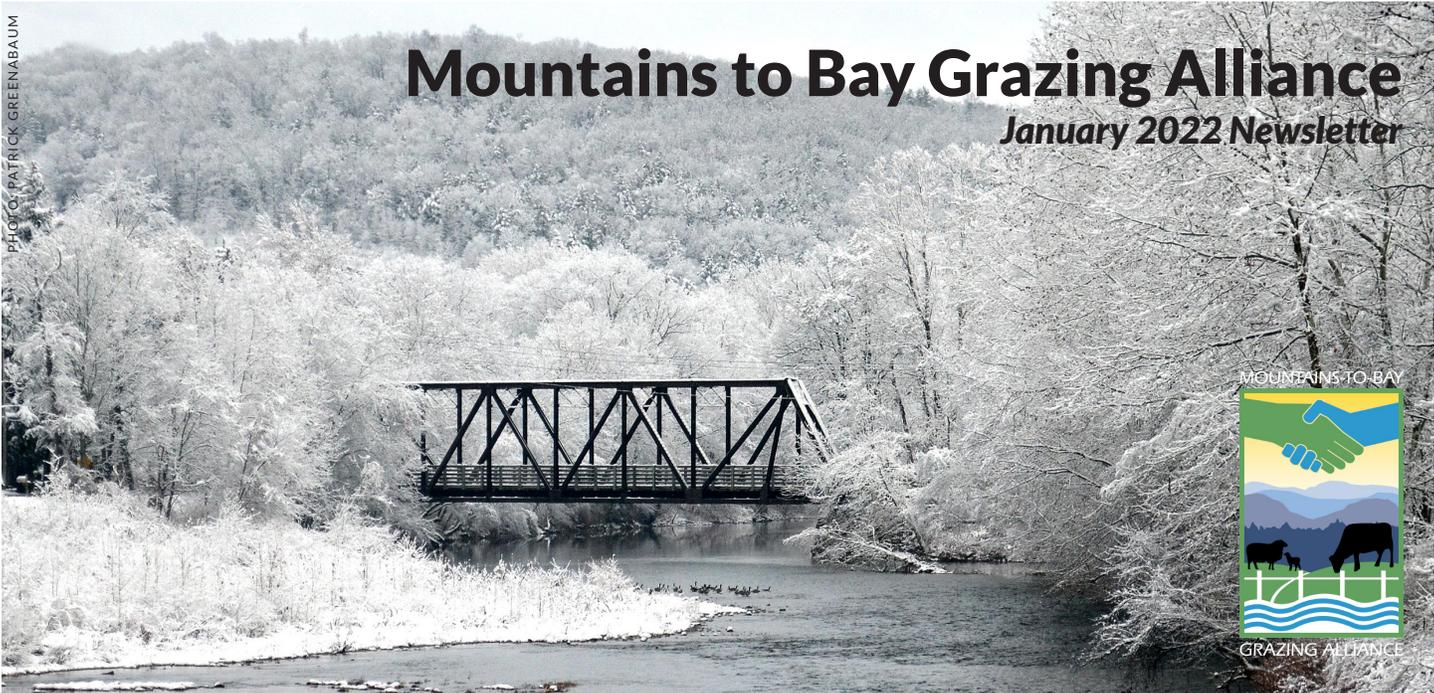


PHOTO: PATRICK GREENBAUM

# Mountains to Bay Grazing Alliance

January 2022 Newsletter



## Are You A Prepper?

by Jacob Gilley, Mid-Atlantic Sustainable Grazing Manager for American Farmland Trust

If it weren't for the calendar hanging in the kitchen and the full stomach that I still felt from the holidays, I would have sworn it was mid-fall based upon the comfortable 70-degree temperatures and abundant stockpiled forages we had been experiencing in our pastures.

That is however until Monday, January 3 arrived. On this day, we "officially" entered winter with the roughly 11 inches of snow that our farm and many others throughout the region received.

Though thankful for the moisture to balance out our dry fall, the heavy snow knocking out the farm's power four days and counting hasn't been as welcome.

As we have been working through this lack of modern convenience, it has provided ample time to reflect on whether we did what we should have done to prepare our farm for the storm, hence the title, "Are You A Prepper?"

Below are some items or practices that you may or may not have considered in the past when it comes to prepping your farm for winter. As you will find, most of these are directly related to us producers providing the essentials for our livestock, feed and water.

**Adequate Feed Inventory:** Acquiring and maintaining adequate feed inventory may

seem elementary and common sense but it's not always so simple.

Many of us stockpile significant amounts of fescue for winter grazing with little intention of feeding much, if any, hay. Therefore, hay inventories may not always be where they should from a blizzard prepping standpoint.

Plan for the worst and ensure hay is secured long before any storms. It's also ideal to stage the hay within close proximity to fields in case the tractor won't start; it can then be rolled into the field.

Though significantly more expensive than round bales, having a few small squares stashed for emergency has also proven to be quite helpful.

On our operation, we also supplement stocker calves with pellets through the winter and we try to always re-order feed when we have half of our total bin capacity remaining.

This practice provides a buffer in case winter storms or feed mill breakdowns prevent a feed delivery from arriving when we would normally expect it. As we all know, things happen!

