

# Champions of Agroforestry in the Upper Midwest

*Farmers merging agriculture and conservation in America's breadbasket*



Carbon180



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## ABOUT CARBON180

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Carbon180 is a climate NGO with a vision to remove legacy carbon emissions from the atmosphere and create a livable climate in which current and future generations can thrive. Based in Washington, DC, we design and champion equitable, science-based policies that bring carbon removal solutions to gigaton scale.

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## ACKNOWLEDGMENTS

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Thank you to all our partners for welcoming us, educating us, and showing us the boundless beauty of the Midwest.

Kaitie Adams (*Hudson Farm*)

Emily MacDonald (*Greenfield Grazing*)

Steve Brunn (*Green Horizon Farm*)

Mark Shepard (*New Forest Farm*)

Nate and Liz Brownlee (*Nightfall Farm*)

Kathy Wahl and Tom Dice (*Red Fern Farm*)

*All photos by Courtney Fee (Carbon180)*



# Agroforestry can transform US agriculture.

The integration of trees and shrubs into production agriculture, known as agroforestry, is recognized by the international scientific community as one of the most effective strategies to sequester carbon, rebuild soil health, and deliver a multitude of ecosystem services on working lands. Rooted in Traditional Ecological Knowledge (TEK) and stewarded by Indigenous communities for millennia, agroforestry practices synergize food production with conservation. These practices are gaining renewed momentum across the American Midwest, where the stakes for agricultural and climate resilience are especially high.

Five states in particular — Illinois, Indiana, Iowa, Michigan, and Wisconsin — are ripe with potential for agroforestry to improve on-farm resilience, restore soil health, and fortify rural agricultural economies. They collectively represent nearly one hundred million acres of productive US farmland and draw billions of dollars to rural agricultural economies each year. Yet the region's producers face mounting pressures: volatile commodity prices, rising input costs, and degraded soils that have, in some areas, led to the return of devastating dust storms. At the same time, devastating cuts to programs like the Partnerships for Climate Smart Commodities Grant Program, which promised to award over \$150 million to collaborative agroforestry projects, have obstructed high-impact projects from execution on the ground.

Now more than ever, farmers must make challenging management decisions amid high uncertainty, and for many, establishing trees is a long-term investment in a resilient future. The 2022 Census of Agriculture reported that more than 32,000 farms now integrate trees into their operations, representing a 6% increase since 2017. With targeted federal policy support, we can harness this momentum to catalyze widespread farmer transitions to agroforestry. Early versions of the latest Farm Bill included key provisions directing USDA to expand capacity at the National Agroforestry Center and strengthen conservation incentive program support for agroforestry practices. Understanding the needs and priorities of agroforesters on the ground is essential in getting these improvements right, and Carbon180 is committed to rooting our policy development in producer voices.

To that end, our team visited Upper Midwest farmers who champion agroforestry on their landscapes and demonstrate the power of diversified agriculture, particularly on marginal land. Their stories illuminate unique motivations, challenges, and creativity in implementing these long-term practices, serving as invaluable models for other farmers interested in transitioning. They also reveal what's still needed from policymakers, service providers, and researchers to make these systems thrive at scale. With their help, we share distinct visions for the future of agroforestry in the Midwest and across the United States, including constructive perspectives on gaps in federal policy support for these systems.

By farming differently and integrating trees, these producers are transforming agriculture in the heart of our nation's breadbasket. It is my privilege to share their experiences and insights to inform stronger, more effective agroforestry policy in the years ahead.

Rooted in gratitude and humility,



**MAYA GLICKSMAN**  
**SENIOR POLICY ADVISOR**  
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# Considerations for Policymakers

## *Rooting agroforestry policy in farmer experiences*

In Carbon180's conversations with farmers across Midwest states, key throughlines emerged highlighting gaps that federal policy can address to support agroforestry. Rooted in real-world experiences and expertise from farmers on the ground, targeted policy support can both enable transitions to these systems *and* support their management long-term.

### *1. Specialized technical assistance is imperative*

**Agroforestry systems require different management from other traditional forms of agriculture, from species selection to long-term tree management.** Farmers looking to adopt and maintain agroforestry need specific design support and technical guidance to do so. Farmers noted gaps in this support and raised that:

- A.** There is a lack of agroforestry-specific training and expertise from service providers at NRCS, and some are wholly unfamiliar with these practices. Even when farmers are able to receive financial support for agroforestry practices, they are often left to do their own research, pay for third party agroforestry-specific consultants, or learn from agroforesters who operate in different regional contexts. This takes significant time and energy for farmers, on top of managing their operations.
  - B.** This lack of expertise compounds when farmers are trying to determine what conservation practices would best suit their landscapes and tree planting practices are not considered or recommended by those providing technical support.
  - C.** There are a small number of excellent agroforestry-specific consultants in the Midwest who can provide sound guidance for farm design and management, yet these services come at additional cost burden to farmers.
  - D.** Ultimately, developing stronger agroforestry expertise at NRCS offices across regional contexts via train-the-trainer field days, courses, and resource development will be critical in enabling practice transitions.
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### *2. Agroforestry creates opportunities to merge conservation with production agriculture*

