

# Sustainable Agriculture Research & Education

## FIELD NOTES



## Foodbanking and Farming with Youth in Ohio

The Foodbank, Inc. in Dayton, Ohio has been a hub of activity since the coronavirus outbreak. With massive COVID-19 drive-thru distributions and assistance from the National Guard, this community food supplier has shared 17.8 million pounds with more 900,000 people this year in Montgomery, Greene, and Preble counties, Ohio.

“Our community here in Dayton has had a difficult two years, starting first with a water crisis in February of 2019, 15 tornadoes in May of 2019, a mass shooting in August of 2019, and now COVID,” Lee Lauren (Alder) Truesdale, Chief Development Officer at The Foodbank. “Our team’s response to many of these emergencies, providing critical emergency food assistance, is only possible because our team knows how to be flexible, we know how to work together amid crisis, and we have the best supporters.”

Childhood hunger is a critical assistance area of concern for The Foodbank; a 2019 analysis showed their service area had a child food insecurity rate of 20.7%. In 2016, The Foodbank staff wanted to make an effort to engage more young people with their civic-minded, food-based mission.

### A New Generation of Urban Growers

With support from an NCR-SARE Youth Educator grant, The Foodbank worked with area farmers, schools, community centers, and Extension personnel to develop ten lesson plans about sustainable farming. The plans focused on land stewardship, sustainable growing practices, and the impact that urban growing could make on solving hunger in the Miami Valley.

“Our building and growing space sit in a very urban community, and we find that many students don’t get the chance for hands-on ‘field trips’ due to limited school funding,” said Truesdale. “We try to create a fun and accessible space for young children to learn and older youth to gain job and life skills.”

The Foodbank’s growing space is three acres of former industrial land. Throughout the summers of 2017 and 2018, 385 youth ranging in age from 3-16 years old planted, cared for, harvested, and helped distribute food. They learned about planting, composting, pollinators, beneficial insects, harvesting, and food preparation. Youth also learned about local food insecurity figures and the problem of hunger in the Miami Valley.

“Fresh produce can be an item that is out of reach for families living with a limited food budget,” said Truesdale. “If we can help supplement what families are buying with their small SNAP stipends, or limited budgets, by providing fresh produce, dairy products, and lean proteins, then we can help create a healthier community, and families can use the funds they have to pay for other necessary expenses.”

The Foodbank’s SARE-supported youth education classes were the first ‘formal’ youth classes offered at The Foodbank. While the COVID-19 outbreak prevented classes for summer 2020, they hope to have youth back on site in 2021. During reduced operations in 2020, staff workers were able to work on educational amenities. They added an in-vessel composting system and will add a greenhouse this fall, and will incorporate both into their youth education programs.

“The Foodbank truly benefited from SARE funding and enjoyed working with our community to both educate youth about food insecurity and how to sustain their own lives by growing healthy food,” said Truesdale.

To view the lesson plans or learn more about this NCR-SARE Youth Educator grant project, visit the SARE project reporting website at [https://projects.sare.org/sare\\_project/yenc16-107/](https://projects.sare.org/sare_project/yenc16-107/), or contact the NCR-SARE office.

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*In Dayton, Ohio, The Foodbank, Inc. has distributed more than 4 million pounds of food since the beginning of the coronavirus outbreak. They also help area youth learn more about sustainable growing, local food systems, and food insecurity. Above photos courtesy of Lee Lauren Truesdale.*

# NCR-SARE Awards \$5.7 Million in Grants

NCR-SARE is pleased to share the results for our grant programs for 2019-2020. **NCR-SARE's competitive grant programs awarded 131 projects almost \$5.7 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 \$790K supported NCR-SARE's regional state coordinators who train agriculture professionals in sustainable practices and raise awareness about SARE 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 2020, 55 grant projects were selected to receive a total of more than \$718,000 through this NCR-SARE grant program.

For the 2020 **Youth Educator Grant Program**, NCR-SARE awarded \$45,000 to 12 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 2019 Graduate Student program, NCR-SARE awarded more than \$278,000 to 20 projects.

For the 2019 **Partnership Grant Program**, NCR-SARE awarded almost \$582,000 to 15 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 2019 Research and Education program,

NCR-SARE awarded \$3.12 million to 17 projects.

