# Introduction

The Silvopasture Case Studies are made possible through a partnership among the Center for Integrated Natural Resources and Agricultural Management (CINRAM) at the University of Minnesota, the University of Minnesota Agricultural Extension, Great River Greening (GRG), and the Sustainable Farming Association of Minnesota (SFA). Together, these groups are part of the project “Silvopasture for Oak Savanna Restoration” funded by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Silvopasture is the intentional practice of managing timber, forage and livestock on the same acres to create income opportunities on often under-utilized land. Using managed grazing techniques, sound timber management and 21st-Century fencing technology, silvopasture can help restore the over 660,000 acres of Minnesota woods and forest, including oak savanna, that are not achieving their full potential for the landowner and society. Described on the next page in more detail, silvopasture and agroforestry are additional strategies to achieve soil health adoption and foster livestock production in Minnesota, a priority for SFA.

SFA and the partners above are working to create a Silvopasture Learning Network for education and support; research effective silvopasture practices and innovations at the Sherburne Wildlife Refuge; and educate farmers, agricultural and natural resource professionals and conservationists throughout the state on silvopasture and oak savanna restoration principles and practices.

Research and written by Jared Luhman, SFA’s Soil Health Lead, these case studies feature farmers throughout Minnesota who have been using silvopasture practices for three or more years and whose stories offer tangible examples, support, and encouragement to others. The case studies reflect the partners’ understanding that farmers learn best from each other and that strong connections across the landscape will result in wider adoption of effective silvopasture practices. They are modeled after a series of two soil health case study publications made possible through the Southwest Regional Sustainable Development Partnership (SWSRDP) and a third supported by the Southeast Regional Sustainable Development Partnership (SERSDP).

These new case studies, and the previous series, are the basis of FarmMaps.umn.edu, a tool allowing farmers to learn about, connect with, and receive advice from fellow farmers with experience successfully applying soil health practices. The ability to talk to a peer about benefits, successes, challenges and costs on issues related to silvopasture and soil health is a powerful motivator for adoption and provides a source of continued support.

# Acknowledgments

Several people were involved in preparing this report, starting with the farmers whose silvopasture stories are featured herein: Vickie Kettlewell and Greg Booth of Sunup Ranch, Brainerd; Tom Barthel and Gail Wilkinson of Snake River Farm, Becker; Tom Hunter, Wabasha; and Tyler Carlson of Early Boots Farm, Sauk Centre. SFA Executive Director Theresa Keaveny and CINRAM Director Dean Current were the supervisors for this publication. SFA Soil Health Lead Jared Luhman is the primary author and photographer; SFA Communications Associate Jason Walker is credited with layout and design. Special thanks to LCCMR for financial support of this project.
Background

Silvopasture is the deliberate integration of trees and grazing livestock operations on the same land. The trees, forage, and grazing livestock are managed intensively and must complement one another to increase overall production. The sales of livestock provide annual income to the producer while fostering long-term economic benefits from trees such as sawtimber.

In silvopasture, management of trees through thinning and pruning helps provide high-value timber and ensures that sufficient light is available for forage. Grazing animals control competition for moisture, nutrients, and sunlight, enhancing tree growth. Trees provide shade for livestock and create a microclimate that improves forage quality. Livestock promote nutrient cycling, and nitrogen fixing forage crops benefit trees.

Silvopasture can look similar to oak savanna, with acres of dense grass interspersed with tall oak trees providing shade for livestock and shelter for wildlife; it can also resemble a diverse forest being managed and intentionally thinned to allow sunlight to the forest floor to increase grass production for livestock. Typically ruminants like cattle, sheep and goats, or possibly even hogs are integrated. In the case of Regeneration Farms (Pages 4-5), it’s poultry.

Silvopasture is not a ‘plant it and leave it’ system. Allowing livestock to graze in a natural woodland area without active livestock/forage management is NOT considered silvopasture, nor is having one or two trees in the pasture considered silvopasture.

Silvopastures are:

- **Intentional** – The trees, livestock, and forage together are intentionally designed, established, and managed to work together and yield multiple products and benefits. These are not individual practices that occur coincidentally together nor managed independently.
- **Intensive** – Silvopastures are managed intensively to optimize production. Cultural practices such as thinning and pruning are often employed on the trees, while fertilization is done on forage to improve production. Livestock in silvopastures are managed based on forage availability.
- **Interactive** – Livestock grazing, forage production, and tree management are conducted in harmony to enhance the production of multiple harvestable components, while providing conservation benefits.
- **Integrated** – The trees, forage, and livestock are structurally and functionally combined into a single, integrated management unit tailored to meet the landowner’s objectives.

