



MOUNTAINS-TO-BAY GRAZING ALLIANCE

Working with farmers to implement and improve grazing management and reduce feed costs

July 2020

Mitigating Heat Stress for Livestock

by Jeff Semler, University of Maryland Extension

Many graziers are meticulous planners but often overlook heat stress for grazing livestock. Too often shade is a four-letter word mainly because it conjures up a mud hole under a large tree that is actually a cesspool of urine and manure where millions of flies are born.

We need to remember when we are developing our pasture rotation schemes that we move the animals into paddocks that provide either natural or artificial shade during hottest days. If you move your animals often you can put them in the unshaded paddocks during overnight hours and move them to shaded paddocks during the day.

By rotating animals, we can reduce the mud holes under trees. The areas can dry out while the pasture is regrowing, thus killing two birds with one stone.

Many livestock producers do not have the luxury of grazing savannas so man-made shade may be an option to consider. Beth Doran, Extension beef specialist at Iowa State University suggests there are a number of shades currently on the market, varying in design, material, and portability. But important design considerations pertain to each. East-west orientations provide greater ground shadow whereas north-south orientations minimize mud build-up. Provide approximately 20 to 40 square feet of floor space per animal (depending on the size of the animal) and avoid overcrowding. Optimal

shade height ranges from 7 to 14 feet, with higher shade heights increasing air movement under the shade and providing for easier manure removal.

Various types of materials have been used for roofing. Solid, reflective roof materials (white-painted galvanized or aluminum) are most effective in reducing heat load. Slats, plastic, and other shade materials with less than total shading capability can be effective if they provide 60% shading, and they handle wind better than solid cover shades.

Some designs for shades are really creative, with a dual purpose. In the summer, they provide shade from solar radiation. When they are folded down in the winter, they serve as windbreaks.

During extreme heat events, livestock can nearly double their water intake need than what they would typically consume. Ensuring abundant access to cool, fresh water is the most important step producers can take.

Because heat events can tax automatic water capacity, it is suggested putting out extra free-standing tanks prior to a heat event. Not only does this ensure all have access to water, but it reduces bunching around water tanks—exaggerating the heat issue.

Additionally, people think of paddocks as flat symmetrical squares. Unfortunately, most farms are not flat. They have hills, streams,

and often trees. Animals also tend to travel to water in groups when a lane is used or when they are far away from the water.

This can be important in determining the type of water system to use. The appropriate distance to water, however, can vary depending on terrain, forage availability, and grazing goals of the producer. A general recommendation in system design is to allow stock access to water within 800 feet of any point on the pasture where possible. So as the temperature rises remember livestock are just like you, they prefer shade and cool, clear water.

Top Water Management Considerations for Summer

- Plan the water system carefully
- Monitor water quality
- Maintain access to water, making sure there are no impediments
- Ensure the cattle have water availability all summer long

Cool refreshing water in summer is not only good for humans, but is critical to cattle health. Depending on humidity, temperature, and lactation status, cows require between 6 and 18 gallons of water per day.

Cleaning and Disinfecting Troughs

by Jeff Semler, University of Maryland Extension

Water is the most important nutrient we can give our livestock, yet it is often overlooked or taken for granted. Cows drink on average four pounds of water to produce one pound of milk. So a brood cow producing 20 pounds of milk requires 80 gallons of water. That figure may seem high but remember, in addition to producing milk, the water also aids in cooling during the heat of summer.

Low-quality water means less water consumed translating to lower feed intake. Cleaning and testing your water are essential preventative measures.

Cleaning

Blue-green algae can easily build up in waterers and release toxins that cattle can ingest. In order to keep this to a minimum, clean your waterers frequently.

- Empty water from trough.
- Scrub with stiff-bristled brush and detergent.
- Rinse with water.
- To prevent further growth, add diluted, unscented chlorine bleach or copper sulfate crystals.

Disinfection dilution rates

(Note: Rates vary based on the product you use, consult your veterinarian.)

- Bleach: Add 2-3 ounces of bleach per 150 gallons of water (conduct as often as every week).
- Copper sulfate crystals: Dilute 1.5 teaspoons into 4.5 ounces of warm water first, then add to 1,000 gallons of water (or equivalent dose to one part per million) every four to five weeks.