**The Conservation Reserve Program (CRP) prohibits any non-emergency commercial harvesting and grazing on enrolled acres, limiting opportunities to blend conservation with production agroforestry.** Farmers raised that:

- A.** All key conservation benefits observed on their farms — from biodiversity to soil health to water infiltration — were achieved on commercially harvested agroforestry operations. Harvesting and grazing has not obstructed conservation, but instead plays a direct role in driving practice adoption and holistic ecosystem management.
- B.** Agroforestry systems are best managed as whole ecosystems, where conservation outcomes and agricultural productivity are deeply intertwined. Producing more food in healthy ecosystems is a core driver for many farmers to choose agroforestry.
- C.** Options within programs like CRP that allowed harvesting or grazing while prioritizing conservation outcomes would better suit agroforestry without hindering ecosystem benefits.



### *3. Conservation programs pose a high administrative burden to small farmers*

**In order to participate in federal conservation programs, all enrollees must complete the same paperwork regardless of the size of their contract award.** Farmers raised that:

- A.** For small-scale producers, this means the same time spent on paperwork for smaller payoffs, while they are already working long hours to steward their farms.
  - B.** For some, the amount of administrative work required to participate in federal programs isn't worth the financial assistance they could receive.
  - C.** In order to relieve some of this administrative burden, farmers indicated that they would appreciate a simplified administrative process through, for example, an online form or portal option.
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### *4. Fundamental research, demonstration sites, and market development are critical gaps*

**Ultimately, adopting new practices involves significant risk for farmers.** In order to de-risk these transitions, farmers require both proof of concept and guaranteed product markets for agroforestry. In our conversations, farmers raised that::

- A.** Demonstration projects are most valuable when they are long-term and large enough to reflect real commercial farmers' — even small ones' — management and economic realities, rather than tiny, short-term projects.
  - B.** Small and beginning agroforesters who don't grow enough to make wholesales profitable rely on small and alternative markets. Policy support for processing infrastructure and market development for value-added agroforestry products will be critical in sustaining agroforestry transitions long-term.
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### *5. Cost-share support varies from state to state*

**Since each state determines which practices are eligible under federal conservation programs, support for agroforestry practices is not always available.** When unavailable, there is no Field Office Technical Guide (FOTG) for these practices, so there are no public resources for farmers to get started. Farmers shared that:

- A.** They celebrate the creation of FOTGs for more agroforestry practices — for example, for silvopasture in Indiana and Michigan — to enable cost-sharing for adopting farmers
- B.** Small and beginning agroforesters who don't grow enough to make wholesales profitable rely on small State-specific restrictions on utilizing only native species can limit the productivity of supported agroforestry practices, noting that many non-native cultivars provide comparable environmental and biological benefits alongside more valuable harvests.

Improving programmatic support for agroforestry begins with listening to farmers. Integrating their stories and experiences on the ground is essential in getting these improvements right, and Carbon180 is committed to rooting our advocacy in producer voices.





**STEVE BRUNN**  
WISCONSIN (WI-3)



**MARK SHEPARD**  
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**KATHY DICE + TOM WAHL**  
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**KAITIE ADAMS**  
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**ILLINOIS**



**INDIANA**



**EMILY MACDONALD**  
MICHIGAN (MI-5)



**WISCONSIN**

**MICHIGAN**



**NATE BROWNLEE**  
INDIANA (IN-9)

## Our Regional Focus

The breadbasket of the Upper Midwest is ripe with potential for agroforestry to improve on-farm resilience, restore soil health, and fortify rural agricultural economies. These farmers' stories illuminate the realities of implementing agroforestry practices and reveal what's still needed to make these systems thrive at scale.



# Hudson Farm

Est. 2022 | Urbana, Illinois | IL-13

Kaitie Adams runs the Savanna Institute's Agroforestry Demonstration Farm, also known as Hudson, where she stewards over 120 acres of leased land to test, assess, and demonstrate a range of agroforestry systems.

At Hudson, she stewards 11 different windbreak designs and three distinct alley cropping systems, including a unique sublease of the alleys between tree rows with a conventional corn and soybean grower. Situated right next to the most productive agricultural county in the US, Hudson Farm stands out as a diverse mosaic of production agroforestry.