Benefits

- Diversify farm enterprise (e.g., livestock sales, timber sales, hunting leases, etc.), and spreads out market risk
- Provide high value timber resulting from pruning and thinning to manage tree density
- Provide shade or cooler summer environment for livestock
- Provide wind protection for livestock during severe winters
- Reduce animal stress and improve animal productivity
- Improve soil health and nutrient cycling
- Enhance habitat for many wildlife species through plant diversification and promoting nutritious forages
- Enhance plant nutrient uptake efficiencies and water quality – deep tree roots capture nutrients from deeper soil horizon
- Increase recreation opportunities
- Control weeds and invasive species due to browsing of animals, and development of desirable ground cover
- Reduce wildfire severity due to reduction of forest and ladder fuel
Reginaldo Haslett-Marroquin wanted to develop a system of food production that was not only sustainable but regenerative in every sense of the word. He wanted it to be regenerative to the soil, regenerative to the livestock and plants under management, regenerative to managers of the farm, and lastly he wanted this system to be regenerative to a population of people who had historically been unable to farm. With a lifetime of farming knowledge and a team of great partners, Regi, Jim Kleinschmit, Tony Wells, Wil Crombie along with huge support from many family, friends and mentors, have developed the Tree-Range® Chicken brand, using an innovative production system that integrates food producing perennial nut and fruit trees with pasture, natural forages to achieve “truly” free-range poultry. This regenerative poultry production system offers a premium market to allow easier entry for new farmers by providing reasonable economic returns with minimal upfront investments, (compared with what is normal in farming). Over the past 3 years, this regenerative poultry production system has been replicated on 3 small farms and 5-10 new farmers are now developing Tree-Range® production plans on their farms for 2021 and beyond. 

A New System

This team of innovators thought beyond standard ways of thinking about silvopasture and followed the principles of integrating trees, forage and grazing livestock with chickens and hazelnuts. Poultry actually evolved out of a jungle habitat, so the system mimics nature in that way. Their goal was to create a production unit that is replicable by other farmers on small acreages. One production unit consists of a chicken coop and 1.5 acres split into two .75 acre paddocks that have perennial tree species planted on 12 to 14 foot row spacing with 6 to 8 feet between trees. This system is designed to produce batches of 5-10 medium size batches.
SILVOPASTURE CASE STUDIES

1,500 chickens which rotate between the two paddocks. Also, by strategically placing the feeders in different areas they are able to alter which areas within the paddock are receiving animal impact. This is important for soil health as soil and plants need adequate time for rest and recovery between animal impact.

**Symbiosis**

In a chicken production system, typically feed is imported and chicken manure which is high in nutrients is considered a liability for which a home must be found after every batch of chickens. The Regeneration Farms team views the nutrients from that fertility as an asset, and sought to find a way to utilize it within the system. To offset the large amount of nutrients being deposited on the pasture every summer and also to create the jungle environment that the chickens evolved from, they planted hazelnut trees in the paddocks. These trees provided a natural evolutionary habitat for the poultry as well as a secondary income stream to the farm through the saleable hazelnuts and also took up much of the nitrogen placed from the chicken litter turning the liability into an asset. Not only do these trees provide a secondary income source and utilize the fertility from the chickens, but as they grow taller and expand, they provide shelter from aerial predators and from the sun and weather.

**Trial and Experimentation**

Tony shares how this was not an overnight success, there was a tremendous amount of thought and intentionality that went into each aspect of this silvopasture chicken production model. Several years of research went into the design of the chicken coop and feed and water infrastructure. Prior to Tony joining the team, Reginaldo had done experimental trials with over 30 different chicken breeds before coming to the conclusion that freedom rangers were an ideal fit. They are good foragers, they have few if any health issues, and they produce a high quality delicious meat product. Reginaldo also had experimented with other tree species such as apples and plums but in the end, determined that hazelnuts were the best fit for this system. They have the ability to handle and thrive through all the fertility left from the chickens. Additionally, in 5-7 years when the hazelnuts grow and are at full production, they will produce 30-50 percent of the total farm revenue.