Ideally, let the bleach or copper sit one hour before allowing livestock to drink.

Adding bleach or copper sulfate or other products to dirty waterers is not effective. You first need to clean away organic debris and any buildup of materials.

Testing

Now that you have made sure the way the water is getting to the animals is clean, ensure the water itself is of high quality. Regular annual testing of your water is recommended.

How to sample: Use clean containers and



collect one-pint samples at random intervals. Pour all samples into a one-gallon container and mix to take your final sample. Follow specific lab guidelines.

Water tests will show levels of the following present in the water:

- pH
- Total dissolved solids
- Nitrates
- Sulfates
- Additional factors

Any of these factors can cause livestock health issues. If you experience water problems, work with your veterinarian to come up with a solution. These solutions may not be quick and easy fixes, but they are well worth the healthy and productive animals you will get in return.

Recipe for Growing One Ton of Grass

by Matt Booher, Virginia Cooperative Extension

Ingredients for growing one ton of cool-season grass (on a dry-matter basis):

- An average of 4.5" of water per acre (ranges from 2.5" in spring to 7.5" in summer)
- 45 pounds of nitrogen per acre
- 12 pounds of phosphorus per acre
- 50 pounds of potassium per acre

Other than some common micronutrients, and a little free sun and carbon dioxide, these inputs are all that are necessary to grow grass. We have little control over the rain we get, but we do have control over how much of the rain we keep.

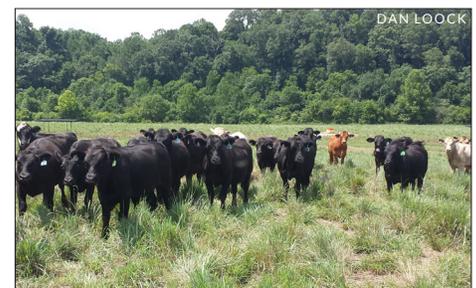
Maintaining a four-inch residual when grazing or mowing hay ensures ground cover to prevent erosion and ensures that plants' root systems take hold and take up moisture.

The main point of this article, however, is to look at the value of adding fertility when

it's needed. The difference in productivity between a field that is deficient in some nutrient and one that is not can easily be one ton per acre—especially in a first cutting hay situation. But the same holds true for spring pasture, and to a lesser degree, fall pasture.

Although not always the case, let's assume that the nutrients required to grow an extra ton of grass match what is removed by that ton.

The cost of these nutrient additions would be roughly \$54 per acre in commercial fertilizer (figuring \$0.50 per pound for nitrogen, phosphorus, and potassium). Those same nutrients purchased as poultry litter may be \$15-\$30. In a hay setting, a ton of hay would be about two-and-a-half 4'x5' round bales. What does a 4'x5' round bale cost you? In a pasture setting (assuming your management is set up to capture the extra tonnage through stockpiling) a ton of grass represents about two months of grazing for one cow, and we



typically calculate the value of a day's grazing to be about \$1 per day. An additional benefit in a grazing scenario is that 85% of the nutrients are returned to the soil, so your fertility bill is reduced or eliminated the next time around.

Also consider that grass grown in nutrient deficient soils will be deficient in quality for animals' diets as well. These dietary deficiencies will eventually end up being addressed by you through the purchase of supplemental grain or protein. Or, if not addressed, you'll sacrifice pounds of gain, body condition, or conception rates.

You tell me, are you better off taking whatever Mother Nature will provide, or is it worth it to soil test and import nutrients if needed?

What Can Trees Do For Me?

by Austin Unruh, Crow and Berry Land Management

As someone who spends a lot of time talking with farmers about planting trees, there's a certain phrase I've heard more than I can count: "Why in the world would someone do that? My granddad spent years clearing the woods so we can farm."

If you're reading a grazing publication, I'll assume you're a bit more open to new ideas than the typical corn-and-bean farmer. If you've converted to grass-fed livestock, chances are your neighbors already think you're a bit loony. But to plant trees in that pasture? You'd be nuts!

If you have some hesitations about planting trees (not least because several ancestors would roll over in their graves), that's normal. But here's the deal: These ain't your grandpa's trees. If the trees your grandpa cleared were a rusty jalopy sitting out back with a broken axle, what you can now plant is more akin to a shiny F150. We're not talking planting random trees at random places and crossing our fingers that they'll survive. We're talking planting the right species with the right genetics in the right places in a way that will complement your farm.

