and soybean systems.

"Independent of farming style, nitrate leaching, and erosion are challenging issues that cover crops help to mitigate," said Sammons. "For the organic farmer, cover crops are imperative because so much depends upon microbial activity and ultimately, soil health. For the conventional farmer, cover crops can help stabilize soil movement and erosion and provide some organic matter."

Each farmer set aside a 40-acre plot for the project; Sammons' test plot was no-till, and Naylor's test plot was tilled. In September 2015, they broadcast cereal rye cover crop seed at 3 bushels per acre into standing corn in Sammons' no-till plot using a modified Hagie highboy seeder. The following May, they planted soybeans in 15-inch rows into the standing rye, which was about 5' tall. They roller-crimped immediately (they crimped the rye twice since it was not quite in full anthesis). In the tilled plot, the soybeans were growing normally, as were the weeds. Within a month, the soybean growth in

the no-till field matched the growth in the tilled field.

"We had good success in year one planting soybeans into standing rye and then crimping the rye post-planting," said Sammons. "Mechanical, physical, and NOP-compliant herbicidal weed control costs in the tilled field eliminated any initial yield benefits according to calculations using the Ag Decision Maker averages for labor, fuel, materials, and equipment depreciation costs."

During the second year of their project, they aerially applied a combination of oats and Hairy Vetch onto the tilled and no-till plots in October 2016. In the no-till field, the vetch survived a mild winter and was difficult to terminate. Sammons used a no-till, single sweep cultivator to boost the corn yield, but it was too late, and the yield suffered. Meanwhile, in the tilled field, the vetch was incorporated at about one foot of growth. The incorporation of the vetch in the tilled field prevented competitive interference and accelerated nutrient availability from the vetch, but Sammons says that finding is troublesome for a no-till operation.

"We need to experiment using a tactic learned from Jeff Moyer of the Rodale Institute," said Sammons. "The strategy involves mowing the vetch early in the spring growing season which acts to 'trick' the vetch into accelerating its growth toward the reproductive stage. If this works, then we could roller-crimp the vetch earlier to allow for planting the corn earlier and utilizing the nitrogen from the decomposition of the vetch earlier in the growing cycle."

So far, Sammons and Naylor have shared their findings at several field days and conferences. Their Practical Farmers of Iowa (PFI) field day in June 2016 attracted more than 120 people from five states, the largest crowd for a field day in PFI history, to date. The Newsletter of the NCR-SARE Program

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With SARE support, Billy Sammons (left) and George Naylor (right) are working to improve cash crop production on their lowa farms with a combination of cover crops and no-till practices, including a roller crimper. Photo courtesy of Billy Sammons.

"Essentially, weed suppression was the central concern since out-of-control fields have such a negative influence on yields and successive weed seed banks because there are very few mechanical operations available once the cash crop has passed the early growing stages," said Sammons. "Through personal correspondence with all of the farmers that actually bought roller-crimpers over the last year and one-half, the general consensus was that the investment was worth it."

Sammons and Naylor want to continue to collect data, and in particular, they want to determine if rye can be crimped well after soybean emergence without injury. If they can, they intend to share their findings with the Risk Management Agency to ask for their consideration of providing an exemption on termination before emergence.

For more information, and to see videos and figures documenting Sammon and Naylor's NCR-SARE Farmer Rancher grant project, visit the SARE project reporting website at https:// projects.sare.org/search-projects/ and search for project number FNC16-1055, or contact the NCR-SARE office.





NCR-SARE Awards \$4.5 Million in Grants

NCR-SARE is pleased to announce the projects that have been selected for funding for several grant programs. NCR-SARE's competitive grant programs awarded 106 projects about \$3.8 million this past year; the programs offer grants for producers, researchers, students, educators, organizations, and others who are exploring sustainable agriculture in America's Midwest. Another \$.66 million supported NCR-SARE's regional state coordinators, who train agriculture professionals in sustainable practices and raise awareness about SARE grants and resources.

The Farmer Rancher Grant Program is a competitive grant program for farmers and ranchers who want to explore sustainable solutions to problems through on-farm research, demonstration, and education projects. In 2018, 42 grant projects were selected to receive a total of more than \$515,000 through this grant program.