**Generator Ownership:** A generator is a WONDERFUL tool to have on your farm throughout the year, but especially when a

winter storm knocks out your power.

Our small generator has been critical over the past four days to maintain desired temperatures in our nine freezers that hold all of our beef, pork, and chicken which we direct market to consumers.

Needless to say, we could purchase A LOT of generators if we lost the value of all that meat due to thawing from a lack of power.

Generators can also be useful if your operation stores supplemental feed in grain bins. Because we decided to not hard wire our grain bin auger motors into the panel box, we have been able to plug those motors into the generator to load feed into our UTV pellet feeder.

All things considered, generators can be purchased at a reasonable price and can save your farm a lot of money and headache. However, without adequate gas to power them, generators aren't much help, so be sure to always maintain half of your total gas storage capacity.

**Adequate Fuel Inventory:** Whether you feed your livestock with an ATV, 150 HP tractor, or pickup truck, your operation likely uses some type of fuel.

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Depending on the size of operation, this fuel may be stored in several five-gallon jugs or within a 500-gallon tank like the one on our farm.

However you store your farm's fuel, re-ordering when total capacity is at 50 percent is highly recommended.

Also, for those operations with a larger bulk fuel tank, you may want to consider having a hand crank or battery powered transfer pump available to transfer the fuel from the tank into your equipment in the absence of electricity.

Like feed deliveries, fuel trucks can't always deliver fuel the same day you order it and with inclement weather, they can be even less predictable.

**Water Access Points:** We have worked closely with our local Natural Resources Conservation Service (NRCS) staff over the past several years to exclude livestock from streams on our farm and we have enjoyed all the benefits to water quality, wildlife habitat, and livestock management resulting from this practice.

As part of our efforts with NRCS, we have installed many pressurized watering troughs to provide our livestock with an abundance of fresh, cool water.

However, without electricity to run the well pump and the pressure tank, these troughs aren't much good.

Fortunately, NRCS also worked with us to install hardened stream crossings which have a stone base, are fenced, and serve as lanes between pastures.

Our livestock rarely have access to these stream crossings but when the power goes out, they sure provide a convenient controlled access point to keep cattle alive!

**Dry Wood:** Many homes on farms certainly have the ability to burn wood as a supplemental or primary heat source. Maintaining an adequate supply of dry firewood can be critical in times of no electricity.

Not only has our woodstove been keeping the house warm, it has also provided heat to cook steak and eggs for breakfast the past two mornings along with heating water to make coffee in our French press.

By the way, the bottle calf in the barn is also thankful for the warmed water to mix with his milk replacer.



**Patience:** This list could certainly go on and on and I'm sure others could provide some really great ideas to help us all improve our prepper skills.

That being said, the last item I will mention is PATIENCE.

Several days without power, three kids under the age of seven in the house who are "bored," the inability to take a shower, and farm chores taking 2-3 times longer than normal can really reduce our aggravation threshold.

Let us all take a deep breath and count our blessings during these types of challenging times and work to have more patience with one another as preparation for the next storm!

## Regenerative Agriculture Needs Grazing Animals

by Nicolette Hahn Niman

Farming is a livelihood and economic sector uniquely tied to weather, water, seasons, and soils.

Philosopher and physicist Fritjof Capra has said, "In nature everything is connected; nothing is linear. Only human-created machines are linear."

This understanding, I believe, is the chief cornerstone of regenerative agriculture.

Viewed holistically from a systems point of view, the indispensability of animals to good farming becomes apparent.

Industrial agriculture thinks linearly: focusing on input costs and production of individual commodities as outputs.

The mindset is extractive, treating the earth as something to be mined. It simultaneously ignores collateral damage and potential symbioses.

Regenerative agriculture, on the other hand, is grounded on modeling the interconnected functioning of nature, which is in a constant state of adapting, recycling, and cooperating.

There's give and take. And animals are a crucial piece of the earth's systems for using and restoring resources.

Sir Albert Howard said, "Never does Nature separate the animal and vegetable worlds. This is a mistake she cannot endure, and of all the errors which modern agriculture has committed this abandonment of mixed

husbandry has been the most fatal."

Recent soil science has revealed fungi as another vital thread in nature's tapestry.

Suzanne Simard, professor of forest ecology at the University of British Columbia notes, "What goes on beneath a forest floor is just as interesting—and important—as what goes on above it."

She then explains, "A vibrant network of nearly microscopic threads is recycling air, soil, and water in a continuous cycle of balance and replenishment. Survival depends not on the fittest, but on the collective."

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By mediating interactions between plant roots and the surrounding soils, fungi play a key role in soil health and plant growth.

“Recent research by Dr. David Johnson of New Mexico State University indicates that the ratio between fungi and bacteria in the soil is critical to a plant’s productivity in healthy agricultural systems and thus to a plant’s efficiency in nutrient uptake,” farmer Gabe Brown notes in *Dirt to Soil*, his captivating manifesto for regenerative farming. “Dr. Johnson’s research shows that the fungal component of the soil is the most important factor to most plants early in life. It is much, much more significant than nitrogen, phosphorous, potassium, or even organic matter,” Brown writes.