When thinking about what trees can do for a farm, I like to think about two paths that people can go down. On one path, we can plant trees that will add new enterprises to the farm. Here we're talking about growing timber, fruits, or nuts. Planting pecans or English walnuts for their nuts, apples for

cider, or black walnuts and black locust for timber. Each one will allow you to diversify the farm operation and develop new income streams.

The other path is to choose trees that will strengthen your current livestock operation. Whether you raise dairy or beef or sheep or hog or poultry or alpacas, you can plant trees that will make what you already do more profitable and resilient. We do this by planting trees that will provide the shade, fodder, windbreak, and nitrogen that will keep your livestock healthier, more comfortable, and better fed than could be done with pasture alone.

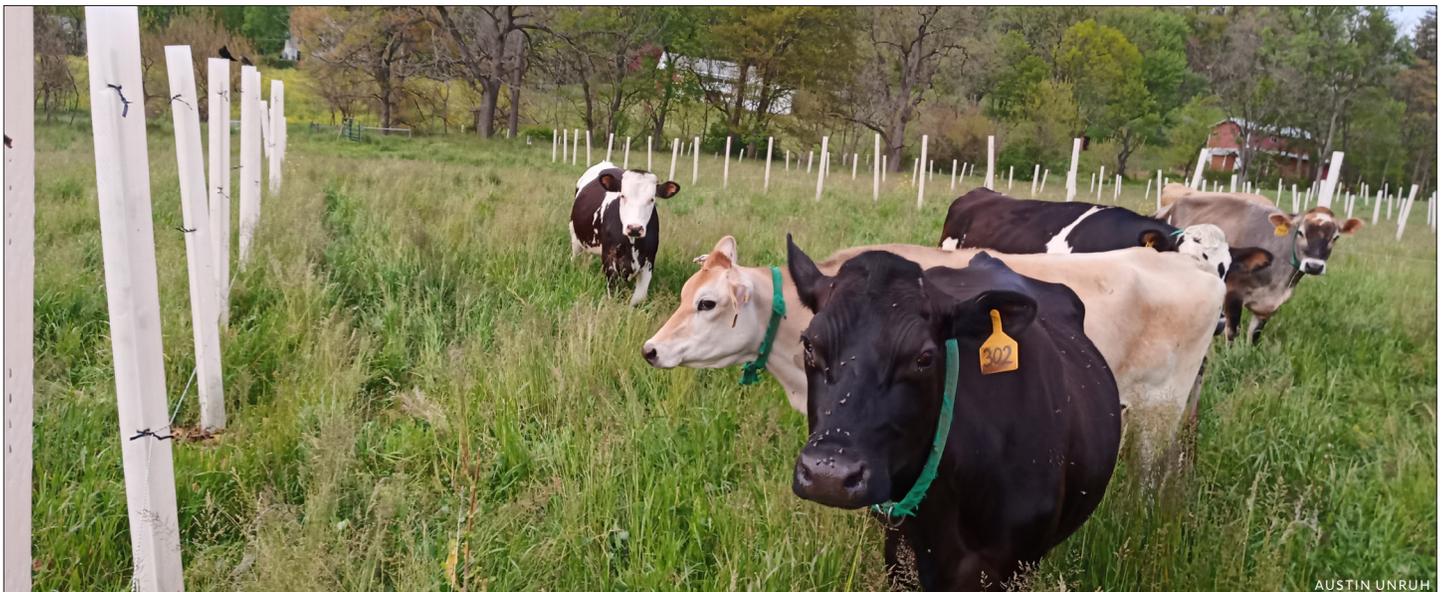
Of course, these two paths don't have to be mutually exclusive. You can focus on adding trees to serve your livestock while also planting a patch of persimmons or chestnuts. Just keep in mind that planting fruit and nut trees across the whole farm for commercial yield is a whole other game than planting for home use alone.

What is certain is this: When adding trees to pasture, the low-hanging fruit is not fruit (or nuts). The easiest approach is to hone in on those trees that will take your grazing management up a level. Plant persimmons to drop high-energy fruits packed with vitamins in the fall. Plant black locust to fix nitrogen while letting nice dappled shade cool your livestock and forages. Best yet, plant honey locust for a complete package

of nitrogen fixation, light canopy, and calorie-packed pods dropped from October through December.