For the 2018 Youth Educator Grant Program, NCR-SARE awarded \$26,000 to 13 projects. The competitive Youth Educator Grant Program supports educators who seek to provide programming on sustainable agriculture for youth.

The Graduate Student Grant Program is a competitive grant program to fund graduate student projects that address sustainable agriculture issues. For the 2017 Graduate Student program, NCR-SARE awarded more than \$214,000 to 18 projects.

For the 2018 Partnership Grant Program, NCR-SARE awarded almost \$408,000 to 14 projects. NCR-SARE's Partnership Grant Program is intended to foster cooperation between agriculture professionals and small groups of farmers and ranchers to catalyze on-farm research, demonstration, and education activities.

The Research and Education Program is a competitive grant program for researchers and educators involved in projects that explore and promote environmentally sound, profitable, and socially responsible food and/or fiber systems. For the 2017 Research and Education program, NCR-SARE awarded \$2.2 million to 12 projects ranging from \$120,000 to \$199,944.

For the 2017 Professional Development Program, NCR-SARE awarded more than \$517,000 to seven projects. Professional Development Program competitive grants emphasize training agricultural educators in extension, the Natural Resources Conservation Service, private, and not-forprofit sectors, using farmers as educators and addressing emerging issues.

To learn more about these funded projects, visit the NCR-SARE website for lists of funded projects and descriptions of the projects at www.northcentralsare.org/ Grants/Recent-Grant-Projects. Go to www. northcentralsare.org/Grants for timelines and more information on how to apply, or contact the NCR-SARE office.

To learn about the NCR-SARE grants funded in your state, visit the NCR-SARE website here: www.northcentralsare.org/ grants/Funded-Grants-in-Your-State, where you can view a portfolio summary and funded grants list for every state and island protectorate. The focus for each of the NCR-SARE grant programs is on research and education. Funding considerations are based on how well the applicant presents the problem being addressed, the project's relevance to sustainable agriculture in the 12-state North Central region, and how well it aligns with NCR-SARE's goals, among other factors specific to each grant program.

NCR-SARE's Administrative Council (AC) members decide which projects will receive SARE funds. The AC includes a diverse mix of agricultural stakeholders in the region. Council members hail from regional farms and ranches, the Cooperative Extension Service, universities, federal agencies, and nonprofits. Since 1988, the SARE program has helped advance farming systems that are profitable, environmentally sound, and good for communities through a nationwide research and education grants program. The program, part of USDA's National Institute of Food and Agriculture, funds projects and conducts outreach designed to improve agricultural systems.

Grant-Writing Assistance

Are you interested in writing a proposal for an NCR-SARE grant? Did you know that NCR-SARE can provide grant applications, reports from other projects, lists of funded projects, or other sustainable agriculture information? To receive more information about the NCR-SARE grant programs' preproposal/proposal processes and timelines, contact the NCR-SARE office, or visit www.northcentralsare. org/Grants/Write-a-Successful-Grant.

You can also sign up to receive notifications when grant programs are accepting proposals; simply go to www.sare.org/About-SARE/Join-Our-Mailing-List, or contact the NCR-SARE office at ncrsare@umn.edu or 612-626-3113.

SARE State Coordinators

SARE has a network of state coordinators working in each state and island protectorate. They hold workshops and field days to share sustainable practices and research results, and generally serve as agriculture resources in their state. SARE sustainable agriculture coordinators help train agriculture professionals in sustainable practices, share SARE project results, and work with SARE grant applicants. Find your SARE State Coordinator and view documents about funded grants in your state by visiting www.northcentralsare.org/Professional-Development/State-Coordinator-Contact-Info.

Michael Fields Grant-Writing Assistance

The Michael Fields Agricultural Institute (MFAI) provides free grants advising services with priority to two target groups in the Midwest:

- In Wisconsin: All new or existing producers and agriculture-related businesses, as well as those working with them. Agriculture includes forestry and fisheries.
- In the Midwest: Beginning farmers, limitedresource farmers, socially disadvantaged farmers and/or military veterans, as well as organizations working with these farmers.

