

Profile from the Field

Contact: Marie Flanagan, NCR SARE Communications Specialist
120 BAE, Univ. of Minnesota | 1390 Eckles Ave. | St. Paul, MN 55108
ph. 612.625.7027 | f. 612.626.3132 | mart1817@umn.edu

Non-Profit and Producers Partner Up Around Agroforestry

Project Title: Crop Performance, Pests, and Pollinators in Diverse Agroforestry Systems

Coordinator: Keefe Keeley, Savanna Institute

Location: Midwest

SARE Grant: \$29,957

Duration: 2015-2017

To read the full project report, go to <https://projects.sare.org/search-projects/> and search for project number **ONC15-005**



Savanna Institute Co-Executive Directors, Keefe Keeley (left) and Kevin Wolz (center) pose with producer Cathe Cappel (right) in front of some hybrid poplar trees at her farm in Champaign County, Illinois. Photo by Marie Flanagan.

Agroforestry helps farmers diversify products and income. Trees can produce an annual fruit or nut crop or a future timber harvest. Shrubs can be grown instead of, or with, trees and can produce a yearly crop. Forages and other fruit, vegetable, or specialty crops can be harvested for market or grazed by livestock. In addition to these harvests, tree and shrub crops can offer other benefits such as pollinator habitat.

Here in the Midwest, the Savanna Institute is working to lay the groundwork for widespread agroforestry. A nonprofit organization, they work in collaboration with farmers and scientists to develop perennial

food and fodder crops within multifunctional polyculture systems grounded in ecology and inspired by the savanna biome. Keefe Keeley, Co-Executive Director of the Savanna Institute, says that edible agroforestry is intentionally designed and intensively managed to produce food, fuel, and fiber, while simultaneously farmers work to maintain and even restore soil, water, climate, and biodiversity resources.

“This approach adapts diverse agroforestry (DA) practices, including alley and multi-story cropping, silvopasture, edible buffers, and forest farming,” says Keeley. “It also draws ideas and techniques from aligned disciplines that apply ecological science to managing complex landscapes for multiple objectives: forestry, range management, agroecology, integrated pest management, organics, permaculture, and others.”

With support from a \$29,957 NCR-SARE Partnership grant in 2015, Keeley and the Savanna Institute had an opportunity to work with four farmers to research crop performance, pests, and pollinator activity in agroforestry systems.

“Agroforestry systems integrating fruit, nut, and forage components have potential to restore ecosystem services while simultaneously providing economically viable and nutritionally valuable staple-food crops at industrial quantities,” said Keeley. “Despite the increasing

implementation of these systems with core crops such as hazelnut, chestnut, currant and apple, there has been no rigorous onfarm evaluation of the impact of various management strategies on growth and yields. Many of the component crops driving the adoption of edible agroforestry systems are relatively novel to the Midwest. Little is known about the pests/pathogens of these crops in this region, especially in a diversified context. Although agroforestry systems are inherently diverse, and mature agroforestry systems can increase diversity of arthropod communities, little is known about the potential of young agroforestry systems to foster arthropod diversity.”

Each collaborating farm planted rows of fruit and nut trees and shrubs with alleys of grass or alfalfa hay, and worked with the Savanna Institute to collect data. Their objectives included:

- Evaluating the growth and yield of DA systems across a range of management strategies.
- Identifying baseline pollinator communities present in and interacting with DA systems compared to adjacent land-uses.
- Identifying and monitoring pests affecting the novel woody perennial crops in DA systems.
- Documenting the establishment and growth of DA systems via time-lapse photography.
- Distributing results via printed materials, online media, and field days.

The project served as a first step for the Savanna Institute in exploring the input/management tradeoffs in DA systems. Keeley says the knowledge gained of critical pests, arthropod communities, and monitoring methods will support management decisions and appropriate future studies in DA systems.

“We found that even while tree crops were still very young, fields with agroforestry plantings offered a good home for helpful arthropod groups, like pollinators, spiders, and other natural

pest predators,” said Keeley.

Keeley says understanding the tradeoffs and benefits of agroforestry is key to other farmers deciding if and how to adopt perennial cropping systems themselves.

“Most importantly, this project helped farmers document what’s working well and what needs work, and then helped them share that with other farmers,” said Keeley.

North Central Region Sustainable Agriculture Research and Education strengthens rural communities, increases farmer / rancher profitability, and improves the environment by supporting research and education. Any opinions, findings, conclusions or recommendations expressed within this product do not necessarily reflect the view of the SARE program or the U.S. Department of Agriculture. USDA is an equal opportunity provider and employer.