If you already have your hands full and don't foresee more folks joining the farm business, this is a great place to stop. However, if Junior is coming up and wants a place on the farm, or you want the farm to support multiple families, adding trees for saleable crops is vertical integration of a business in the most literal sense. Joel Salatin would call it stacking fiefdoms, and in this case, we're actually stacking one farm enterprise above the existing one. You'll need to go into it wide-eyed about the investments you'll need to make in order to harvest, process, and market your wares, as well as being conscious about food-safety regulations, but thankfully there's a growing body of information to help you make those decisions. If you're interested, I would suggest getting the [Perennial Pathways guide](#) from the Savanna Institute.

Your grandpa never really had the opportunity to plant trees this way. The information and support and genetics and resources were just so much tougher to come by. Yet if he had pulled it off somehow, you might now have a farm with towering honey locusts feeding the herd through the winter, hybrid oaks for fattening hogs, and apples for pressing into cider. Today, the resources and support and information are all available, ready for you to take grazing up a level.



Fiddle Creek Dairy, where 1,500 trees were planted this spring.

Soil Health Practices Increasingly Helping Farmers Hit Pay Dirt

by Ad Crable, reprinted courtesy of the Bay Journal

As he has dozens of times since stumbling into the benefits of cover cropping and no-till farming nearly 50 years ago, Pennsylvania farmer Leroy Bupp set up his props for a talk on soil health at a large Chesapeake Bay conference.

There were goofy moments, like calling out volunteers from the audience to replicate how worms breed. But the real wow moment came when he dropped two clods of soil—one from his no-tilled, cover-cropped farm and one from a neighbor's conventionally tilled field—into beakers of water.

The neighbor's dirt quickly dissolved and fell to the bottom, showing how easily it would be whisked away in a rainstorm. But Bupp's handful of dirt stayed clumped together even as holes from worms, bugs, and air passages soaked up some of the water.

"Mother Nature made soil work, then with tillage we destroyed this," he told the audience, now riveted. "In tilled soil, without air spaces, the water is running off into the Bay. Leave the soil alone!" said the 75-year-old Bupp.

Relatively quiet and driven by farmers themselves, a revolution of sorts is happening in agriculture in the Chesapeake Bay region: soil health. It's a way of improving the soil that reduces runoff pollution in the Bay region while helping farmers turn a profit.

Farmers have tilled the earth into submission for thousands of years. But now, growing numbers are spreading the gospel about a fundamental shift in which soil is left unplowed and covered with a diverse mix of plants in all seasons.

"This soil health movement is big, growing, and critical," said Lamonte Garber of the Stroud Water Research Center, a world-renowned freshwater research facility in Pennsylvania.

Instead of constantly pumping fertilizers and pesticides into worn-out soil, a more hands-off approach encourages an underground living ecosystem of bugs, worms, fungi, microbes, and bacteria to make the soil healthier and less threatening to the environment.



No-till and cover crop consultant Steve Groff of Lancaster County, PA, takes a deep whiff of soil to check its bouquet, the sweet smell of fertility, the result of managing his farm fields with soil health practices.

The result, over time, is a soil with a rich, intertwined web of living matter. You may have heard it called soil health, regenerative agriculture, or carbon farming.

While no-till and cover crops are key ingredients, soil health is broader than those two environmentally-friendly farming methods and can also incorporate changes to crop rotation, livestock grazing, and other actions.

"It's using the soil not simply as a medium. It's a win-win. Farmers can cut costs, and we can clean up the water," said Franklin Egan, of the Pennsylvania Association for Sustainable Agriculture. Though each farm is different, farmers generally see benefits within a couple of years, and soil fertility increases each year for up to 20 years or so without drop-offs in crop yields from cutting back on commercial fertilizer.

Proven dividends of this laissez-faire approach include less soil runoff and more nutrients being manufactured by the plants themselves, reducing the need for other sources of fertilizer. The protective layer of plants hinders the growth of weeds, and organic matter in the soil discourages plant diseases. Beneficial insects attack crop pests. Herbicide and fertilizer costs are cut—though generally not eliminated—and farmers have more time for other farm chores because

they are not plowing fields. Cover crops can be used as feed for livestock or grazed, saving farmers more money.