## Agroforestry Practices

Alley cropping (*mixed cropping with trees*)

Windbreaks (*barrier rows of trees*)

## Agroforestry Products

Elderberry, hazelnut, heartnut, gooseberry, black currant, and more



Kaitie Adams (*she/her*)

## Conservation Programs: RCPP, EQIP, CRP

Kaitie and the Savanna Institute started Hudson Farm in 2022 with a **mission to farm with trees**. They signed a unique 50-year lease with landowner Cathe Capel to create a productive, diverse, and perennial agroforestry farm nestled in a county of large-scale corn and soybean production. In the time since, Kaitie and her crew have evolved from driving around in an old, broken-down bus to plant trees to partnering with Canopy Farm Management who uses precision technology to plant and maintain the system. Now in their fourth season, they're celebrating their first commercial harvest — right on schedule for trees maturing into productive agroforestry.

With financial support from the Farm Service Agency under the Conservation Reserve Program (CRP) and design support from the Savanna Institute's Technical Assistance Program, Kaitie says these **windbreaks became functional surprisingly quickly**: in the first few years, they're already protecting against soil erosion, blocking pesticide drift from neighboring farms, and supporting insect and pollinator habitat.

Certain windbreaks at Hudson are designed specifically for **wind and pesticide drift protection** — oriented strategically to protect crops from prevailing winds from the south — while others are designed to provide habitat for beneficial wildlife like birds, insects, and ground animals. Each demonstrates a combination of different species, spacing, and number of rows. According to Kaitie, a huge benefit of windbreaks is that they're an **edge-of-field practice**, reaping outsized benefits for the amount of space they take up — they do their job on the margins without forfeiting income from prized growing space in the field.



WILDLIFE: A BIRD NESTED WITHIN A WINDBREAK TREE'S BRANCH



WINDBREAKS: TALL TREES PROTECT AGAINST PREVAILING WINDS



## “Agroforestry can look very different in the middle of corn and soybean country.”

Three diverse alley cropping systems also demonstrate how integrating trees within the field can distribute benefits such as carbon sequestration, erosion protection, and nutrient cycling across more of the farm, while stacking both annual and perennial production. The most novel alley cropping experiment at Hudson is a series of tree rows spread throughout a conventional corn-soybean field, each testing different spacing and species designs to identify **best practices for regional commodity growers** interested in incorporating trees.

Another alley cropping system grows heartnuts with elderberries and black currants between them, and the final grows hazelnuts with alleys of pollinator plants and prairie grasses as permanent groundcover — each teeming with a diversity of beneficial insects that help manage pests. As overstory trees mature and shade out their understory neighbors, Kaitie is hoping to **transition to silvopasture**, with sheep or cows grazing beneath the heartnuts.

In Illinois, these practices are still emergent, and there’s a lot that practitioners still don’t know about the long-term impacts. At Hudson, Kaitie’s team is **tracking outcomes** across agricultural productivity, carbon sequestration, water quality, and more over time. Ultimately, she hopes that demonstrating impacts both in-field and on the margins will inform how farmers can continue growing and making a living like they already are, but with the added environmental and soil health benefits of trees.



ALLEY CROPPING: BLACK CURRANTS GROWING BETWEEN ROWS OF NUTS

“We’re hoping to see the benefits of one row stretching meet the benefits of the next row, so you have a whole field benefit.”

Every tree on Hudson Farm was planted using cost-share support from USDA programs, with **CRP** supporting windbreaks and pollinator habitat, and the **Regional Conservation Partnership Program (RCPP)** supporting alley cropping establishment. Kaitie says that NRCS’s guidance specifically on windbreak design has been quite effective. For Hudson, **these programs made agroforestry possible** and continue to play a critical role in establishing trees on farms in the region. However, because the farm is **not permitted to harvest or generate income** from CRP-supported trees, they’re planning to reassess their enrollment at the end of their contract.

**Hudson Farm is showing farmers what is possible**, acting as a model for alternative ways to grow food that actually work, while co-prioritizing soil, ecosystem, and economic health. As she envisions the legacy Hudson is striving to create, the future of agroforestry is very personal to Kaitie. As a lover of rural life and community in Illinois, she believes that building diversified agroforestry systems can generate new economic opportunities, healthier landscapes, and local food for rural communities. By combining conservation, carbon sequestration, and productive agriculture at Hudson Farm, she is laying the groundwork for that future.



ALLEY CROPPING: YOUNG SWAMP WHITE OAK TREES GROWING WITHIN THE CORN







# Green Horizon Farm

Est. 2021 | Elk Mound, Wisconsin | WI-3

Steve Brunn established Green Horizon Farm in 2021 to grow a diversity of nuts, berries, and native prairie species to support soil health and pollinator habitat.

Across ten acres, Steve stewards a combination of row crops, woodlands, and wetlands, and sells his agroforestry products directly to restaurants, families, and specialty food companies. Four years in, Steve's trees and shrubs are popping with productivity as they reach early maturity.