For the 2019 **Professional Development Program**, NCR-SARE awarded more than \$955,000 to 12 projects. NCR-SARE Professional Development Program competitive grants emphasize training agricultural educators in extension, the Natural Resources Conservation Service, private, and not-for-profit sectors, using farmers as educators and addressing emerging issues.

Visit the NCR-SARE website for more information about the project that were funded, timelines, and information on how to apply at <https://northcentral.sare.org/grants/apply-for-a-grant/>, or contact the NCR-SARE office.

To learn about the **SARE grants in your state**, visit the NCR-SARE website here: <https://sare.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.

## Apply for a Grant

NCR-SARE currently has four open grant programs! If you are interested in writing a proposal for an NCR-SARE grant, we are here to help. We can provide grant reports from other projects, lists of funded projects, or other sustainable agriculture information. To receive more information about the NCR-SARE grant program's preproposal/proposal processes and timelines, contact the NCR-SARE office, or visit <https://northcentral.sare.org/grants/apply-for-a-grant/>. Before writing a grant proposal, determine a clear project goal and explore previous research. It often helps to contact NCR-SARE, local agriculture groups, the Natural Resources Conservation Service, and/or Extension educators to share ideas and invite participation.

### Grant-Writing Assistance from 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 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. Your SARE state coordinator can provide advice and feedback as you work on your grant proposal. If you have questions about SARE in your state or have a grant proposal idea, your SARE state coordinator can help. Find your SARE State Coordinator and view documents about funded grants in your state by visiting NCR-SARE online at <https://northcentral.sare.org/state-programs/state-coordinators/>.

### Michael Fields Grant-Writing Assistance

Did you know that the Michael Fields Agricultural Institute's (MFAI) Grant Advisory & Resources can help you apply to grants and cost-share programs of state or federal sources that can help you achieve your farming or ag-related business goals? They have resources for designing sound projects, finding funding sources, and writing successful grants, along with other valuable information. For more information and to sign up for grants advising email list for program announcements, please visit the website at <https://michaelfields.org/grant-advising-resources/>, or contact MFAI Grants Advisor, Martin Bailkey at (608) 698-9478 or [martinbailkey@gmail.com](mailto:martinbailkey@gmail.com).



Minnesota ranks 15th nationwide for craft breweries. All told, 196 craft brewing companies are making 4.8 gallons of beer for each of-age adult in the land of 10,000 lakes per year (Brewer's Association, 2019). It was during a tour of a Minnesota brewery that local farmer Noreen Thomas first became inspired to connect with the craft brewing industry after seeing all the grains they used. Thomas and her husband, Lee farm 1,200 certified organic acres of crops and produce on their fifth-generation farm nestled on the Buffalo River near Moorhead, Minnesota.

"Craft beer enthusiasts are constantly seeking novel ingredients to expand the variety of offerings, and create a unique experience around their brew," said Thomas. "This quest for a unique flavor can be met with locally-sourced ingredients; thus, providing expanded market options for farmers to grow grain for the production."

### Growing Alternative Grains for Malt

At Doubting Thomas Farms, Thomas wanted to explore the potential of using organic heritage grains for malt, a key ingredient in beer. Typically made with barley, malt is essentially toasted grains, and malted grains affect beer's color, flavor, and sugar content. Working in collaboration with two other local farmers Melany Thomas and Owen Transrud, along with Vertical Malt, a small-scale malting operation in Crookston, Minnesota, Thomas received a \$26,978 NCR-SARE Farmer Rancher grant to explore alternative grain crops for the malting market.

"We wanted to identify varieties of organic heritage oats, organic heritage wheat, and organic heritage barley that would malt with good flavor," explained Thomas.

The team tested Tinka barley (a German variety), Organic Conlon barley, Paul hullless oats, Boiles wheat, and Red Fife wheat. Ideally protein for malting needs to be between 11 and 13.5 percent.

Each batch size for the malting process required a minimum of 2500 pounds of grain; including shrinkage involved within the process. They brought the grains to Vertical Malt for malting and then sent the malt to various breweries.