Over time, as all of the underground elements team up, soil structure improves too—increasing its ability to act like a sponge to both hold more moisture during storms and release water during dry periods. Farmers call it weatherproofing their fields: A single acre can hold 25,000 gallons more water than one that is tilled.

While not tilling soil would seem to invite more weeds and insect pests, advocates of soil health say the use of pesticides and herbicides can be vastly reduced because crops grown in healthy soil resist pest pressure and allow natural enemies of pests to thrive. And, the use of cover crops suppresses the growth of weeds.

The constant layer of plants also sucks up earth-warming carbon. According to a 2018 study by government and university scientists, the use of cover crops on all of the nation's farmland could remove 103 million metric tons of carbon dioxide each year from the air. That's equivalent to eliminating harmful global warming emissions from 21 million vehicles.

That would help farming become part of the climate change solution rather than be part of the problem. Currently, agriculture accounts for 10% of all greenhouse gas emissions in the United States, according to the U.S. Environmental Protection Agency.

For the consumer, crops grown in fields with healthier soil have more nutrition and essential oils that aid immune systems and bodily functions.

"I just feel this is the future of agriculture and this is where we need to be at a national level," said Lisa Blazure, coordinator of a newly created soil health position at the Stroud Water Research Center in Pennsylvania.

The Natural Resources Conservation Service, the federal government's chief conservation agency for farmers, was formed after severe dust storms during the Depression ravaged

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U.S. prairies—a landmark example of the price to be paid for poor soil management. The agency was slow to embrace soil health but now is one of its main cheerleaders, calling it “the next frontier of conservation.” Tilling the soil, it says, “is like burning down the house” and destroying the microbiological community under the surface.

Agency handouts urge farmers not to “treat your soil like dirt.” One says, “We believe improving the health of our nation’s soil is one of the most important endeavors of our time.” Advocates say a soil health ethos also is badly needed to keep the nation’s soil from disappearing. In the last 40 years, it’s estimated that one-third of all the world’s food-production soil has been lost to erosion. Soil is vanishing 10–100 times faster than it is being formed.

“There’s soil and then there’s dirt. Farming is a degraded resource right now and we’ve kind of accepted that as normal,” Blazure said. “We used to have the viewpoint of what can the soil do for the plant. With soil health, we realize it’s not a one-way street. The plants and that crop are doing as much for the soil as the soil is doing for the plant.”

For the Chesapeake Bay, the movement could be fortuitous, over time reducing significant amounts of runoff sediment and nutrients flowing into the Bay, though it is unlikely to be adopted on a wide enough scale in time to help states such as Pennsylvania meet its reduction goals for sediment and nutrient by 2025.

“Our hope is it will help the Bay. We really want to try to help the scientific community understand what the impact of healthier soils is on delivery of pollutants to waterways,” said Garber of the Stroud Water Research Center.

PennFuture, a Pennsylvania environmental group, now considers soil health practices more important than planting streamside buffers for the state to attain its Bay cleanup commitments.

State and federal farm agencies are pushing to make soil health a standard land management practice in Bay states. And research institutions are rushing to complete studies to prove the benefits farmers have found on their own.



Cover crops planted in farm fields for the winter not only bind the soil, but help insect life and suck up carbon dioxide.

In 2019, Pennsylvania added soil health, for the first time, to the seven priority conservation practices for farmers listed in its most recent Bay cleanup plan.

And a state program that gives Pennsylvania farmers tax credits in exchange for using conservation practices now includes soil health best management practices.

Elements of the soil health movement are starting to take hold in the region. Pennsylvania farmers have led the way nationally in bringing no-till agriculture to the fore. In 2002, 20% of farmland in the state used no-till methods to grow crops. That figure has risen to 60%, according to the National Agricultural Statistics Service.

Maryland ranks first in the nation for the use of cover crops on farms. In 2017, the legislature created a Healthy Soils Program and instructed the Department of Agriculture to expand the adoption of soil health practices. Agency officials estimate that more than half of the state’s ag fields use cover crops and conservation tillage.

“My impression is soil health is pretty mainstream in Maryland. Our farmers are progressive thinkers,” said Alisha Mulkey, head of the Healthy Soils Program.

Virginia ranks third in the nation in the percentage of farm fields using cover crops.