**Adaptable**

Broiler chickens and hazelnuts are a starting point for the Regeneration Farms team. However, the system has the ability to be adapted to a number of different production systems. They have found success using elderberries in place of or in addition to hazelnuts. The elderberries offer another high value crop that grows faster and can begin providing shelter earlier and begin producing a crop in 2-4 years rather than 5-7 typical of hazelnuts. There is also room for diversification in animal species. Other poultry species like laying hens, ducks, turkeys and potentially even hogs and sheep are possible within this system.

The farm has begun commercialization of regenerative Tree-Range products, implementing silvopasture and regenerating soils in an innovative, exciting new way.
Background

Tyler Carlson didn’t grow up farming, so his interest in it came around in a slightly unconventional way. His grandfather owned a farm, but at the time, it was more of a recreational retreat than a productive farm. Tyler spent much time there, exploring, hunting and fishing which instilled in him a love of nature and the land. While in college, Tyler studied biology, geology, horticulture, and sustainable agriculture and began to make the connection between nature and food and realized that our current system is not sustainable. Ultimately, he arrived upon agroforestry and perennial regenerative grazing and decided to get involved at the production level. In 2011, he purchased the family land that sparked his interest in nature and began the transition into a productive, regenerative ecosystem that provided food for humans and habitat for wildlife.

Fitting Nature’s Model

Tyler’s initial plan for his land was to produce food for himself and his family. A pivotal moment came when he heard of a program in South Dakota working to restore native prairie by reintroducing bison, which sparked an interest in regenerative grazing and grass-based perennial agriculture. He said this type of management “fit with what I felt the farm was asking to be.”

Tyler’s farm is not a cookie-cutter square quarter section of black dirt. It is 200 acres of open grasslands, thick overgrown forests, lakes and marshes. To farm in any other way than nature’s image would take time, money, and be a challenge every step of the way. So Tyler decided to work with nature, mimicking the historic context of this land through livestock integration and silvopasture. Obtaining funding and design help from professional agroforesters, Tyler got started planting trees in 2012.

Early Boots Farm

Tyler Carlson & Katie Droske
320-249-1841
earlyboots@gmail.com
20232 Balsam Dr, Sauk Centre
Sources of Income: Grass Finished Beef and lamb, Perennial Fruit
Acres: 40 in open pasture
13 planted pine silvopasture
20 actively converting from forest to silvopasture
6 aspen silvopasture
20 of woods grazed in rotation
20 in old pasture
Remainder in water
Data was important. Tyler wanted to know that silvopasture pays, and thus collected data on what contributions it made environmentally and to carbon sequestration. He created three seven-acre paddocks with standard forestry spacing for the trees; in each paddock was a different species of tree: Red Pine, Eastern White Pine, and Red Oak. He protected the trees from livestock by creating alleys with high-tensile electric fence and grazed amongst the trees to manage vegetation around them.

Integrating grazing started slowly. Tyler focused initial efforts on areas that were more open, or where trees had exposed the forest floor to sunlight. He seeded orchardgrass and red clover onto the land and slowly integrated grazing animals. He moved the livestock twice per day to minimize animal damage and allowed adequate recovery time for the grass species. After seeing some success in these naturally open areas he wanted to further open the canopy. His tools of choice are a chainsaw, weed eater with a blade attachment, and a loader tractor. The progress is slow and labor-intensive, but his hope is that over several years he can transition all of his woodlands into a silvopasture system.

Benefits of Silvopasture

Tyler has been utilizing silvopasture for several years and sees many benefits, the first and most obvious being the expanded grazing area. In many of these dense forest stands, prior to thinning and seeding there was little to no forage production, making those acres worthless as far as grazing value. Now he sees forage production that competes with open grasslands, and in certain times of the year during heat and drought the silvopasture grasslands can even be more productive. Additionally, the same shade that allows grass to be more productive during hot and dry conditions also improves cattle comfort and can result in improved gains on Tyler’s cattle as well as an increased conception rate from his cows.

On the acres where he planted trees to establish silvopasture, the trees are still short and provide minimal shade value. They have, however, already begun to provide a great winter windbreak for cattle. Across his whole farm Tyler believes that his management has improved wildlife habitat.

Lessons Learned

Tyler’s experience has been educational, and while he is still early in the process of building his farm, he has plenty to share. He has lost animals to poisoning due to certain plant species in the woods and recommends educating yourself on the species in your particular woods and how best to manage those risks. Where he transplanted in trees he has quite a bit of trouble with the red oaks; if he could go back, he says he would have used tree tubes to protect the trees. He was very happy with the pine transplants. They were larger with much more vigorous root systems that took off with no water supplementation in a drought year.