"The varieties that worked well were organic Conlon barley, Paul hullless oats, and Red Fife wheat," reported Thomas. "Tinka barley was difficult to grow and lodged as well. Plus, when the weather was raining non stop at harvest time, the DON (a contaminating mycotoxin known as deoxynivalenol) popped up to near 3.0 ppm (less than 1 ppm is acceptable)."

### Crafting Relationships and Beer

Working with Vertical Malt gave Thomas the opportunity to connect with Lakes and Legends Brewing. Together, they produced a 100-percent Minnesotan beer called MN Haze, a hazy IPA brewed for the 2019 Minnesota State Fair. The brew sold out during the first day of the fair and they restocked; it received a white ribbon from *The Growler* magazine among 48 new alcoholic drinks at the state fair in 2019.

# Heritage Grains for Craft Brewing

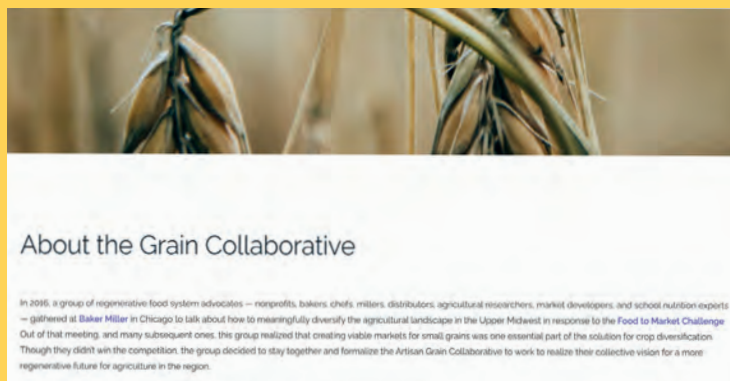
*When Doubting Thomas Farms partnered with two local farms, a local maltster, and local breweries they identified some heritage malting grains for prize-winning beers. Photo courtesy of Lakes & Legends Brewing Company.*



"We learned a lot about the brewing industry and are still learning," said Thomas. "Without the SARE grant I would not have met any of these people. It gave us resources to explore. The work with breweries is emerging. They are the most intense of relationships. I have worked in local foods for 18 years and found this work to be much more relationship bound with more questions about quality of product."

Half Brothers Brewing Company in North Dakota used Doubting Thomas Farms' oats and Vertical Malt's local barley to launch a new beer called OAT-Standing, an oat pale ale. More recently, Bang Brewing Company in Minnesota began working with Doubting Thomas Farms and Vertical Malt to process their organically-grown barley and oats. Bang Brewing was the first brewery to join the Artisan Grain Collaborative, a group working to create viable markets for small grains to promote crop diversification; Doubting Thomas Farms is also a member of the group.

You can learn more about the Artisan Grain Collaborative at <https://graincollaborative.com/grainmarket/>. For more information on this NCR-SARE Farmer Rancher grant project, visit the SARE project website at <https://projects.sare.org/project-reports/fnc19-1202/>, or contact the NCR-SARE office.



# Advancing Food Literacy in Michigan's Upper Peninsula

*Michigan high schooler Wyatt Gerner uses a GPS device to record the location of a spotted wing drosophila trap on a blueberry farm. The sticky red trap is laced with a species-specific pheromone. Photo courtesy of John Gierke.*



With rocky soil, 200 inches snowfall in any given year, and 84% of its land covered in forests, Michigan's Upper Peninsula (U.P.) can be a tough place to farm. But Michigan native Dr. Matt Raven, who grew up working summers on his family farm in Michigan says career opportunities in agriculture and food systems are more important than ever in the U.P. For several years of his professional life, Raven traveled around the U.S. working on issues of regenerative agriculture, but his interest in education and community food systems brought him back to the U.P., where he now serves as a faculty coordinator of Michigan State University's Upper Peninsula Research and Extension Center (MSU's UPREC) located in Chatham, Michigan. In this role, Raven offers opportunities for youth to experience farming and food systems in the U.P., where there are just a handful of state recognized school-based Agriculture, Food and Natural Resource Education programs.