New York has spent \$5 million since 2015 on climate resilient farming. Soil health practices are a linchpin. In 2018, legislation was passed to create a two-year soil health project.

The federal government is investing in Bay soil health, too. Last fall, Maryland got a grant from the National Fish and Wildlife Foundation to launch a \$2.3-million program to get 150 more farmers to adopt soil health practices.

Another grant and matching funds will support a \$2-million program at Virginia Tech to help the Virginia Soil Health Coalition expand soil health practices in the Shenandoah Valley and the lower Eastern Shore. The effort also will educate consumers and producers about the benefits of soil health.

The Stroud Water Research Center will spend \$2.9 million to get 4,500 farmers in Pennsylvania to turn to cover crops, no-till, and rotational grazing through farmer-to-farmer soil health “hubs.”

Big ag business is starting to jump on the bandwagon as well. General Mills, Tyson Foods, Pepsi, Walmart, Monsanto, and others are encouraging their supply-line farmers to use soil health practices to deliver better quality foods and satisfy consumer demands for healthy farming. Even Wrangler has rolled out a brand of high-end jeans, called its Rooted Collection, made of cotton grown using cover crops and no-till fields.

One of the remarkable things about the soil health movement is that it has been unearthed and championed by farmers themselves, with little initial support from government.

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“The farmers believe in it because they’ve come up with it,” Blazure said. “The Pennsylvania No-Till Alliance was tired of hearing my agency or Penn State Extension or conservation districts saying this won’t work around here when they were having success,” said Mark Goodson, state agronomist in the Pennsylvania office of the federal Natural Resources Conservation Service.

“When you hear from another farmer it’s a lot more believable than hearing it from a government person or an academic,” said Charles White, a Penn State assistant professor and Extension specialist in soil fertility and nutrient management. “The conversation has really changed. Credit pioneering farmers.”

Even today, the movement grows primarily through field demonstrations by farmers hoping to convert their neighbors. The Extension and NRCS are increasingly holding similar field days.

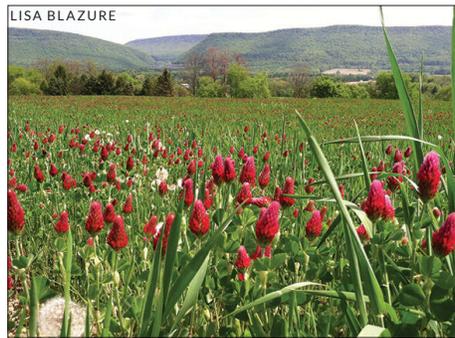
“That’s been the spark plug,” said Steve Groff of Lancaster County, a vegetable farmer who travels the world as a cover crop and no-till consultant. “It relies on farmers (realizing) that it’s about our own farms and we can actually grow our cash crops in a way that is most cost-effective.”

Thoughts on Clipping Pastures

by Matt Booher, Virginia Cooperative Extension

This year I got many questions about clipping pastures. By the time you read this, we will be past the peak of spring flush, but I thought it might be good to capture a few thoughts for use in the future. In most of Virginia, it seems like it takes about three days to go from not enough to too much grass. Seed heads can be removed by grazing animals, but it takes some intentional management to get stocking rates high enough to do this effectively. Most people will have seed heads in some or all of their pasture. So, is clipping necessary, and at roughly \$15 per acre, is it cost-effective to clip pastures? A fixed yes-or-no answer does not exist, but here are some things to consider as you debate the question each year.

Do your livestock need pasture with increased protein and energy that clipping seed heads will produce? Stockers certainly do. Grass-based finishing or dairy operations certainly do. First-calf heifers may benefit. Mature



A winter cover crop of crimson clover in a farm field in Clinton County, PA. It not only helps to fix nitrogen in the soil, but can be used for forage.

Like Bupp, many of the pioneers of soil health discovered its benefits by accident.

Thirty years ago, Lancaster County, PA, dairy farmer Jim Hershey tried no-tilling as a way to save time and fuel as he and his wife struggled to run the farm themselves. “There was nothing much talked about back then about keeping nutrients on our soil. And I thought the Chesapeake Bay was not even close to me and it’s not something I had to worry about.” A lot has changed since then. Hershey was a founding member of the Pennsylvania No-Till Alliance and has been its president since 2010.