For more information and to be placed on the e-list for program announcements, please contact MFAI and Wisconsin Farmers Union's Grants Adviser, Kitt Healy, at 630-346-4749 or gracekhealy@gmail.com.

Also visit www.michaelfields.org/grant-advisingresources/.



New Research Tackles Concerns About Grazing Corn Residue

A team of researchers at UNL found that there was no difference in yield or soil attributes if corn residue was grazed using UNL's residue grazing recommendations. Photo courtesy of UNL.



Since the 1850's, several states in the North Central region have dominated corn production nationally, earning the nickname "The Corn Belt." It should come as no surprise, then, that corn residue is abundant in the region. Rick Rasby, Associate Dean of Extension, professor, and Beef Specialist at the University of Nebraska-Lincoln (UNL) says corn residue can be excellent feed for livestock, and that cow costs can be reduced if the cows graze to get their nutrient needs as compared to feeding harvested feeds. Rasby was raised on a small, diversified livestock and crops farm, and grew up working with livestock producers.

"Crop residue is one of the most under-used feed resources for beef cattle, at least in Nebraska," said Rasby. "In addition, the most expensive cost in the beef cow/calf enterprise is feed costs. Corn residue is a nutritious inexpensive feed source for beef cows. Row crop producers are concerned that allowing livestock to graze their corn residue will reduce the yield of the subsequent crop and also cause compaction."

To address producers' concerns, Rasby applied for and received a \$199,059 NCR-SARE Research and Education grant to determine the effects of corn residue grazing and baling on subsequent grain yield and soil productivity. The team had already collected long-term data from two locations in Nebraska, but they wanted to expand their research by using cooperator sites across Nebraska that had different soil types. Six sites were identified to participate in the project with three replicated treatments: control, baled, and grazed (using UNL's corn residue grazing recommendations). Rasby's team collected yield data and soil data in the spring and fall each year for three years.

After three years of the study, Rasby reported that there were no yield reductions in corn or soybean yield (when the field was in a corn-soybean rotation) when corn residue was removed by grazing. He also reported that grazing corn residue, using stocking rates recommended by UNL, did not result in compaction. Although the team reported no reduction in yield and no significant compaction with grazing corn residue, water and wind erosion were evident when residue was removed by baling.

Rasby says that for every bushel of corn, 18 lbs. of stems, 5.8 lbs. of cobs, and 16 lbs. of husks and leaves are produced. Cattle are selective grazers, and will eat any grain remaining first, followed by the husk and leaf, and finally the cobs and stems. UNL's corn residue grazing recommendation is to remove 8 lbs. of husk and leaves per bushel of corn produced. Rasby understands the importance of leaving residue on the field for soil health purposes; he says that targeting a grazing strategy for removal of 8 lbs. of husks and leaves per bushel means

that just 12% of the total residue is removed.

"Over the last 15 years, cow costs have almost tripled," said Rasby. "Crop residue grazing, when grazed at UNL recommended rates, allows cow/ calf producers to reduce feed costs and remain sustainable. In addition, our data says there is a slight increase in grain yield when the residue is grazed the previous year—a win-win situation."

Rasby's team used a varied approach to engage producers and deliver the results of their project, including field days, producer meetings, YouTube videos, written reports, a website, and regional and national meetings. They created a Crop Residue Exchange website to facilitate mutually beneficial grazing agreements. The site allows crop producers to list available crop residue, and allows cattle producers to find available crop residue. In addition to facilitating crop/livestock producer relationships, they plan to use the website to provide educational material that supports those relationships such as lease agreement templates. Access the exchange online at https://cropresidueexchange. unl.edu/. UNL also offers a Corn Stalk Grazing Calculator online that allows producers to consider a wide variety of variables when making corn residue grazing decisions, including costs such as transportation. It's available online at https://beef.unl.edu/learning/cornstalkgrazingcalc. shtml.