His last comment on establishing silvopasture into open land was to put more intentional thought and consideration into where he planted the trees. He chose to plant on his best open tillable acres; looking back, he questions if it would have been better to plant on some of his less-valuable sloped land. Overall, though, he has been pleased with the results and has not lost his passion for agroforestry and silvopasture.
Tom Hunter Farm

Contact: 651-328-1872, hunter.ts@gmail.com, 23257 685th Street, Wabasha
Sources of Income: Weaned calves, grass-finished beef | Acres: 100 pasture, 100 woods

Background

During the 1980s, Tom left the family farm in western Illinois and took a job at Pillsbury in the Twin Cities. This separation allowed him to break old farming habits and, after attending an ACRES conference, he found himself thinking more about grazing and grass-finishing beef. In 2006, he retired from Pillsbury and began searching for a farm that wasn’t a perfectly flat, black dirt expensive crop farm, but an affordable farm that would be adaptable to a grazing system. In 2010, he found and purchased the farm where he has been building his grazing system ever since.

Restoring Landscapes

Silvopasture is not something Tom always imagined as being part of his operation. However, after purchasing a farm that was 50 percent wooded, he began to consider what value he could gain out of all of the land that most farmers would consider “waste” or that only had value to a hunter. Looking back in historical aerial photographs he noticed that much of this wooded area was at one point much more open, with trees scattered across the hillsides. Reading original survey notes of the land further confirmed his suspicions that the land historically had been an oak savanna. The potential grazing value along with the opportunity to restore the land back to its historical context led him to begin his project of converting overgrown forest into silvopasture.

Grazing Value

Tom’s primary farm business is based around grazing livestock. Like most graziers in the Upper Midwest, his pastures primarily consist of cool-season grasses that produce as much as 60 percent of their annual growth in as little as two months. They also need time in late summer and fall to recover and store energy for winter. Tom learned from years where he
grazed in late summer and fall without allowing adequate rest periods and resulted in winter kill on the forage. Warm-season forages produce most of their quality forage in late summer. The challenge of an uneven grass production schedule forces graziers to deal with this mismatch in grass production with making hay or adjusting stocking rates, both of which can be complicated and expensive. The addition of warm-season grasses on his farm helps level out the grass availability throughout the grazing season.

This integration of silvopasture will also offer a shady spot to bring cattle in the heat of the summer which can result in reduced heat stress and increased gains on yearlings and calves. Additionally, the warm-season grasses provide ideal fuel for burning in the dormant season.

Implementation, Maintenance

Tom worked with his local SWCD to experiment with a trial of silvopasture establishment. He established silvopasture in two different ways: thinning an overgrown forest and planting trees into existing grassland. Each method of establishing silvopasture presents its own challenges and advantages. Thinning the overgrown forest requires tremendous amounts of time, labor, and equipment. Tom did as much work as he could with a chainsaw and skid loader, and used a bulldozer on some of the steeper land. After clearing the land he seeded it down to rye which he hopes will produce adequate fuel to burn next summer to stimulate growth of warm-season forages from the latent seed bank.

Establishing trees into existing pasture takes many years, and you have to protect them from both livestock and wildlife. Tom transplanted burr oak seedlings he found around the farm and put a 30”x30” rubber belting around the plant to suppress weeds and a polywire fence around the trees to protect them from wildlife and livestock.

He planted trees 60 feet apart which amounted to 12 trees per acre and his hope is to result in 50 percent shading of the ground when they are fully grown. Once the silvopasture is established, he plans to maintain it with well-managed grazing and fires just as the landscape was managed by Native Americans.

Once Tom Hunter’s silvopasture is established, he plans to maintain it with well-managed grazing and fires just as the landscape was managed by Native Americans.