## Agroforestry Practices

Alley cropping (*mixed cropping with trees*)

## Agroforestry Products

Aronia, currants, tart cherries, hazelnuts, chestnuts and more



Steve Brunn (*he/him*)

## Conservation Programs: EQIP

Before Steve started Green Horizon Farm, his land had been farmed intensively for over a hundred years, leaving him with **incredibly sandy, degraded soil**. With soil organic matter hovering around just 1%, he described his land as marginal — not great for any crop, but could eventually be good land for nuts and berries as the soil is restored through agroforestry. Inspired by tropical agroforestry systems he visited in Costa Rica, Steve planted his first five acres in 2021, followed by another five-acre planting in 2023.

In his **diversified alley cropping system**, Steve grows a variety of fruit and nut crops, and aronia, black currants, and red currants have performed best. Steve has also incorporated four rows of mostly native shrubs and trees to support biodiversity and provide habitat for pollinators, beneficial insects, and nesting birds.

Steve is experimenting with cultivating **Chinese-American chestnuts** in a colder climate than their typical growing range, which are establishing well alongside purebred American varieties. Since hybrid chestnuts haven't had proven success in his climate, Steve hopes to share his learnings with other farmers in the region.



ALLEY CROPPING: AN EXPERIMENTAL BLUEBERRY PLANTING



ALLEY CROPPING: CHESTNUTS GROWING OUT OF THEIR NORMAL CLIMATE





ALLEY CROPPING: RIPENING BERRIES ON A SMALL, NATIVE ELDERBERRY

Still in the startup years, Steve is working to identify what grows best in his challenging sandy soils. While he's harvested some fruit from them, his serviceberries and elderberries haven't matured as expected — four years post-planting, his two-to-three-foot shrubs should be approaching six feet tall. He hopes to **improve soil fertility** using locally-produced organic compost and biochar, supporting his local economy.

Steve emphasizes the importance of learning from and alongside other practitioners via demonstration farms, farmer peer networks, and simply seeing more agroforestry locally. Agroforestry best practices vary from region to region, and Steve says there are still many unknowns about their implementation in his particular context. He hopes his farm can play a role in developing a **regional knowledge base** of best practices, sharing his learnings with other farmers as his trees mature.

As a small farmer, Steve is grappling with economic questions and market opportunities — at his scale, while hand-harvesting all of his berries, selling wholesale wouldn't be profitable. Rather than scaling up in size and production, Steve is considering producing his own value-added products like juices, finding small markets for natural dyes, and continuing direct sales. Ultimately, Steve says, **developing markets** and demand for agroforestry products will be critical in enabling farmers to transition practices.



ALLEY CROPPING: AN EXPERIMENTAL MULBERRY PLANTING



ALLEY CROPPING: STEVE'S 10 ACRE FARM GROWING DIVERSE FRUIT AND NUTS

**“I had planned on expanding more by now, but I’m just not confident in the market opportunities.”**

In 2021, Steve received support from the **Environmental Quality Incentives Program (EQIP)** to plant his first trees. Steve says the amount of **paperwork was cumbersome** and time consuming. For small-scale beginning farmers, he says, the administrative burden is a real tradeoff, since all enrollees complete the same paperwork regardless of the contract size. For his second planting in 2023, Steve opted not to apply for EQIP support.

At the time, Wisconsin's EQIP program only covered native species, so he was only able to receive cost-share to establish native aronia and elderberry shrubs. The program primarily provided monetary support — while they were eager to help, his local **NRCS office wasn't well-versed in agroforestry**, and couldn't provide the technical assistance he needed. Instead, Steve turned to specialized agroforestry consultants from Propagate Ag and the Savanna Institute for stronger guidance on designing his farm.

Ultimately, Steve says federal cost-share programs can play a critical role in driving farmers to adopt agroforestry practices for their dual benefits to conservation and local food systems. To ensure those agroforestry practices are economically viable and worthwhile to farmers once adopted, Steve says support for **market development** will be crucial — including financial support for infrastructure to process agroforestry crops into value-added products and market them to consumers.







# Nightfall Farm

Est. 2013 | Crothersville, Indiana | IN-9

Nate and Liz Brownlee are in their twelfth season cultivating Nightfall Farm in Southern Indiana, where they raise a diversity of animals on tree-covered pastures.

They primarily sell meat and eggs, which they vend throughout Southern Indiana at farmers' markets, small groceries, and their own CSA. On a given day in the growing season, Nightfall Farm is home to over a thousand animals chattering amongst the trees.



## Agroforestry Practices

Silvopasture (*grazing with trees*)

## Agroforestry Products

Pigs, meat chickens, laying hens, turkeys, sheep



Nate Brownlee (*he/him*)

## Conservation Programs: EQIP, CRP-SAFE, ACEP-WRE

Nate and Liz Brownlee started Nightfall Farm in 2014 on a mission to convert fields that had been monocropped intensively for decades into a diverse livestock operation. As they began converting the land, they experienced **dangerous, relentless heat** in their new pastures without the relief of shade. On high heat index days, the sun threatened the welfare of the farm's animals and humans. They started planting trees as an investment in future shade.