For more information on Rasby's NCR-SARE Research and Education grant project, visit the SARE project reporting website at https:// projects.sare.org/search-projects/ and search for project number LNC13-354, visit https://beef.unl.edu/documents/2017-beefreport/201717-Effect-of-Corn-Residue-Grazing-or-Baling-on-Subsequent-Crop-Yield-and-Nutrient-Removal.pdf/ to see detailed figures from the project, or contact the NCR-SARE office.



UNL's online Crop Residue Exchange allows crop producers and cattle producers to exchange information about residue grazing needs and opportunities.

FIELD NOTES 3

Peer-to-Peer Food Safety Education Fruitful for Hmong-American Farmers in Minnesota

When the Food Safety Modernization Act (FSMA) was signed into law in 2015, it included new provisions that regulate food safety requirements for some fruit and vegetable farms. This new federal food safety legislation, along with market-based audit programs like Good Agricultural Practices (GAP), can seem daunting to smallscale or diversified farmers. As a statewide Extension Educator for farm food safety at the University of Minnesota, Annalisa Hultberg says her program's goal is to help fruit and vegetable growers understand the science-based best practices to reduce potential risks on the farm.

"While many farmers sell vegetables at farmers' markets, these markets are becoming more saturated, and many farmers seek to enter new wholesale markets," said Hultberg. "These wholesale markets often require food safety training, audits, or a written food safety plan. We help farmers understand how Good Agricultural Practices can improve the safety of their fresh produce and help them enter these new markets. You can never eliminate all the risks, but doing basic things like washing hands, cleaning surfaces, and getting water tested goes a long way in reducing potential risk."

Hultberg has been working with the Hmong-American farming community in Minnesota for more than ten years. She recognized that some of these concepts or requirements were new to some of the Hmong-American farmers she works with; she learned from the farmers that a peer-to-peer educational model could be an effective way to share this information. Hultberg received a \$29,897 NCR-SARE Partnership grant to work with a small group of Hmong-American farmers to provide in-depth education around farm food safety principals, help them implement these evidence-based food safety practices on their farm, and provide a platform to share these ideas with their peers. An advisory board of Hmong-American farmers led the activities, planning, and deliverables of the project, and it was evident early on that the farmers wanted to lead the trainings themselves.

"Building capacity among a few farmers, so that they can share that information with their friends, is a good practice and well-suited for this community, " said Hultberg. "The farmers were empowered and happy to participate, and were very proud to teach these concepts to their fellow farmers."

Two nonprofit partner organizations, the Hmong American Partnership (HAP) and The Good Acre, helped recruit farmers to participate in the workshops and helped ensure that the content met the needs of the growers. HAP's agriculture program associate, Tria Vue, works directly with farmers and builds relations between them and local and regional markets; HAP offers educational training program on a variety of topics, and this project became one of the training opportunities they offered. Meanwhile, The Good Acre, a nonprofit food hub that buys directly from many immigrant farmers for wholesale and CSA, had some funds available to build hand washing stations, which meant they could provide workshop participants with the materials they needed to build hand washing stations, as well as a food buyer's perspective.

During the first year of the project, project "farmer leaders" received compensation to attend field days, conferences, and workshops across Minnesota to enhance their farming skills, knowledge, and leadership capacity as peer-to-peer educators. Meanwhile, the project team hosted two field days and two winter workshops, which showcased the construction and use of safe hand washing stations and safe vegetable washing stands, water quality and testing, and animal exclusion and fencing options. During the second year of the grant, the Hmong-American farmer leaders who had been trained during the first year took on more responsibility. Ten field days, two conference presentations, and the development of food safety videos in the Hmong language helped the farmer leaders build their confidence and knowledge to share with other farmers.

"I have two hand washing stands on my farm that they helped me learn to build, and my family uses them before we pick the vegetables," said one workshop participant. "I don't want to make someone sick. This makes my produce safer and cleaner."

By the end of the project, the team had helped one producer develop a food safety plan. That farmer won a contract with Minneapolis Public Schools, and was able to deliver a large quantity of produce in fewer deliveries, which was a goal for his farm. He has continued this contract, each year increasing the amount of produce sold to the school district.