"As public awareness of agriculture and food systems grows in the U.P., so does interest in establishing educational programs to prepare students for career opportunities in these fields," said Raven. "Next-generation concerns exist in our farming communities. When we applied for this grant, only one FFA program and one career and technical education (CTE) program with an agriculture focus existed in an area that comprises one-third of Michigan's landmass."

With support from a \$151,408 NCR-SARE Research and Education grant, Raven and MSU UPREC Extension Educator Abbey Palmer coordinated with 17 farmers and 15 educators to provide learning opportunities for 7 school districts over the course of 2 summers to generate interest in careers associated with food and farming systems. They used a model known as land-based learning, where students and their teachers

collaborated with farmers or ranchers and MSU Extension educators to help implement sustainable, land-based farm solutions. Producers brought their on-farm challenges to the table, and worked with the Extension specialists, educators, and students to develop a supervised, Sustainable Agricultural Experience (SAE) project on the farm.

## Teaming Up for On-Farm Solutions

One of the seven farms involved was Ben and Denise Bartlett's farm, Log Cabin Livestock in Traunuk, Michigan, where they had some soil health concerns.

"We are on the school board and really value hands-on learning opportunities for our kids, especially agricultural type projects," said Ben Bartlett. "We really were interested in seeing if there are ways to improve soil health in hay fields we couldn't graze."

Students from Superior Central School's Agriculture and Forestry class helped develop treatments for some of the Bartlett's hay fields that were too far from the farm for grazing.

"The problem our students have been researching and seeking solutions to is a common one that many farmers face and that is the depleting quality of the soil in fields that have hay harvested year after year," explained Superior Central science teacher Tim Bliss. "In many cases, and for various reasons, some farmers are unable to sufficiently put nutrients back into the soil through fertilizers, manure, grazing, etc. Our students worked with the coordinating team to design four possible treatments to alleviate this issue."

Students conducted soil health tests and implemented strategies that emphasized biological activity with assistance from MSU Extension Educator Jim Isleib. They had the opportunity to present their work at the Alger County Farmer Potluck.

## Increasing Food System Literacy

John and Lynn Gierke's blueberry farm in Chassell, Michigan is not certified organic, but they do not use pesticide sprays. The pest spotted wing drosophila (SWD) lays eggs on over-ripe or rotting fruit, and the Gierkes wanted to monitor their fields for the presence of the pest. As part of the project, Wyatt Gerner, an area high school student, helped set up SWD monitoring stations in the Gierke's fields using sticky traps and GPS technology with assistance from Michigan Tech University. Because of Gerner's interest in the research, he was able to lead a student farm visit at the Gierke's farm, and was even selected as Youth Citizen of the Year in Chassell in connection with the project.

Ultimately, Raven wants more youth to be interested in agricultural-based careers. Some, like Gerner, are interested in learning more, while others decided it wasn't a good fit. After surveying the students at the end of the project, Raven noticed a decrease in students' career aspirations in agriculture, and investigated it.

"Students experienced first-hand the hard, physical nature of producing food and fiber so it is not surprising that perhaps the romantic view that some students might have about farming faded as a result of their participation," said Raven. "It's a good outcome in some ways because they're not making the investment before they learn that working in the hot sun might not be as fun as they thought it was."

Raven was pleased with the food systems literacy that students gained by being involved in the project, saying, "Any time you can increase food literacy, it's a positive experience."

Learn about the UPREC's land-based learning projects online at: <https://www.msunorthfarm.org/land-based-learning-centers.html>. For more information on this NCR-SARE Research and Education grant project, visit the SARE website at [https://projects.sare.org/sare\\_project/lnc17-394/](https://projects.sare.org/sare_project/lnc17-394/) or contact the NCR-SARE office.



# NCR-SARE Heroes: Donn Teske and Fred Madison

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 Donn Teske and Fred Madison have been named the 2020 NCR-SARE Heroes.

## Donn Teske



*2020 NCR-SARE Hero, Donn Teske during a SARE project tour in Kansas. Photo by Marie Flanagan.*

Donn Teske's fifth-generation farm was homesteaded by his family in Kansas after the Civil War. One hundred fifty years later, Teske's 900-acre farm, a grain and cow-calf operation, inspires his concern for the environment and motivates Teske's heavy involvement with organizations and policy development that focus on sustainable agriculture.