The couple began by building shade shelters for their animals, which kept them safe from the worst sun exposure, but had to be moved daily to rotate where the animals grazed and didn't provide any shade for humans. In 2021, just days before the butcher, Nate and Liz lost a devastating 18 turkeys and 30 chickens to an intense heat dome — even underneath shade structures with full water tubs. **Ultimately, Nightfall Farm needed trees.** In 2025, when another heat dome hung over the farm, their trees were four years taller and kept all animals safe and protected.



SILVOPASTURE: LAMBS GRAZING ON TALL GRASSES AMONGST TREES



SILVOPASTURE: NATE MOVING CHICKENS AS THEY GRAZE BETWEEN TREES



“This isn’t intentional cultivars ... we need shade for our animals, and we’re going to take advantage of the resources that we have.”

When Nate and Liz started Nightfall Farm, their soils were heavily degraded after decades of unsustainable farming practices, and contained less than 2% organic matter. Now, they grow their pastures specifically to **rebuild soil health** — allowing shrubs and grasses to grow tall and provide additional shade, creating habitat for birds and beneficial insects, and delivering as much biomass back to the soil as possible.

Nate says **water infiltration** is the greatest soil benefit they’ve seen — in areas of pasture where they’d once lost chickens to standing water after big rain events, perennial root structures have improved the soil’s ability to accommodate bigger influxes of water. After years of groundwork to establish their agroforestry system, Nate and Liz are beginning to see benefits beyond the shade they initially planted for. At Nightfall, adding trees has created a **vibrant production space** — restoring healthy ecological diversity, storing more carbon, *and* producing food.

Nate says trees are a **long-term investment** that take time to reap rewards, and that farmers require targeted financial support while trees mature. With the right support structures, Nate believes agroforestry can be a win-win-win for conservation, feeding communities, and enabling financial security for farmers.



SILVOPASTURE: TURKEYS GRAZING UNDER THE PROTECTION OF SHRUB WILLOWS

“I can’t imagine working with animals on a pasture that didn’t have trees, now.”

In 2018, Nightfall Farm was one of the first in Indiana to receive an **Environmental Quality Incentives Program (EQIP)** contract for silvopasture, supporting around 400 new trees to optimize shade. Many of those trees are now twice Nate’s height, creating proper shade while supporting an impressive diversity of beneficial insects, amphibians, and birds.

Nightfall is also in its tenth and final year of a **Conservation Reserve Program (CRP)** contract to restore native grassland habitat, pursued based on imperfect technical guidance from NRCS. Since enrolling as grassland, they’ve discovered this land really wants to be forest, and remaining in compliance with less than 10% tree cover has been an immense management challenge and cost burden.

**Developing technical service providers’ expertise** on tree practices and agroforestry would enable better support for farmers like Nate to choose and manage conservation practices that best suit their landscapes. Nate says that **options for production agroforestry within CRP** would empower them to conserve their land in closer alignment with its natural ecology while mutually benefiting their livelihood.



SILVOPASTURE: PIGS GRAZING BENEATH TREES PLANTED FOR SHADE







# Greenfield Grazing

Est. 2018 | Buchanan, Michigan | MI-5

Emily Macdonald raises sheep on tree-covered pastures that were once an apple orchard and row cropfield farmed in the 1970s.

Across 80 acres, she raises about 50 lambs for direct-to-market meat each year, breeding and lambing herself with about 30 adult sheep. As her silvopasture operation blossoms, Emily is imagining how she'll expand the agroforestry practices on her farm.



## Agroforestry Practices

Silvopasture (*grazing with trees*)

Windbreaks (*barrier rows of trees*)

## Agroforestry Products

Apples, sheep



Emily Macdonald (*she/her*)

## Conservation Program: EQIP

When Emily began imagining Greenfield Grazing, she took inspiration from her region's natural ecology. Pre-colonization, she says, Michigan was almost entirely forests, stewarded sustainably by Indigenous communities for millennia. On her land, a young forest was already reemerging on former cropland retired around thirty years ago, alongside aging apple groves. It only made sense for her to **work with these trees as resources**.

In her **highly managed grazing system**, she moves her sheep as frequently as every day. With mobile fencing, she plans her grazing areas to ensure the flock always has access to adequate shade from trees, rather than relocating built shade shelters.

Because she inherited the majority of her trees, she's creative with the shapes and sizes of her paddocks. Areas with denser tree cover remain cooler on the hottest summer days, and grow faster at different parts of the season than more open pasture beneath the orchard, allowing for more strategic grazing rotation.