"This project gave him the skills and knowledge necessary to meet demands of growing for Minneapolis Public Schools," said Hultberg. "He's also getting organically certified, so having both of those certifications is a great place for him to be from a marketing standpoint."

For more information, visit the SARE project reporting website at https://projects.sare.org/ search-projects/ and search for project number ONC16-016, or contact the NCR-SARE office. You can view the food safety videos from this project online at www.youtube.com/channel/ UCAkZq_Q_zWKpaa-ib04akFQ/videos.

Hand washing, vegetable washing, and cleaning and sanitizing routines were the key concepts that were covered through a peer-to-peer food safety SARE project with Hmong-American fruit and vegetable producers in Minnesota. Photos courtesy of Annalisa Hultberg.



NCR-SARE Heroes: Charles Francis and Robert Wills

In 2012, the NCR-SARE Administrative Council created the NCR-SARE Hero Recognition to highlight, recognize, and pay tribute to those who have made significant contributions to NCR-SARE and/or National SARE. NCR-SARE is pleased to announce that Charles (Chuck) Francis and Robert (Bob) Wills have been named the 2018 NCR-SARE Heroes.

Charles (Chuck) Francis



Charles Francis. Photo courtesy of University of Nebraska-Lincoln.

Charles (Chuck) Francis has more than four decades of experience working in sustainable agriculture and agroecology. Holding a bachelor's degree in agronomy from the University of California, Davis and a master's and doctoral degree

from Cornell University in plant breeding, Francis started his career at the University of Nebraska-Lincoln (UNL) in 1977 after completing his graduate research in the Philippines and in Colombia, and conducting research and training at the International Center for Tropical Agriculture for seven years.

Francis is a professor in UNL's Department of Agronomy and Horticulture with research, extension, and teaching interests in efficient cropping systems, cover crops, rotations, spatially diverse field designs, integrated crop/animal systems, whole-farm planning, sustainable practices, and farming systems in watershed design, on-farm and participatory research and educational activities, and collaborative research design. He has been director of the International Program for the Rodale Institute in Pennsylvania and director of the Center for Sustainable Agricultural Systems at UNL.

Francis is a highly energetic and enthusiastic sustainable agriculture and agroecology advocate, educator, promoter, and author. His publications include 240 peer reviewed papers, 72 book chapters, 202 abstracts, 23 books (as editor or author), and 324 symposium and workshop papers. In addition to participating in more than 15 SARE grant projects, Francis served on the NCR-SARE Technical Committee, and coauthored the 2005 publication, "Evaluation and Perceived Impacts of the North Central Region SARE Grants, 1988-2002" with John E. Barbuto Jr. and Shirley K. Trout, which helped stakeholders understand the ways in which programs could add value and where they could be improved to better serve the program's constituents.

Among his numerous awards, Francis has received honorary doctoral degrees from Helsinki University in 1999 and the Swedish University of Agricultural Sciences in 2015 for his development of curricula within sustainable agriculture and agroecology. He received the International Service in Agronomy Award from the American Society of Agronomy in 2002, the 2009 Educator's Award from the Sustainable Agriculture Education Association, and a 2012 Distinguished Teaching Award from the College of Agriculture and Natural Resources at UNL.



Bob Wills. Photo courtesy of Federal Reserve Bank.

cheesemaker in Wisconsin for more than 30 years, Robert (Bob) Wills is no stranger to the sustainable agriculture movement in the Midwest.

Robert (Bob) Wills

As an artisan

Wills, who holds a

Ph.D. in economics as well as a law degree from the University of Wisconsin, had been working in Washington, D.C., and Chicago when he decided to leave that work behind and become a fulltime cheesemaker. He now owns Cedar Grove Cheese in Plain, Wisconsin and Clock Shadow Creamery in Milwaukee, Wisconsin.

In Wisconsin, aspiring cheesemakers are required to work under licensed cheesemakers, and as a Master Cheesemaker, Wills has enthusiastically shared his expertise with many artisan cheese makers. His specialty cheese plant allows interested producers an opportunity to rent space to experiment with new recipes. With a mission of sustainable production and environmental leadership, Wills was the first cheesemaker in the United States to label his cheese as rBGH-free in 1993.