When care of this living collective is at the forefront, the economic and ecological importance of animals is clear.

For farmers around the world, animals produce meat, milk, and eggs for direct sustenance and income.

Farm animals enhance biological cycling by consuming resources that would otherwise be wasted and returning nutrients to soils in biologically available forms.

Omnivorous chickens, turkeys, and pigs can eat kitchen scraps, farm by-products, and surplus crops.

Grazing cattle, sheep, and goats trigger plant growth by pruning and mowing naturally occurring rain-watered vegetation and can be moved around according to local conditions.

All of these creatures—through the aggregate impact of their mouths, feet, urine, and manure—catalyze biological activity in soils.

Ecologically vibrant soil fosters water-holding capacity, vegetative growth, and carbon sequestration, building the foundation for ecosystem biodiversity.

Animal manures also provide the less obvious benefit of creating habitat for useful bugs, says entomologist and farmer Jonathan Lundgren.

He cites research of cow pats in South Dakota that has found 172 insect species, while Canadian researchers have identified 450.

These insects are crucial for well-functioning ecosystems, including farms.

Dung beetles are particularly valuable. Lundgren calls them a keystone species. “They drive everything else that happens,” he urges. “Nature abhors monoculture. Biodiversity is life.”

The benefits of grazing to birds have also been well-documented.

“The cows themselves are one of the best tools for renewing grasslands. Rotating where they graze mimics the behavior of bygone bison herds: The movement helps ensure they don’t clear out patches, and their hooves and mouths stir up soil where native seeds can take root,” says an Audubon Society article from 2017.

Several bird researchers in our region of Northern California have told me they once considered cattle a threat but became “pro-cow” through their own fieldwork.

They witnessed first-hand how grazing, by maintaining healthy grasslands and keeping open spaces open, helps a variety of bird species.

Many avian experts and rangeland scientists now believe, “What’s good for the herd is good for the bird.”

Grazing also helps sustain wild pollinators.

The rangelands that exist because they are used by domesticated grazing animals provide essential habitat for these animals and insects, which perform as much as 39 percent of crop pollination.

“Preserving rangelands has significant economic value, not only to the ranchers who graze their cattle there, but also to farmers who need the pollinators,” says UC Berkeley biology professor Dr. Claire Kremen.

Her research has unveiled some of the hidden connections grazing animals have to important plant food crops like tomatoes, almonds, and oranges. Humans need wild pollinators and wild pollinators need cattle.

In *Call of the Reed Warbler*, Australian farmer and human ecologist, Charles Massy, urges that to restore planetary health humans must first understand how landscapes were meant to function.



As we work the land we have to listen and observe things like how water is meant to flow and what services are provided by native plants and animals.

Rather than fighting them, human-created systems should follow these natural patterns.

When we do so, we can restore the original functioning of our landscapes, bringing back vitality, life, and healthfulness, Massy argues.

Massy considers animals integral to re-establishing landscape function and invaluable for providing human nutrition.

“Having animals genetically adapted to healthy landscapes and natural, human management regimes has huge implications for human health,” Massy writes. “This is because such animals on healthy landscapes provide vital nutrients that a plant only-based diet cannot.”

At the core of our modern dysfunction is our collective failure to see and understand connections.

The barrage of recent negative attention paid to meat is a prime example.

I know the criticisms intimately.

More often than not, they are actually arguments against industrial animal production.

Some critics offer processed food substitutes for real, whole animal-based foods. And their criticisms do nothing to build a better agriculture.

We need farms that look more like nature—diverse, complex, and interconnected. We need a food system where animals, plants, and fungi work together to restore soils and create nutrient rich foods.

# Beef is Good Food

by Nicolette Hahn Niman

In his seminal work, *Nourishment*, retired animal nutrition professor Fred Provenza argues that each of us holds an innate knowledge about what foods our bodies need. Not just a general knowledge. A highly specific ability to recognize what we need to keep us in vibrant health, and even treat deficiencies and sickness.

This capacity begins in utero and is further developed through breast feeding and by eating foods provided by an infant's parents.

Why, he asks, have we collectively come to believe that “experts” must tell us what to eat when every wild animal in the world has such a nutritional wisdom?

Provenza's question is particularly timely at this moment. Mainstream dietary advice has been increasingly insistent that people reduce consumption of meat, especially red meat. Many suggest that it's healthier to eat meat replacements, including high-tech industrially produced faux meats.

But this advice is seriously flawed. For starters, there is no credible evidence that meat is bad for human health.

Earlier research that once seemed to show negative health effects from eating meat has collapsed under recent re-evaluation.

Dietary studies' methodologies fail to produce credible results. These studies have proven so unreliable that Stanford medical professor Dr. John Ioannidis, whom *The Atlantic* calls, “one of the world's foremost authorities on the credibility of medical research,” advises that we should, “Ignore them all.”

At the same time, newer, more carefully designed studies have found no significant links between red meat and heart disease and other health problems. A 2010 study by the Harvard School of public health, for instance, found no link between eating unprocessed red meats and either heart disease or diabetes.