SILVOPASTURE: YOUNG LAMBS GRAZING AMONGST AGING APPLE TREES



SILVOPASTURE: SHEEP GRAZING POLLINATOR-FRIENDLY GRASSES



“We leave the dead trees standing until they get blown over because they’re great habitat for birds and insects.”

Emily worked with the Savanna Institute to design a diverse next generation of trees on her pasture, along with a new alley cropping system on her hayfield, each interplanting a strategic mix of fruit, nut, and conservation-grade species. Originally, Emily planned to work with the Expanding Agroforestry Project (EAP) under the Partnerships for Climate Smart Commodities Program, which has since been federally terminated. Without this support, she is reassessing how she’ll manage, renovate, and expand her agroforestry system.

When Emily started running sheep in tree-covered pasture, Michigan had no Field Office Technical Guide (FOTG) for silvopasture as a conservation practice — the practice was unavailable to farmers interested in cost-share support, and **NRCS field staff lacked experience with agroforestry.**

Despite being old and unmanaged for decades, most of her apple trees continue to produce, and the sheep enjoy the fruits while taking shelter in the shade. Emily doesn’t sell apples commercially, but works with folks in her community to turn them into cider and wine. As they age, many of these trees are declining, and Emily is making plans for their succession and other improvements on the farm.



“Agroforestry systems are complex. In the case of silvopasture, you’re dealing with trees, forages, and grazing animals ... there’s a big learning curve.”

Emily says that cost-share programs are critical for farmers to overcome agroforestry’s greatest barriers to adoption: the initial financial investment and the long wait time before the trees mature and return revenue. She celebrates that Michigan has since created a FOTG for silvopasture to support other farmers implementing agroforestry in her state.

In the meantime, Emily utilized the **Environmental Quality Incentives Program (EQIP)** for a forest stand improvement project and for fencing, water infrastructure, and other improvements to her prescribed grazing system. She said the process required a lot of patience — her grazing contract took seven years to complete as **she did her own research to write her grazing plan**, since she’s one of the few grazers in her county and her NRCS office couldn’t provide the information she needed.

In that time, labor and materials costs increased dramatically while cost-share remained fixed. Emily is very grateful that the program enabled her to upgrade to a much more efficient grazing system and hopes that **NRCS can develop stronger grazing and silvopasture expertise** to support other ranchers in Michigan.



SILVOPASTURE: DENSER TREE COVER FOR GRAZING ON HOTTEST DAYS







# New Forest Farm

Est. 1995 | Viola, Wisconsin | WI-3

Mark Shepard is in his 30th season practicing what he calls “restoration agriculture” on 106 acres that were degraded corn-soy fields when he bought them.

Now, Mark grazes animals beneath a mix of almost any tree crop you can imagine, from fruit to nuts to berries. Mark nurtures the synergies between food productivity and conservation, and believes that agroforestry is the best way to optimize land for nutrient-rich food production.



## Agroforestry Practices

Alley cropping (*mixed cropping with trees*)  
Windbreaks (*barrier rows of trees*)  
Silvopasture (*grazing with trees*)  
Forest farming (*farming beneath managed trees*)

## Agroforestry Products

Chestnuts, hazelnuts, apples, asparagus, pigs, and more



Mark Shepard (*he/him*)

When he purchased it 30 years ago, Mark’s clay soils were **deeply eroded** from decades of annual row cropping. He sought to restore ecological health while producing diverse, nutritionally dense food. His method, coined “restoration agriculture,” mimics the natural, pre-colonial ecosystems of the region known as oak savannas, or lightly forested grasslands. **Guided by nature**, Mark planted rows of strategic species to fill different niches: tall nuts as the overstory, smaller fruits as the understory, native berries as shade-tolerant shrubs, and grasses as groundcover.

Each tree row contains its own diverse mix of harvestable trees and shrubs, with berries vining among their branches. In the alleys between trees, he began farming vegetables organically and selling them wholesale for added on-farm and economic diversity. Later, he incorporated pigs and cows to perform multiple ecological roles that often present significant expenses for farmers — **weed control, pest control, and fertilizer** — while also helping to generate income.

Mark manages his farm as an ecosystem: rather than ensuring the individual success of each plant, he manages his groves for population fitness. He mass plants thousands of tree seedlings at a time, and facilitates “guided natural selection” to create a **disease-resistant, cold-hardy, and fruitful ecosystem**. As a result, wildlife has returned to his farm, including threatened and endangered species like the massasauga rattlesnake, northern cricket frog, and monarch butterfly. And after 15 years of rebuilding organic matter through perennial roots, livestock manure, and drastically reduced tillage, he transformed his degraded clay into carbon-rich, black soil.