Cedar Grove Cheese has a "Living Machine" greenhouse, which allows them to naturally clean their wastewater before it's discharged into a nearby creek. In 2007, Wills, along with the 13 dairy farms that supply milk to his plant, became the first food processors in the Midwest to complete third-party certification for sustainable agricultural and food handling practices through Food Alliance, based in Portland OR.

In addition to his service to the cheesemaking community, Wills has served on the NCR-SARE Administrative Council, and was chairperson in 2005-2006. Wills has also served on the NCR-SARE Technical Committee. He has served on the Wisconsin Organic Advisory Council, the Center for Integrated Agriculture Systems advisory committee, the American Cheese Society Board of Directors, and is currently serving as president of the American Cheese Society Foundation. He won the American Cheese Society Above and Beyond Award in 2016, for volunteering in excess of 400 hours to develop their Best Practices Guide for Cheesemakers.

Read tributes and learn more about the NCR-SARE Heroes online at www. northcentralsare.org/About-Us/ Regional-Initiatives/NCR-SARE-Hero-Recognition-Program.

New Administrative Council Members for NCR-SARE

Julie Doll, Jennifer Filipiak, Hans Kok, Sarah Lovell, and Katie Nixon were recently elected to the NCR-SARE Administrative Council. Representing various agricultural sectors, states, and organizations, the Administrative Council sets program priorities and makes granting decisions.

Julie Doll has been elected as an at-large university representative for the NCR-SARE Administrative Council. Doll is an Outreach Specialist at Michigan State University and coordinates the education and outreach programs for the Kellogg Biological Station Long-term Ecological Research program.

Jennifer Filipiak has been elected as a nonprofit representative for NCR-SARE's Administrative Council. Since joining American Farmland Trust (AFT) in 2013, Filipiak has been working on watershed projects aimed at increasing conservation practice adoption and promoting cover crops in Illinois. She also directs AFT's Women for the Land initiative, a national campaign to locate and empower nonoperating women landowners.

Hans Kok has been elected as an agribusiness representative for NCR-SARE's Administrative Council. Kok is

an independent agricultural conservation consultant based out of Indianapolis. He currently contracts with the Indiana In-Field Advantage Network, the Soil Health Partnership, and works on educational events for Conservation Districts and private industry throughout the Midwest.

Sarah Lovell has been elected as an agricultural experiment station representative to NCR-SARE's Administrative Council. Lovell is an associate professor in the Department of Crop Sciences at the University of Illinois. Her research focuses on productive agroforestry systems, including tree and shrub crops that produce fruits and nuts.

Katie Nixon has been elected as a farmer/ rancher representative for the NCR-SARE Administrative Council. Nixon, along with her husband, is a full time farmer at Green Gate Family Farm, a certified organic diversified market farm in rural Missouri.

NCR-SARE would like to extend gratitude to **Darin Eastburn**, **Vicki Morrone**, **Ryan Stockwell**, **Donn Teske**, and **Kevin Warner** whose terms on the Administrative Council have come to an end.

New Resource: Cultivating Climate Resilience on Farms and Ranches



Cultivating Climate Resilience on Farms and Ranches outlines the new challenges that changing weather patterns pose in

agriculture throughout the United States, and what you can do to make your farm more resilient. By understanding the climate risks to your production system and practices that can reduce those risks, you can identify some management steps that will improve the resilience of your farm or ranch to changing climate conditions while allowing you to achieve your other sustainability goals. This bulletin was written by Laura Lengnick and is an adaptation of her 2015 book *Resilient Agriculture: Cultivating Food Systems for a Changing Climate.* Order a copy or download it for free at www.sare. org/Learning-Center/Bulletins/Cultivating-Climate-Resilience-on-Farms-and-Ranches.

NCR-SARE Grants At-A-Glance

Learn more about exciting SARE-supported projects! Use the project number listed with these projects to find more information at https://projects.sare.org, or follow NCR-SARE on Facebook or Twitter to receive regular updates like these.