Meanwhile, a growing number of studies have shown that the nutrients provided by meat are uniquely valuable to human health—especially for children and older adults.

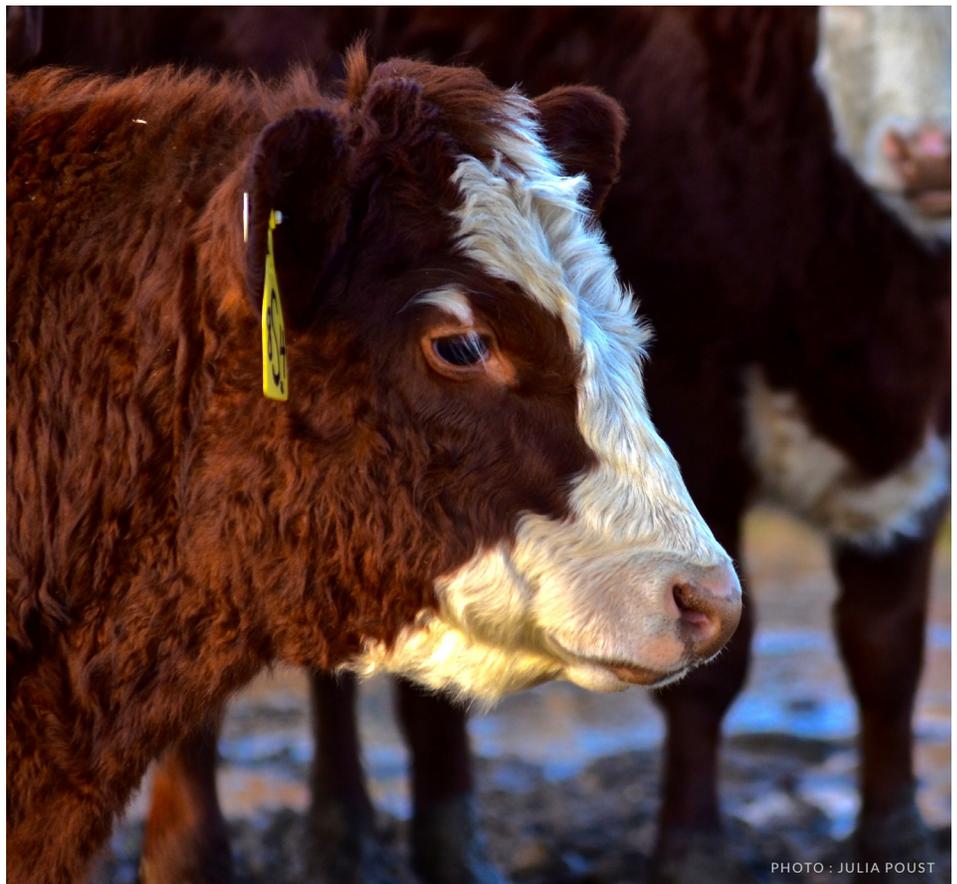


PHOTO : JULIA POUST

The type of protein found in meat is the most usable by the human body and it is not found in plants.

Likewise, the form of iron in meat is far more absorbable by the human body than that found in plants.

The same is true for numerous other essential elements and compounds that are important to our bodies' functioning. The macro and micro nutrients in meat help us grow and maintain muscle and bone, and keep our brains working, among many other important functions.

A 2014 study from Ohasama, Japan for example, found that men who ate more animal protein aged better than those who did not. The researcher concluded: “Higher quality protein, particularly animal protein, was associated with lower risk of decline in higher level functional capacity in older men.”

Additionally, a growing body of credible research is demonstrating that sugar and processed foods are actually to blame for modern diet-related diseases.

As people have been urged to reduce their

fat and meat consumption, they have replaced animal fats and foods with industrial vegetable oils and increased sugar and processed foods.

As I wrote in *Defending Beef*, “Ultra-processed foods, collectively, are coming to be regarded as the single biggest dietary problem in the developed world. *The New Republic* further points out that ‘earlier this year, ‘the National Institutes of Health released a landmark study showing that America's obesity epidemic is driven primarily by ultra-processed foods’—the same month that ‘two large European studies linked ultra-processed food consumption to cardiovascular disease and death.’”

Mainstream dietary advice has been focusing for several decades on the wrong villain.

Rather than discouraging meat eating, medical and nutrition advisors should focus like a laser beam on sugar and processed foods. The less we eat of it the better.

The key to healthy eating is real food. That means vegetables, fruits, nuts, eggs, fish, and many other foods. And it definitely includes beef and other red meats.

# Silvopasture Touted for Benefits to Climate, Livestock

by Steve Davies, Agri-Pulse Communications

Silvopasture, a historical practice that involves integrating trees into pasture-based systems for livestock, appears to be growing in popularity as farmers look for ways to help keep animals happy and healthy while maintaining or increasing revenue.

The practice involves either establishing new tree stands in pastures or thinning trees in already forested stands. The benefits include reducing heat stress for animals, reducing feed costs through the planting of edible trees, and increasingly, reducing the risks of wildfire.