Exciting Experiment

Tom’s hope through this project is to prove the viability of silvopasture as a profitable land-management option. His initial experiment on a small portion of land found that the cost of transition from forest to silvopasture was estimated around $2,500/acre. Potential exists to reduce future costs with use of livestock, forestry mowers, and other management techniques. Costs could be further offset if there is valuable timber in the woods that could be harvested. The experiment is ongoing but the potential is great, and Tom is excited to see where it goes.
Snake River Farm

Contact: Tom Barthel & Gail Wilkinson, 763-263-2721, tom@snakeriverfarmmn.com

18251 62nd St, Becker | Sources of Income: bison, beef, hogs, lamb, turkeys, geese, & ducks

Acres: 120 acres open pasture, 120 acres historically oak savanna/wet meadow

Background

Tom grew up on a dairy farm in Otsego which instilled his love of agriculture. In his early 20s, with a wife and two children, he began his own farming business by purchasing his current farm because, due to its location and soil type, it was affordable. In the 70s, Tom farmed as many as 700 acres of corn. He came to the realization that this operation was not sustainable, shifted to a pasture-based operation and focused on his electrical engineering career. In the late 90s, he developed his grass-based production system and began to build his direct-to-customer sales enterprise. He now raises at least seven different livestock species ranging from large ruminants to small ruminants and poultry. At the same time he began developing the woods into an open silvopasture system to restore the native oak savanna.

Silvopasture Conversion

Tom could see that the woods on his land had been in an oak savanna, but that grazing on that land had ceased ten to fifteen years before he purchased the farm. He could also see that the white oaks were already being suppressed by newer, faster-growing tree species. His goal had always been to reintegrate livestock and grazing in the woods but, due to his farming and
engineering careers, he wasn’t able to pursue that goal for nearly 30 years. The job of clearing his overgrown forests is labor-intense and has taken time. Over 20 years he has made tremendous progress but still has 15-20 acres he hasn’t been able to work in yet. What has worked best for Tom is a multiyear process in which he first goes through and cuts the trees he doesn’t want. He often will let that timber sit for a year which makes it easier to move when he does come to remove or burn it. He then plans his winter bale grazing in the newly opened woods the first year after opening the canopy. The fertility from the wasted hay, manure and urine along with new seeding of pasture plant species and the sunlight exposure jump-starts the plant growth in his newly established silvopasture.

A Stewardship Mindset

When asked about the cost of converting forest to silvopasture, Tom admitted that he doesn’t know the exact cost of the conversion, but he would guess that the expenses per acre when accounting for labor would come close to the cost of purchasing another acre of open pastureland. However, for Tom the motivation was less the financial value and more a sense of responsibility as a steward of the land. Tom believes that as a farmer, he is supposed to take the best care of the land that he can. He talked about how people assume that the wild overgrown forests of northern Minnesota are natural, when in reality they are not. To restore them to their more natural state, he believes grazing ruminants must be reintroduced as part of the whole system. It would be easy to look at the woods at wasteland, or hunting property and ignore the fact that it, like most of our productive grassland and tillable acres, is degraded. But Tom sees it as his responsibility to manage that land in the same manner as his tillable acres.

Many Benefits of Silvopasture

Tom’s primary motivation for restoration of oak savanna was out of a sense of responsibility and also desire to see his land returned to its native state. However, his efforts to restore this land did not come without a plethora of benefits. It was mentioned that the cost of converting woods to silvopasture may not be that competitive compared with purchasing new land, but converting woods to silvopasture allows the owner to gain grazeable acres with sweat equity and labor, rather than cash and debt. This land also incurs no additional property tax whereas new land would. In a grazing system contiguous acres is one of the most valuable things a grazier can find, and it’s tough to find land much closer to home than acres you already own. Additionally the benefits of shade that silvopasture provide to both the cattle and grass are benefits you wouldn’t get on the purchase of open pasture. And lastly, Tom’s management of the woods has created new habitat for wildlife which Tom and farm visitors to his farm get to experience daily along with the satisfaction of knowing that he is doing his best to care for the land entrusted to him.
Sunup Ranch

**Contact:** Greg Booth & Vickie Kettlewell, 12248 Clark Dr SW, Brainerd
Vickie: 612.269.1644 or vickie@sunupranch.com; Greg: 218.838.1266. **Acres:** 700

**Sources of Income:** Quarter horse breeding, commercial Angus cow/calf

**Background**
Vickie is a second-generation rancher on her family’s ranch in Brainerd. Her family has been in the cattle and quarter horse breeding business since 1950 when they began ranching, but in the late 50s they switched focus even more to the horse enterprise. Vickie held a career in journalism, but in 1993 she and husband Greg were able to move back when her mom was ready to back out of the ranch. In 2009, Vickie and Greg began to work with NRCS to develop a grazing system and intentionally manage their woods as silvopasture.