DIVERSE TREES AT DIFFERENT STAGES OF MATURITY ON MARK'S SLOPING FARM





WINDBREAKS: MATURE TREES PROTECT FROM PESTICIDE DRIFT AND WIND EROSION

“Agroforestry has the answers to so many challenges. We can solve them with programs we already have in place, and we can do it at a profit.”

With a focus on chestnuts, Mark selectively breeds trees best adapted to his cold environment, and partners with local nurseries to cultivate and sell them. While his primary crops are wholesale-sold chestnuts, hazelnuts, and apples, he says his highest-value crop is cold-adapted chestnut seed. By nurturing what thrived on his landscape, Mark has developed a **foundational demonstration site** and body of best practices for commercial-scale, cold-climate agroforestry.

Mark says traditional yield metrics don’t accurately reflect success in diversified agroforestry systems. While his individual crop yields are lower than those in conventional systems, he emphasizes that he can grow **more total food** on the same amount of land with much lower input costs. Specifically, he says his integrated approach to silvopasture is an incredibly **low-cost, low-maintenance** way to raise pigs, once the system can feed them. Mark only purchases a fraction of typical grain feed as his pigs primarily forage their own grass, fruit, and nuts on the farm.



A GRASSY ALLEY BETWEEN ROWS OF MATURE CHESTNUTS

“We know what we’re talking about, because we actually do this. We actually live this way.”

New Forest Farm demonstrates that agroforestry can be **economically viable** at a commercial scale, closely aligned with Mark’s personal values as a farmer. Mark grew up in the Northeast amidst industrial decline and oil embargoes — he’s seen economic collapse firsthand, and it’s essential to him that a farming system can ultimately pay its own way.

Mark says there’s been incredible progress for agroforestry since he started New Forest Farm, including at the USDA National Agroforestry Center, although critical gaps remain. He calls for research and demonstration projects which operate at a scale that’s economically practical for farmers, rather than small-scale pilot projects. Bottom line, he advocates for a broader paradigm shift to **integrate commercial-scale farming with conservation**, currently kept separate in most federal programs.

Mark says federal technical assistance falls short because service providers **lack direct experience with agroforestry**. To fill this gap, Mark has devoted much of his career to teaching farmers how to design functional agroforestry systems with tree crops that suit their region’s ecology. He believes communities across continents can utilize diversified agroforestry to restore their ecosystems and food systems in tandem, with New Forest Farm as an early model for success.



ALLEY CROPPING: NATIVE GOLDENROD GROWING ALONGSIDE ASPARAGUS IN ALLEYS





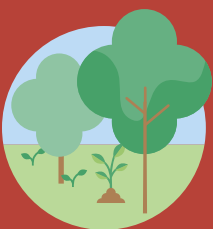


# Red Fern Farm

Est. 1993 | Wapello, Iowa | IA-1

Kathy Dice and Tom Wahl have been managing, breeding, and harvesting fruit and nut trees at Red Fern Farm since the early 1990s. With chestnuts as the overstory anchoring their farm design, they've added sheep and a diverse range of fruit and nuts to enhance their productivity.

As wildlife biologists by training, Kathy and Tom manage their land as a complex, dynamic ecosystem that merges conservation with productivity.



## Agroforestry Practices

Alley cropping (*mixed cropping with trees*)

Silvopasture (*grazing with trees*)

## Agroforestry Products

Chestnuts, pawpaws, Asian pears, apples, sheep, and more



Kathy Dice (*she/her*) & Tom Wahl (*he/him*)

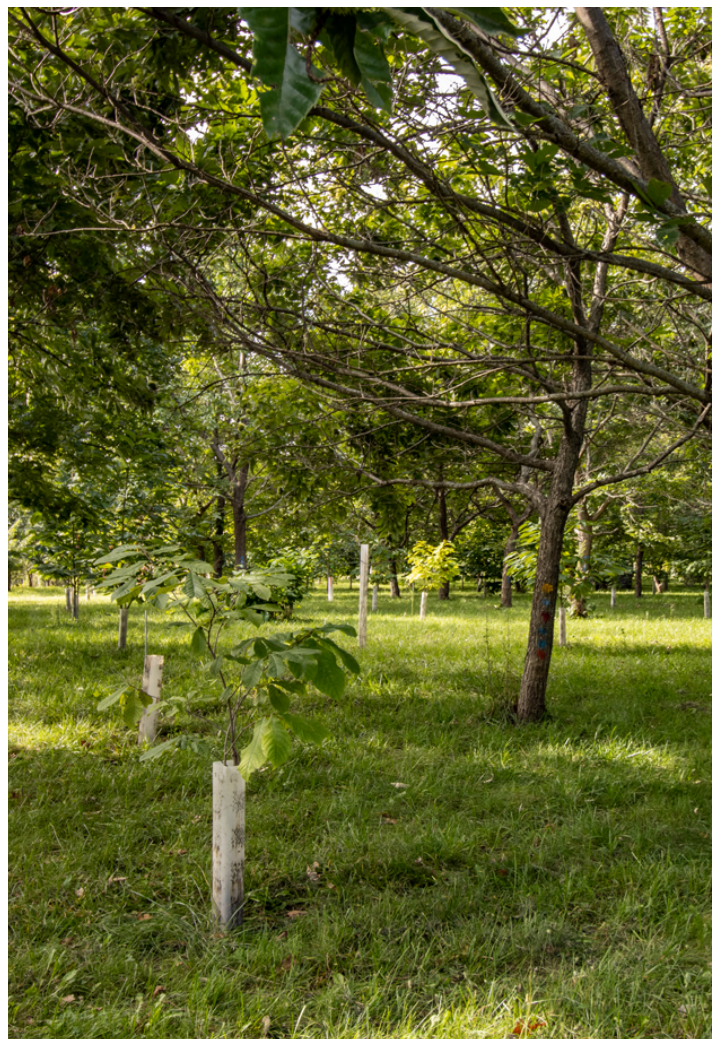
Kathy and Tom purchased their land in two parcels as a mix of rugged timberland and soils heavily eroded from decades of farming — **highly marginal land**.