“I think it’s going to be a really important part of both curbing effects of climate change and increasing carbon sequestration,” says Mary-Thomas Hart, environmental counsel at the National Cattlemen’s Beef Association. And when it comes to the impacts of climate change, “wildfire’s one of those things that comes to the top of everyone’s list.”

A growing body of research has shown the benefits of silvopasture, which is increasingly being looked at as a way to address climate change, or at least mitigate its effects. “Scientific evidence of the ecological and economic benefits of silvopasture has been accumulating rapidly over the last few years,” according to a 2019 article from Agroforestry Systems. “Most studies have shown an overall increase in system productivity, including greater productivity of animals.”

“Silvopasture, as an integrated land use practice, has been proven to be economically and environmentally sustainable both at small and large scales,” the paper, which examined 28 other papers on the subject, concluded.

“The production benefits to the farmer are significant enough to make this a valuable practice,” says Austin Unruh of Trees for Graziers, a Pennsylvania company working with “dozens of farmers” in Lancaster County to help them establish silvopasture systems. “It’s one of the top climate change solutions and we can get a lot more people on board with it, too.”

The federal government does not have solid data on whether the practice is increasing, although anecdotally it appears to be.



Researchers also say it can be used on farms of any size and with any type of animal.

“We’ve found that people are using silvopasture with goats, sheep, chicken, turkey, bison,” says Matt Smith, a research ecologist at the Forest Service’s National Agroforestry Center. “Any livestock that forages you can have in a silvopasture system,” he says. Smith says the Forest Service is teaming up with USDA’s National Agricultural Statistics Service on a survey to better estimate how many producers are using silvopasture.

But “it’s not going to be for everybody,” says John Fike, a professor at Virginia Tech who has studied silvopasture extensively. Advocates of the practice say they often run up against skepticism about planting trees when throughout history, farmers have removed trees to create arable land.

But trees help stabilize the soil and reduce runoff, as well as contributing to higher levels of organic matter in the soil and more fungal activity, says Unruh.

One of the farmers he’s working with is Tim Sauder, who operates a small dairy farm on about 55 acres of Pennsylvania land in southern Lancaster County. There, Sauder and his wife make Greek yogurt and other dairy products from their herd of about 16 cows.

He says he has gotten some questions from neighbors.

“We’re already weird in that we direct market,” Sauder says before playfully recounting a question he received.

“You’re planting mulberry trees?” a neighbor joked. “Never in my life have I planted a mulberry tree. They just come up anyway.”

But despite the friendly skepticism, Unruh says two of Sauder’s neighbors “are jumping on board” and adding trees to their dairy operations. “Lancaster County, Pennsylvania, right now is probably the hot spot of silvopasture,” Unruh says.

Sauder was able to get started with trees by partnering with Unruh to pursue, among other funding sources, a grant from the National Institute of Food and Agriculture’s Sustainable Agriculture Research and Education Program. The grant has paid for trees to be established at five farms in Lancaster County. The Chesapeake Bay Foundation (CBF) is recording and evaluating the results at the farms, including different methods of protection from the grazing cattle—plastic tubes versus metal cages, for example.

On a recent fall day, Sauder, Unruh, a CBF representative, and a reporter took a stroll through Sauder’s operation, filled with about 3,000 trees—including honey locust, persimmon, mulberry, black locust, willow, and hybrid poplar. Some had shot up to 14 feet tall since being planted in March 2020.

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Shade for the animals offers an obvious benefit, Unruh says. “Heat stress is a huge, huge profit loss because of lack of production,” he says. The trees also provide shade for forage, helping the grass avoid stress during what’s known as the “summer slump.”

“By this time next year, there’ll be some real shade,” Sauder says. For now, when the cows want to cool off, they go to the barn.

“It should definitely help the bottom line” by reducing hay costs during the winter, he says. “Or we’ll buy more cows because we’ll be able to feed more with the tree fodder.”

Sauder says he is “not doing a whole lot better than breaking even, but we’re getting there. That has as much to do with marketing as anything else.” He acknowledges that his system “takes a lot of hands-on attention to detail every day.”

He moves his cows one to five times a day from one to another of his roughly 60 paddocks to prevent any one patch of forage from being overgrazed. The paddocks are separated by lines of trees and electric fencing.

It’s difficult to know how much silvopasture can contribute to carbon sequestration because that calculation depends on so many factors—primarily the species of the tree and the soil it’s being grown in. So, participation in the growing carbon markets could be complicated.

“I think it has a lot of potential” for carbon sequestration, Fike says, but more data need to be gathered.

“The faster the tree grows, the faster it will sequester carbon,” Unruh says. “So, black locusts, hybrid willows, hybrid poplars, and the like will be the fastest-growing species. Others, like persimmon or honey locust, won’t grow as fast, but will live longer.”

Unruh said it cost \$60,000 to plant the 3,000 trees on Sauder’s farm—\$20 per tree. The funding was contingent on Sauder planting 1,555 stems per acre, but “for those farmers planting at a lower density, they’d be looking at more like \$10–\$25 a tree (depending on whether they did the planting themselves or had a contractor do it, and depending on the trees they used).”