Curious about social media and marketing your farm products? With SARE support, University of Wisconsin-Extension, Cooperative Extension researched Facebook advertising to learn what works and what doesn't. Find it online at https://fyi.uwex. edu/localfoodmarketing/social-mediadirect-market/. This was a Wisconsin SARE mini grant.

Weston Lombard at Solid Ground Farm in Ohio is betting on mulberries. Find out why and learn more from his new mulberry growers booklet, which he developed with support from a SARE grant. Find it online at https://www.northcentralsare. org/Educational-Resources/SARE-Project-Products/Sustainable-Agriculture-Solutionsfor-Appalachia-Mulberry-Agroforestry. This is SARE project FNC16-1044.

The SARE Compost Project - Milwaukee is working on a collaborative strategy to increase the supply of affordable compost to enhance the profitability of urban farming in Milwaukee, Wisconsin. This is SARE project LNC16-382.

In Minnesota, the Sustainable Farming Association's SARE-supported work around soil health in Minnesota is training agricultural professionals on soil health practices so they can teach soil health principles to farmers in their area. This is SARE project ENC17-158.

With support from SARE, The Food Corridor and Purdue Extension have developed the Shared Kitchen Toolkit, a free, webbased resource for new and existing shared kitchens that delivers guidance on feasibility, planning, management practices, and more. Find it online at https:// www.northcentralsare.org/Educational-Resources/SARE-Project-Products/ Shared-Kitchen-Toolkit. This is SARE project LNC15-374.

With support from SARE, Stevens Farm is working with UNL Eastern Nebraska Research and Extension to use passive, multi-spectral sensors that are carried on drones to monitor and determine how much and where to apply nitrogen fertilizer on corn. This is SARE project FNC17-1100.



Overwintering Bees for Increased Apirary Sustainability

Meghan Milbrath has experimented with various methods for overwintering bees, and has reduced her number of colonies lost in the winter. Photo by Meghan Milbrath.

Our \$20-billion-a-year crop industry relies on insect pollination, but diseases, pests, and colony collapse disorder are knocking out 30 percent of beekeepers' colonies every growing season. There are as many as 125,000 beekeepers in the country. And while 2.77 million honey-producing colonies generated 161.8 million pounds of raw honey in 2016, the annual value of direct honeybee pollination to U.S. agriculture was estimated at over \$20 billion, which exceeded the value of wax and honey sales (AgMRC 2018).

Meghan Milbrath started keeping honeybees as a child alongside her father. She kept bees through graduate school and even started to raise bees to earn a little extra money. Today, Milbrath is an academic specialist in Michigan State University's (MSU) Department of Entomology and is the coordinator of the Michigan Pollinator initiative, a program started at MSU to address concerns related to pollinators and pollination. She also operates her own beekeeping business, The Sandhill Apiary in Munith, Michigan.

"When I started keeping bees with my dad in the early 90s, our bees didn't die in the winter," said Milbrath. "You would have occasional disease or pesticide kills, but overall it was fun and easy. When I started raising bees again in 2010, it was an entirely different story—the bees were making less honey, it was a lot more work, and my colonies kept dying."

Milbrath has devoted decades of her life learning about the new pests and pathogens affecting honeybees. And while there are many threats facing bees today, Milbrath says one of the biggest issues facing beekeepers is the high rate of winter loss.

"Currently, beekeepers lose 30-65% of their colonies each winter," said Milbrath. "Beekeepers generally replace these colonies lost in winter by purchasing packages of bees in the spring. Package prices have gone up considerably, making this system financially unsustainable to many beekeeping operations."



In 2015, Milbrath received a \$7,492 NCR-SARE Farmer Rancher grant to examine the key variables that affect overwintering nucs, and to develop a system that could be used by other beekeepers to overwinter their bees. The term "nucs" is short for "nucleus colony," which is a smaller colony created from a larger honeybee colony. Milbrath wanted to identify successful options for overwintering smaller colonies by using a large colony to produce many smaller colonies that could either be used to replace winter losses or put toward an apiary expansion. The basis of her method was the use of late season splits. This means splitting colonies after the year's main honey flow as a way to increase the overall number of colonies.