In addition to full-time farming in the 1990s, Teske worked for the Kansas Rural Center and the Kansas State University Agricultural Economics Department as a farm financial analyst. He is currently president of Kansas Farmers Union, and was the National Farmers Union Vice President from 2014-2018.

As a sustainable agriculture advocate, Teske has served as an advisory committee member for the Kansas Center for Sustainable Agriculture and Alternative Crops, was a member of the Farmer & Rancher Advisory Board to the EPA, and served as a board member for several organizations including the Farmer Veteran

Coalition, Kansas Rural Center, Midwest Agency Insurance, Ogallala Commons, and the Kansas Graziers Association. Teske has also appeared in three documentary films, "Go to College, or Take over the Family Farm?" (2011), "What's the Matter with Kansas?" (2009), and "The Disrupted," (2020).

His service as a farmer representative to NCR-SARE's Administrative Council was 2011-2018, and he continues to work with SARE through Kansas SARE's state advisory committee. Across his work with SARE, Teske provides a significant and experienced voice for farmers who champion sustainable practices in conventional corn/soybean row crop rotations.

## Fred Madison (Presented Posthumously)



*2020 NCR-SARE Hero, Fred Madison, during a soil science class field trip in 2014. Photo by Jeff Miller.*

Affectionately known as "Dr. Dirt," Fred Madison spent more than 50 years getting his hands dirty working to protect, build, and teach others about soil and water natural resources in the Midwest.

Madison received a bachelor's degree in geology from the University of Wisconsin, where he also received his master's and doctoral degrees in soil science in 1963 and 1972. During that time, he was the director of the Peace Corps' Midwest Regional Recruiting Office. Madison served as a legislative assistant to Wisconsin Senator Gaylord Nelson, where he assisted with the National Wild and Scenic Rivers Act. This 1968 law helps protect more than 12,000 miles of river in 40 states today.

He was appointed by President Lyndon Johnson to the Upper Great Lakes Regional Commission and was reappointed by President Richard Nixon. Madison returned to the University of Wisconsin's Department of Soil Science in 1978 when he began a split position as an assistant professor of soil science and an Extension specialist with the Wisconsin Geological and Natural History Survey. He received tenure in 1984 and was promoted to full professor in 1991. Among other activities at the University of Wisconsin, he taught, developed courses, and coached the UW-Madison soil judging team.

Passionate about sustainable agriculture and conservation, Madison served as chair of the Lower Wisconsin State Riverway Board for a number until 2018. He received the Wisconsin Idea Award in Natural Resource Policy from Extension in 1995 for his contributions to natural resource policy and his accomplishments as an educator.

Madison commenced his service to SARE in 1995 as a State Geological Survey representative for the Administrative Council and remained in that position until 2010; he chaired the NCR-SARE Administrative Council in 1997. He also served as a SARE State Coordinator in Wisconsin. He was a champion for producers and worked to keep NCR-SARE focused on serving farmers.

Madison passed away on June 3, 2019, at the age of 82. This recognition was presented posthumously to his wife, Tracy.

Read tributes and learn more about the NCR-SARE Heroes online at <https://northcentral.sare.org/about/regional-initiatives/ncr-sare-hero-recognition-program/>

# Latest Cover Crop Survey Reports Continued

by Rob Myers, NCR-SARE Director of Extension Programs



For the 2019-2020 National Cover Crop Survey, 1,172 farmers provided responses to questions, with 81% representing commodity producers (corn, soybeans, wheat, cotton, etc.) and 19% being primarily horticultural producers.

## Growth in Acreage

Cover crop use among U.S. farmers continues to increase. Farmers were asked to report their cover crop use each year over the last five years. Average per farm acreage of cover crops among farmers responding to the survey rose from 337 acres in 2015 to 465 acres in 2019, an increase of 38% in four years.

## Yields

The previous five national cover crop surveys have all reported yield boosts from cover crops, most notably in the drought year of 2012 when soybean yields were 11.6% improved following cover crops and corn yields were 9.6% better. In 2019, when wet early conditions prevailed across much of the corn and soybean regions, yield gains were more modest, but still statistically significant. Soybean yields improved 5.0% on average following cover crops, corn yields increased 2.0% on average, and spring wheat yields improved 2.6%.