“Willows and poplars are really easy to propagate, so they’re cheap,” Unruh says. “Seedling trees are also fairly cheap (say \$2–6, depending on quantity purchased). It’s when you get into grafted trees that you get up into the \$30 per tree realm.”

Fike said producers should look not just at the value of trees as lumber but as a food source for the animals and a possible revenue source for the grower. Sauder, for example, has planted pecans.

There have been studies done on the financial aspects of silvopasture, but Fike says most of them are site-specific.

“We can see a lot of benefits, but we don’t necessarily have them quantified in dollars and cents,” he says. There are numerous studies, he says, showing animals gain more weight when they have access to shade, but then the question becomes, how should the trees be spaced to provide that benefit?

“It’s really a challenge to put a fine point on what these systems are worth,” he says.

“We have often associated straight corn rows and uniform height and all that other kind of stuff as good agriculture, or manicured pasture. And I’m not sure that that’s necessarily the best relative to efficient resource use and managing for multiple outcomes” such as promotion of wildlife habitat, or the return of pollinators and birds.

“We could do a lot more with our agricultural lands to continue to make them productive for food, while also supporting these other functions,” Fike says. “And if that gives us better water infiltration, or holds the bank and the soil together better, that’s great. We should be looking for those outcomes and how do we increase the productivity of this land while lowering its negative environmental outcomes?”

Cost-share assistance is widely available for many silvopasture practices in most states, according to a look at payment rates in states under USDA programs such as the Environmental Quality Incentives Program, Conservation Stewardship Program, and Regional Conservation Partnership Program.

But not all—Idaho, for example, only offers support for silvopasture to support wildlife habitat, and Pennsylvania offers no financial help for either thinning trees or establishing them in the state, meaning proponents such as Unruh have to get creative with financing.

However, many states offer broad assistance. Nevada and Maryland, for example, cover 18 different silvopasture practices including tree establishment.

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## Future Harvest CASA Seeks New Executive Director

Future Harvest CASA is now accepting applications for a new Executive Director! Future Harvest’s mission is to advance agriculture that sustains farmers, communities, and the environment. They provide education, networking, advocacy, and research to help build a sustainable Chesapeake foodshed, where food flows from farm and fishery to table in ways that strengthen farming and the regional food economy; protect our land, water, and air; and provide healthy, nutritious food that sustains the region’s communities. A voice in the Mid-Atlantic agricultural setting for more than twenty years, Future Harvest has deep roots in the work of advancing agriculture that sustains farmers, serves communities, and protects the environment. Future Harvest seeks an experienced, accomplished director to lead in effecting their current strategic plan and in visioning its next iteration. This dynamic and humble leader will be a community builder—both within the organization and in the region—diversifying Future Harvest’s funding streams, reimagining organizational and board workflow, and centering economic and racial justice in their work and practices, while cultivating and maintaining Future Harvest’s role as allies of sustainable farmers in the Chesapeake region.

Specific job duties, responsibilities, qualifications, and application instructions can be found at [futureharvest.org](http://futureharvest.org).

# It's Not Weird, It's Nuts: Farmers Graze Cows in Groves of Trees

by Mark Heller, E&E News Reporter

October wound down on Nelson Martin's dairy farm in true autumn fashion, with windswept rain and the thermostat stuck in the 40s as the season's first nor'easter churned.

But a prettier picture awaits next spring: cows chomping the grass under rows of blooming apple trees.

Farmers like Martin are turning away from the idea that cows must graze in open fields. He's embracing an old practice that puts livestock and trees in the same space—and he may help reduce pollution in the Chesapeake Bay and sequester carbon while he's at it. With the help of the Chesapeake Bay Foundation and an Agriculture Department research grant, Martin's planted dozens of apple trees and plans to venture into Chinese chestnut trees, too, transforming 20 or more acres into dual-purpose groves.

Using grant money from USDA's National Institute of Food and Agriculture, the foundation is working with five farms in south-central Pennsylvania to put trees on pastures, a practice called silvopasture. With about \$80,000 in grant money, the nonprofit organization is taking three years to put in trees and begin to measure results—although the benefits would increase in later years, organizers said.

Martin, 44, admitted he's having a hard time convincing his neighbors or his father, from whom he's buying the family farm, to sign onto the concept. Down the road, a neighbor is expanding to 300 cows in the conventional way, by bringing them indoors to eat formulated grain rations, he said.

"This looks pretty weird," said Martin, who keeps just 30 milking cows at a time and has a license to produce, bottle, and sell unpasteurized milk. But he's sticking to the plan. "As we talk about this farm, we always seem to come back to more trees."

## 'Ancient practice'

The Chesapeake Bay Foundation has overseen the planting of 1,500 trees at the five farms, in plots of 120 each. Organizers figure fields with a mix of grass and trees will send less runoff into the Chesapeake watershed and boast



Martin tends to an apple tree on his dairy farm. He is gradually planting fruit trees on his pastures, which will give cows a shady place to graze one day and helps reduce runoff into the Chesapeake Bay.

healthier grass and trees fed by the manure the cows drop.

"It's considered an ancient practice," said the project leader, Molly Cheatum, citing a long history in other countries. But with the advent of industrialized agriculture came monocropping—putting the same crops on the same fields year after year.