"Not only does a system of late season splits allow for the production of replacement colonies, but it also has benefits that improve colony survival. It does this through both the reduction of disease and a focus on younger and better queens," explained Milbrath.

Milbrath said there are many different methods for overwintering splits and small nucs that can be used to make up losses in honeybees. While she didn't find a "magical overwintering recipe" that works for everyone in all years, she tried four different methods, and was able to optimize each of them for different needs.

"I see a lot of beekeepers who lose a lot of bees in the first years, and they get disheartened and give up," said Milbrath. "Working with methods, such as overwintering, that allow people to reduce costs, means more beekeepers can be successful. Beekeepers may take a year or two to optimize for their operation and location, but have many options to make up replacement colonies, and avoid the high cost of replacing bees each year."

See her comparisons of various methods and read more about Milbrath's NCR-SARE Farmer Rancher grant on the SARE project reporting website. Simply search by the project number FNC15-1005 at https://projects.sare. org/search-projects/, or contact the NCR-SARE office for more information.

SARE's New Podcast Features Farmers' Conversations

SARE's new Our Farms, Our Future podcast series brings together the sustainable agriculture community for thought-provoking conversations about the state of agriculture, how we got here, and where we're headed. With each episode we hope to share different perspectives within the sustainable agriculture community while tackling such topics as building resilient farming systems, farm profitability, and fostering community through local food systems.

This series is being produced in conjunction with the Our Farms, Our Future conference, which was held in April 2018 to coincide with SARE's 30th anniversary. You can subscribe to the podcast on iTunes or Stitcher. When subscribing to the podcast, you may choose to automatically receive the latest episodes downloaded to your computer or portable device. Episodes are being released twice a month. Find them online at www.sare.org/Events/Our-Farms-Our-Future-Conference/Our-Farms-Our-Future-Podcast-Series.



UNIVERSITY OF MINNESOTA



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ADDRESS SERVICE REQUESTED

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Did you know NCR-SARE is on Facebook, YouTube, Instagram and Twitter? Keep track of our grant opportunities, projects, events, and more. Search for North Central Region SARE and follow us!

ABOUT NCR-SARE

NCR-SARE funds cutting-edge projects every year through competitive grant programs, and has awarded more than \$50 million worth of grants to farmers and ranchers, researchers, students, educators, public and private institutions, nonprofit groups, and others exploring sustainable agriculture in the 12 states of the North Central region.

Are you interested in submitting a proposal for an NCR-SARE grant? Before you write the grant proposal, determine a clear project goal, and look for sustainable agriculture research on your topic. Need help determining which program is best suited for your project? Go to www.northcentralsare.org/Grants for more information, or contact the NCR-SARE office.

For more information about any of the NCR-SARE grant programs, go to www.northcentralsare. org/Grants or contact the NCR-SARE office at 612-626-3113 or ncrsare@umn.edu.

NCR-SARE GRANT TIMELINES*

Farmer Rancher*

Mid August - Call for Proposals Released Early December - Proposals Due February - Funding Decisions Spring - Funds Available to Recipients

Graduate Student*

February - Call for Proposals Released April - Proposals Due July - Funding Decisions September - Funds Available to Recipients

Research and Education*

August - Call for Preproposals Released October- Preproposals Due January - Full Proposals Invited April - Full Proposals Due July - Funding Decisions Fall - Funds Available to Recipients

Professional Development Program*

January - Call for Proposals Released March - Proposals Due July - Funding Decisions Fall - Funds Available to Recipients

Youth Educator*

Mid August: Call for Proposals Released Mid November: Proposals Due February: Funding Decisions Spring: Funds Available to Recipients

Partnership*

August: Call for Proposals Released October: Proposals Due February: Funding Decisions March: Funds Available to Recipients

*Timelines are subject to change.

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NORTH CENTRAL REGION SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION PROGRAM CONTACT INFORMATION

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At the Our Farms, Our Future Conference, SARE grantees like JohnElla Holmes (above, right) had the opportunity to share information about their SARE grant projects during a poster session. View resources from the event online at www.sare.org/Events/Our-Farms-Our-Future-Conference. Photo by Marie Flanagan.