## Saving on Farming Costs

Many farmers reported economic benefits from cover crops beyond just yield improvements. Of farmers growing corn, soybeans, spring wheat, or cotton, the following percent had savings on production costs with fertilizers and/or herbicides:

- Soybeans – 67% saved on herbicide costs and 41% on fertilizer costs
- Corn – 39% saved on herbicide costs and 49% on fertilizer costs

- Spring wheat – 34% saved on herbicide costs and 43% on fertilizer costs
- Cotton – 71% saved on herbicide costs and 53% on fertilizer costs

While cover crop seed purchase and planting do represent an extra cost for farmers, it was notable that most producers are finding ways to economize on cover crop seed costs. Whereas earlier surveys from 2012 and 2013 reported on a median cover crop seed cost of \$25 per acre, most farmers reported paying less in 2019. Of the responding farmers, 16% were paying only \$6-10 per acre for cover crop seed, 27% were paying \$11-15 per acre, 20% were paying \$16-20 per acre, and 14% were paying \$21-25 per acre. Only about one-fourth were paying \$26 or more per acre.

## Horticulture Producers Also Benefit

For the first time, the survey queried horticulture producers about how cover crops have impacted their profit. Of the 184 horticulture producers responding to that question, 35% reported a moderate increase in net profit (defined as an increase of 5% or more), and another 23% reported a minor increase in net profit (2-4% increase). Even after factoring in the purchase and planting cost of cover crops seed, only 4% observed a minor (2-4%) reduction in net profit, and none reported a moderate loss in net profit.

Compared to commodity producers, horticulture producers typically use a wider range of methods to terminate cover crops, with mowing, tillage, and spraying all being used by about a fourth of respondents. While tillage is a somewhat common method of terminating cover crops, 56% of horticulture users said they actually reduced their overall tillage with cover crops, and only 5% reported a slight increase in tillage; the rest had no difference in overall tillage.

For the full report on the 2019-2020 cover crop survey <https://www.sare.org/news/2020-cover-crop-survey-report/>.

# NCR-SARE Grants At-A-Glance

Learn more about 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:

The Stockbridge-Munsee Community created the **From the Earth: Mohican Nation** video



**series** to share information with local food producers in their rural community. View their videos at <https://www.youtube.com/channel/UCI4uL0tvf4q461KKo3FF7Yw>. This is SARE project LNC18-414.

With support from SARE, **Megan Mahoney** is **breeding a heartier bee** that can



withstand conditions that are detrimental to the insect. This is SARE project FNC20-1236. Photo by Marie Flanagan.

Ohio State graduate student, Denisha Parker, is studying the patterns of **native lady**



**beetles on urban farms** and greenspaces in Columbus, Ohio. This is SARE project GNC17-246. Photo courtesy of Denisha Parker.

Purdue University graduate student Eoghan McCroskey is researching a soil microarthropod



known as **springtails as biological indicators** of soil health. This is SARE project GNC18-264. Photo by Marie Flanagan.

Will Glazik, with the IDEA Farm Network in Illinois is looking at flavor profiles of various **heirloom**



**corn varieties for the production of white whiskey**. This is SARE project FNC20-1219.



# Graduate Student Develops Online Food Systems Curriculum

Mingla Charoenmuang. Photo courtesy of Purdue University.



A food system includes everything involved from producing food on the farm to disposal of food and food-related items. Everyone who eats is involved in the food system, and understanding food systems is important for understanding human health, social equity, and the environment.

When Mingla Charoenmuang was a Ph.D. student in the Department of Agricultural Sciences Education and Communication at Purdue University, she explored sustainable food systems and food security topics. From her time spent as an assistant field instructor in Northern Thailand, teaching outdoor education, and working on organic farms in Indiana and Vermont, to serving as the Community Food Systems Coordinator for the AmeriCorps VISTA program at Vermont Technical College, her past experiences have contributed to her curiosity about sustainable food systems.