"Now we're realizing maybe that wasn't the best thing because nature thrives on diversity," Cheatum said.

Despite its tradition—farmers in Spain have long let hogs eat acorns under oak trees, for instance—silvopasture hasn't caught on in the U.S. or been widely studied here. Federal agriculture officials in Pennsylvania were skeptical, Cheatum said, when she and Austin Unruh, a conservation consultant, first raised the idea and looked for funding.

It's part of a broader set of practices called agroforestry that combine food production with trees. Advocates say it could help in the fight against climate change by encouraging both the planting of trees and less-intensive livestock farming.

"Research suggests silvopasture far outpaces any grassland technique for counteracting the methane emissions of livestock and sequestering carbon under-hoof," said Project Drawdown, a San Francisco group inspired

by the 2017 best-selling book *Drawdown* by Paul Hawken, on its website. "Pastures strewn or crisscrossed with trees sequester five to ten times as much carbon as those of the same size that are treeless, storing it in both biomass and soil."

## From raw milk to fruit trees

Martin was already something of an agricultural pioneer by the time he started putting apple trees in his pastures in 2018. Several years earlier, he joined the movement to produce raw, unpasteurized milk, a trend slow to catch on but which the Pennsylvania Department of Agriculture has approved for about 200 farms. He also leaves his cows' horns on—a rarity among dairy farmers who worry they'll gore each other or a person.

The apple trees are well over his head now, protected by white plastic tubes and barbed wire around the trunks that keep cows from chewing. The grass, a variety of fescue, grows in 8- or 10-inch clumps with the occasional squash plant interspersed; the cows eat squash readily, he said, proving the point by sticking a small pumpkin in front of a Holstein that quickly took the bait.

Martin admitted he's not like most dairy farmers. He doesn't sell his milk to a dairy company like Nestlé SA or Kraft Foods Group.

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He doesn't use much in the way of farm chemicals, and he doesn't confine his cows to a barn the way most farmers do. "The cows need to be out grazing," he said.

He also has far fewer cattle than the average dairy farm, which in Pennsylvania numbers about 89 cows, according to the Pennsylvania Center for Dairy Excellence, based in Harrisburg. He can't make a living on milk alone, Martin said, which explains the appeal of also growing apples and nuts. Martin has even planted dogwoods near the stream—the red twigs make nice home decorations.

"They go well with pumpkins," said Unruh, whose consulting business, Crow and Berry Land Management, selects the trees as part of the project.

Forest Service researchers are studying silvopasturing, too. The agency has a national agroforestry center, created after the 1990 farm bill, devoted to researching and

promoting combinations of forestry and food production. They're focused mainly on private lands, although some national forests have considered the idea, researchers told E&E News, and there's interest in expanding the concept to the evergreen forests of the West and Southeast.

The Agriculture Department has encouraged agroforestry in the past. During his first stint as Agriculture secretary, Tom Vilsack in 2013 approved a department regulation related to the practice.

Researchers at the Forest Service just finished an analysis of silvopasture practices, said Matt Smith, the center's research program leader. Most producers graze cattle, the analysis showed, although some have ventured into goats or ducks. Pigs are risky because of the damage they can inflict on trees, Smith said. "You just have to keep an eye on them."

The vast majority of producers also use rotational grazing, a favorite practice for sustainable agriculture groups since it takes

better care of soil and allows grass to grow back.

Researchers will soon have a new trove of helpful information, Smith said. The center is working with the National Agricultural Statistics Service on survey of producers. To be completed in January, it will shed light on who's using agroforestry, how and where, broken down by state.

Back on his Pennsylvania farm, Martin stood against the wind and the drizzle and contemplated his novel approach to the dairy business, compared to his friend, who's about to make the jump from 80 milkers to 300.

"He's a good farmer. Best wishes to him," Martin said. "It's not me."

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## Virginia Tech Seeks Landowners to Participate in Agroforestry Implementation Program

by John Fike and John Munsell, Virginia Tech

Scientists at Virginia Tech have been awarded a \$607,000 grant from the Edwards Mother Earth Foundation (EMEF; [edwardsmotherearth.org](http://edwardsmotherearth.org)) to support producer adoption of agroforestry practices. EMEF is a private family philanthropic foundation with a mission to enhance the sustainable and diverse quality of life by addressing global climate disruption.

The grant, titled "Catalyzing Agroforestry," was awarded by EMEF to provide both cost-share and technical support to landowners looking to adopt agroforestry practices on their properties. Virginia Tech was one of four award recipients.

The university's submission was selected based in part on the strengths of its longstanding efforts with silvopasture research, its organization and management of the Appalachian Beginning Forest Farmers Coalition, and its strong links to institutional partners Appalachian Sustainable Development and Rural Action.

The Catalyzing Agroforestry program is focused on implementing silvopastures and

forest farming practices through support payments and will assist producers in designing appropriate projects using technical assistance technologies and science-based planning strategies.

The ultimate goal of the effort is to increase ecosystem sustainability and diversity through the implementation of agroforestry practices.