**Important Goals**
When Vickie and Greg began running the ranch, the land was managed in a continuous grazing system where cattle had the ability to graze anywhere they pleased both inside and outside of the woods. This management system results in cows selectively grazing the plant species they prefer at the start of the grazing season while the less-desirable plants mature, lose quality and reproduce. The highly desirable plants are grazed repeatedly without adequate rest and recovery time and, over many years, can result in unproductive pasture filled with undesirable forage species. Additionally, it results in poor distribution of manure across the land. Vickie and Greg had goals of improving the soil, extending the grazing season, and building a more resilient business and land resource. They recognized that improved grazing management and better utilization of the wooded acres would play an important role in accomplishing those goals.

**Silvopasture**
Of the land base utilized as cattle pasture, 104 of 240 acres, or 43 percent, are woodlands.
Vickie and Greg began to consider how they could best capture value and improve productivity of the grass growing in those woodlands. They saw that this land had value in both timber and grazeable acres and were able to get much of the land cleared for a profit through a logging company. Vickie shares how the value of the timber really helped ease the transition of woodland to silvopasture. However, although this timber value was very helpful, in her perspective “trees add the most value for their other assets such as the micro-climate they create for livestock, for the habitat they provide for birds and wildlife, and for the carbon they remove.” With the time it takes to grow the timber, and the uncertainty of what the market will be at time of harvest, their greatest value in Vickie’s eyes is to the grazing enterprise.

To try and help quantify the value of silvopasture in their ranching enterprise, Sunup Ranch participated in a three year study with the University of Minnesota. This study measured the difference in animal and grass production as well as the difference in forage quality between managed silvopasture, open pasture, and unmanaged woodland grazing. The study was done on three different farms in different environments over a three-year period. The results showed that managed silvopasture has the potential to increase both animal and plant productivity over open pasture and it consistently outperformed unmanaged dense woodland. In hot and dry years, silvopasture helps preserve moisture in the soil by shading it from the evaporative effects of the sun as well as protecting the soil biology from the high temperatures. Animals also benefit from reduced heat stress during the summer months. It also allows you to capture annual income off the land while waiting for the timber to grow to a point it is able to be harvested.

**A Natural System**

Livestock are more than just an income generator for Greg and Vickie, they are an important tool. Maintenance of the silvopasture is just as important as the original thinning, Vickie says, because “by nature, a woodland likes to fill itself in;” in her case, with wild raspberries. Rather than using a mower or chemicals, she chooses to use the cattle to knock back the brush and maintain the silvopasture how bison and elk would have many years ago in native landscape. Much of her woodland acres are not easily accessible, so grazing livestock can be the easiest way to manage vegetation in many areas of the ranch. Additionally, they are able to use their horses to more easily access those same areas that vehicles are not able to access. Greg and Vickie are firm believers in the value of silvopasture and are passionate about the work that they are doing to promote silvopasture, create habitat, and improve soils.
Project Partners

The University of Minnesota Extension is a major outreach arm of the University of Minnesota whose mission is to connect community needs and University resources to address critical Minnesota issues. The Extension Center for Agriculture, Food and Natural Resources (AFNR) brings together over 160 experts who annually engage with thousands of Minnesotans and others worldwide to address the complex demands put on our land and water and develop balanced, comprehensive solutions. Learn more at extension.umn.edu.

The Sustainable Farming Association of Minnesota (SFA) advances the sustainable agriculture principles of environmental stewardship, economic resilience and strong communities through farmer-to-farmer networking, education, innovation, research and outreach. For nearly a decade, SFA has led soil health education efforts through workshops, field days, webinars and farmer networking. “Agriculture, done well, heals” reflects the group’s belief in the power of regenerative agriculture. Learn more at sfa-mn.org.

The Center for Integrated Natural Resources and Agricultural Management (CINRAM) at the University of Minnesota is a partner-based organization that catalyzes the development and adoption of sustainable, integrated land use systems. CINRAM links the expertise of the University with the experience and insights of people and organizations who work with and have understanding of opportunities and issues across the landscape. Learn more at cinram.umn.edu.

Great River Greening inspires, engages, and leads local communities in conserving and caring for the land and water that enrich our lives. We focus our work in locations and on activities that offer conservation impact, ecosystem services, and community benefits through the restoration and enhancement of natural areas and pursuit of economically, agronomically, and environmentally sustainable agricultural systems. Learn more at greatrivergreening.org.