“Agriculture has not been a mandatory subject in most schools in the United States for many decades,” explained Charoenmuang. “There are many schools in Indiana that do not have an agriculture teacher. Also, there are a limited number of resources regarding sustainability topics available at the high school level.”

With support from an NCR-SARE Graduate Student grant, Charoenmuang mobilized a network of high school students, farmers, and agricultural professionals to conduct a qualitative case study, which explored how the instructional design of this learning experience helped students learn about, engage in, and practice systems thinking in the context of sustainable food systems. Next, guided by her advisor, Charoenmuang identified existing resources, and

developed an online curriculum called Food Systems Thinker. Fifteen high school students tested the curriculum and provided feedback.

The Food Systems Thinker website allows students to holistically view sustainable agriculture and practice systems thinking. Learners navigate through 10 self-directed online lessons where instructional content includes readings, slideshows, audio files, and videos featuring local farmers. After each lesson, learners take time to respond to thought-provoking questions and reflect. Learners also participate in experiential learning activities for deeper understanding of sustainable food systems.

Three students who participated in Charoenmuang’s test launch of the website told Charoenmuang that they would like to start a farm or garden and use some of the techniques and concepts that they learned from the experience. Other students reported that they had been reducing their food and packaging waste.

“I really enjoyed this,” said a student who worked through the curriculum. “I’ve never been made to think about something. I’ve always just learned it, memorized it, and then moved on. I’ve never actually had to do something about it or see what we were learning about. And [this program] makes you think a lot more, and I really liked it.”

Charoenmuang will continue to reach students with this kind of information in her new role as the 4-H Health, Wellness, and Food System Specialist at Cornell University. Visit the Food Systems Thinker website at <https://oomloom.wixsite.com/foodsystemsthinker>. For more information on this NCR-SARE Graduate Student grant project, visit the SARE project reporting website at [https://projects.sare.org/sare\\_project/gnc18-256/](https://projects.sare.org/sare_project/gnc18-256/), or contact the NCR-SARE office.

## New Administrative Council Members Join NCR-SARE

**Mary Hendrickson, Doug Jones, and Andy Larson** 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.

**Mary Hendrickson** has been elected as the new rural sociology/quality of life representative for the NCR-SARE Administrative Council. An Associate Professor in Rural Sociology at the University of Missouri, Hendrickson is interested in the positive and negative implications of food system changes for farmers, rural communities, the overall environment, and the health of our population.

**Doug Jones** has been elected as the Environmental Protection Agency (EPA) representative for NCR-SARE’s Administrative Council. Jones is the EPA’s Region 7 Regional Agriculture Advisor covering Iowa, Kansas, Missouri, and Nebraska, and facilitates communication between the EPA and agriculture stakeholders about environmental issues in the 4-state region.

**Andy Larson** has been elected as the agribusiness representative for NCR-SARE’s Administrative Council. Larson is an Agriculture and Commercial Loan Officer with German American State Bank, where he works in both conventional and alternative agriculture. A past SARE State coordinator in Illinois, Larson, his wife, and daughters also produce free-range brown eggs for local restaurants, retailers, and farmer’s markets.

NCR-SARE would like to extend gratitude to **Hans Kok** whose term on the Administrative Council has come to an end.

# UNIVERSITY OF MINNESOTA



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## ABOUT NCR-SARE

NCR-SARE funds cutting-edge projects every year through competitive grant programs, and has awarded more than \$80 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 <https://northcentral.sare.org/grants/> for more information, or contact the NCR-SARE office at [ncrsare@umn.edu](mailto:ncrsare@umn.edu).

## NCR-SARE GRANT TIMELINES\*

### Farmer Rancher\*

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

### Professional Development Program\*

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

### Youth Educator\*

August - Call for Proposals Released  
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.

## NORTH CENTRAL REGION SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION PROGRAM CONTACT INFORMATION

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[www.northcentral.sare.org](http://www.northcentral.sare.org)



Dr. Hongmei Li-Byarlay (above right) studies honeybee genetics and behavior with students at

Central State University, one of two 1890 historically Black Land Grant Universities in the North Central region. Follow her on twitter at @Insect\_Sciences for updates about her SARE-supported work on honeybee queen quality and genetic diversity. This is SARE grant project ONC19-062.