To support this goal, the program will develop an Agroforestry Regional Knowledge (ARK) Exchange that will serve as a framework for future growth of agroforestry adoption.

The ARK Exchange will support ecocultural learning, workforce development, and networking of producer peers, nonprofit organizations, academic institutions, and governmental partners.

Virginia Tech, Appalachian Sustainable Development, and Rural Action have a well-documented history of supporting peer learning through mentorship programs, as well as long-standing agroforestry education in the classroom and at workshops and

technical training at demonstration sites both university-based and on private farms.

The project will provide up to \$1,500 per acre for silvopasture implementation and up to \$1,000 per quarter-acre for forest farming implementation, depending on project scale.

To enhance shared learning and build a base of distributed ARK Exchange demonstration sites, producers who receive support in years one and two will share successes and lessons-learned onsite with their peers and other interested stakeholders as scaling unfolds in subsequent years.

Those interested in learning more about the project and opportunities to participate should visit <https://www.appalachianforestfarmers.org/emef>.

Virginia Tech does not discriminate against applicants on the basis of age, color, disability, sex, gender, gender identity, gender expression, genetic information, national origin, political affiliation, race, religion, sexual orientation, or military status.

# Upcoming Hands-on Workshop: Solar-Powered Water Pumping Systems for Livestock

Please join Virginia Cooperative Extension and partners for an in-person and hands-on workshop focused on water pumping systems for livestock.

Participants will learn the principles and applications of solar-electric water pumping.

The primary focus will be on solar-powered water pumping systems; however, some other alternatives will be discussed too.

Please join us to learn more about these systems, some considerations for their use, and hear farmer experiences.

The session will focus on Management Considerations, Basics of Photovoltaics (PV), Siting Considerations, System Components, Design & Equipment Specifications, Farmer Experiences, and more!

The event will be held at the Shenandoah Valley AREC in Raphine, Virginia during April 7-8, 2022 and include a mix of classroom and in-field hands-on activities during the workshop.

The workshop registration fee is \$40 and includes lunch both days.

If you complete [this brief survey](#), you receive a discount code to apply for a 25% discount off your registration fee.

Space is very limited. More details are available at the registration page, [tinyurl.com/VCEsolarpump](https://tinyurl.com/VCEsolarpump).

## UPCOMING EVENTS

### Southern Maryland Hay & Pasture Conference

January 18, 8:30 a.m.–3:30 p.m.

Calvert County Fair  
140 Calvert Fair Drive  
Prince Frederick, MD

A great line up of speakers will tackle the latest challenges in forage production. Registration fee is \$20. Checks should be made payable to University of Maryland and sent to Hay & Pasture Conference, University of Maryland Extension, P.O. Box 663, Leonardtown, MD 20650. Call 301-475-4484 for more information.

### Central Maryland Forage Conference

January 19, 9:00 a.m.–3:00 p.m.

Middletown Volunteer Fire Company  
1 Fireman's Lane  
Middletown, MD

The Maryland-Delaware Forage Council's conference will cover topics like secondary and micronutrients for forage crops and building soil organic matter in grazing systems, among others. Tickets are \$15-\$20. Visit <https://www.eventbrite.com/e/central-maryland-forage-conference-tickets-222331408227> to register.

### Virginia Forage and Grassland Council 2022 Forage Conference

January 18: Wytheville, VA

January 19: Chatham, VA

January 20: Culpeper, VA

January 21: Weyers Cave, VA

This year's winter forage conference series will explore and challenge the common claim

that beef is bad for the planet. From issues like water quality to climate change, our speakers will show how well-managed grasslands can produce healthy meat and be part of the solution to the environmental issues we face. To register, visit [vaforages.org/event](https://vaforages.org/event).

### Maryland-Delaware Virtual Forage Virtual Conference

January 25, 9:00 a.m.–12:15 p.m.

January 27, 9:00 a.m.–12:15 p.m.

This virtual conference covers topics such as livestock selection for grazing systems and round bale silage management for optimizing yield, among others. Please visit [https://umd.zoom.us/meeting/register/tJEudQCqj4oHNfndP9ml1oh\\_c5Z3AKxjx\\_](https://umd.zoom.us/meeting/register/tJEudQCqj4oHNfndP9ml1oh_c5Z3AKxjx_) to see the full agenda or to register.

### Pasa 2022 Virtual Annual Meeting

February 5, 3:00–4:30 p.m.

Whether you're a Pasa member or simply interested in learning more about Pasa's work, join their staff and board members for their 2022 Virtual Annual Meeting. Visit <https://pasafarming.org/event/pasa-2022-virtual-annual-meeting/> to register.

### Delmarva Soil Summit

February 7, 8:00 a.m.–5:00 p.m.

February 8, 8:00 a.m.–5:00 p.m.

Wicomico Civic Center  
Salisbury, MD

Whether you farm 2 or 2,000 acres, this conference will deliver information for all production systems and scales. Learning tracks and farmer panels for both large-scale commodity farmers and small-scale diversified growers, there's something here for you! Visit <http://delmarvasoilsummit.com/index.php/agenda/> for more information and to register.



PHOTO: JARED PLANZ

# Mountains-to-Bay Grazing Alliance



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