Mixed into this landscape, they purchased a grove of neglected chestnut trees ready for attentive care. After replacing some chestnut trees with better genetics and interplanting more species, their operation snowballed into the **diversified agroforestry system**, fruit wonderland, and genetic laboratory it is today.

Their growing system doesn't fit neatly into a single practice — it's a blend of alley cropping and silvopasture that centers producing food on a diversity of trees, shrubs, and vines. They market their fruit and nuts almost entirely via U-pick, and all of their income has come directly from the farm since 2015. Earlier in their tenure, they ran a nursery operation selling tree seedlings, which evolved from selling their own excess trees.



ALLEY CROPPING: CHESTNUTS AND PAWPAWS THRIVING IN CLOSE PROXIMITY



ALLEY CROPPING: CHESTNUTS AND PAWPAWS THRIVING IN CLOSE PROXIMITY



“When we started planting trees, there were not good sources of these kinds of trees, so we had to grow them ourselves.”

Kathy and Tom emphasize that **trees take years to produce a significant crop** — they see trees start to produce around three years, but really ramp up in the fifth through tenth years. Now ten years mature, their best performing pawpaw groves can produce 2000 pounds of fruit a season, while sequestering and storing more carbon as developed trees with deep taproots. Using these mature **genetics**, they continue to cultivate and cross-pollinate their most prolific species for their prized seeds. Nearby, grazing sheep are moved daily from one tree-covered paddock to another, keeping vegetation under control while staying cool in dappled shade. Kathy and Tom breed and lamb their own sheep, raising roughly 40 lambs in silvopasture each year to auction locally.

Chestnuts are Kathy and Tom’s greatest source of income, more important to their livelihood than all other crops, livestock, and seeds combined. They say demand for chestnut seed and seedlings has exploded in recent years. Kathy and Tom know, though, that chestnuts need particularly well-draining and acidic soils — the wetter parts of even their farm weren’t suitable. They’ve spent years filling gaps in publicly available technical assistance, **sharing their learnings with other farmers** trying to grow chestnuts.

After 30 years of tree farming, their **soil organic matter has increased measurably**, alongside ecologically important birds and pollinators. Kathy and Tom dream of a Midwest where steeper slopes are covered entirely in perennials or pasture — transforming marginal landscapes into diverse agroecosystems that improve soil health, sequester more carbon, and produce nutritious food.



ALLEY CROPPING: ASIAN PEARS RIPENING AMONGST A MIX OF TREES

“The more biodiversity you’ve got, usually, the healthier your groves are going to be.”

Kathy and Tom haven’t felt compelled to participate in federal conservation programs — to them, the amount of time and paperwork required **isn’t worth the financial support they could receive**.

While the conservation benefits of trees are deeply intertwined with food production on their farm, most federal programs currently require farmers to choose one or the other. They say that **greater flexibility** in planting, managing, and harvesting under federal support programs could advance conservation outcomes alongside diverse, nutritious food production. With costs and labor frontloaded in early years before trees are profitable, better startup support would make agroforestry possible for more farmers just starting out.

To help farmers build successful agroforestry systems with specialty trees like chestnuts, Kathy and Tom emphasize the importance of **reliable and well-informed technical assistance**. They say that service providers need specific training to understand and advise farmers on the complexities of tree planting, soil and siting conditions, and agroforestry design. Kathy and Tom also hope to see better resources and technical guidance for supporting infrastructure, like irrigation systems.



SILVOPASTURE: YOUNG LAMBS GRAZING IN DAPPLED SHADE FROM TREES









For more information and to get in touch:

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