“I like to say no-till without cover crops is still dead soil,” he said. “It’s not providing any nutrients to the soil biology and microbes to keep that soil alive, healthy, productive and able to recycle nutrients.”

cows outside of peak lactation don’t need it.

Instead of clipping all pastures, can you pull some pastures out for hay production or summer stockpiling (which stockpiles pasture until late-summer when seedstalks have broken off)? This would increase stock density on the remaining pastures that are being grazed and help control seedheads without clipping.

Do you have low-growing pasture species like white clover, bluegrass—even seedling crabgrass (a great summer forage)—that needs some light to it? Do you have baby clover plants from this past winter’s frost seeding that are starting to get shaded?

Will clipping reduce weed pressure? Note that mowing does very little for perennial weeds that have emerged from a rhizome or taproot. It may however, help reduce seed production

Groff, who experiments with cover crop mixes with up to 13 different plant species to enrich the soil, only stumbled into the deep-rooted benefits of soil health. “We didn’t know about soil health back then. I did it because I didn’t want ditches in my field.”

What will it take to make soil health mainstream and the most common method of farming?

More peer-to-peer mentoring, reinforcing scientific research, nudging agribusiness, and consumer demand, experts say. Also needed is finding ways to reward farmers who use soil health practices, such as getting more for their products or discounts on federal farm insurance premiums.

Part of the resistance by some farmers is simply change. “We’ve been trying to tame nature and make soil into a monoculture for so long. We’ve always said you have to kill everything so we can plow the soil. And now we’re replacing the paradigm and it’s just hard,” Goodson observed.

Soil health advocates also find pushback from fertilizer, pesticide, and equipment companies. But Hershey, for one, thinks most farmers will see the light. “This is a revolution that’s occurring and it’s very promising for cleaner agricultural production. Much cleaner.”

in weeds whose primary reproduction is by seed (e.g. bull thistle). You know as well as I do that timing is of the essence here: Mowing off weeds with mature seeds is a recreational exercise that simply helps to spread it across the farm.

Most veterinarians will remind us that the presence of seed heads and tall stems does not cause pinkeye. It can be a factor in causing some eye irritation, along with dust, strong sunlight, etc. The main agent in spreading the bacteria that cause pinkeye is face flies. If you are currently seeing a pinkeye outbreak, or bringing new cattle onto the farm from somewhere else, it may be worth clipping pastures in hopes of limiting the sources of eye irritation. But, in my opinion, if you have no special reason to expect your herd is higher risk, I wouldn’t recommend clipping pastures unless it is for other reasons as well.

Post-Weaning Grazing Strategies: Leader-Follower Grazing

by the Virginia Graze 300 Team

Leader-follower grazing, also known as first-last stocking, is a grazing strategy that allows livestock with a higher nutrient requirement to have unrestricted access to a pasture for a set amount of time.

The goal is to give these “high demand” animals opportunity to select the highest quality pasture to support rapid gains. Once the high demand livestock are moved, the residual forage is intensively grazed by livestock with a lower nutrient requirement.

This system can work remarkably well to put cheap gains on grass for weaned and backgrounded calves (high nutrient demand), while maintaining mid-gestation cows (low nutrient demand). Using a leader-follower strategy in conjunction with stockpiling fescue can reduce weaning costs during the backgrounding period for spring calves and cow herd wintering costs by reducing hay expense.

To determine how well leader-follower grazing works to accomplish these goals we worked with one operation in Augusta County (Virginia) that currently uses the system.

The operation fence-line weans their calf crop (45 calves in 2019). After 5-7 days of fence-to-fence contact with their dams, the calf group of 45 steers and heifers were moved to an 18-acre stockpiled fescue pasture.

After grazing for 3 to 6 days, the calves were moved to the next available stockpiled pasture. Forage heights are the determining factor for field rotation. Moving calves before grass is grazed below four inches tall ensures they are getting large bites of leafy forage. Half of the cow herd, a total of 26 cows, was moved into the pasture formerly occupied by the calves. In Figure 1, this field is labeled Field 1.

The calves then continued to graze in Field A for six days, from November 10 to November 17. On the morning of November 17, the calf group was moved to another stockpiled pasture, Field B.

To determine the quality of the forage for both before and after the calves grazed, we took forage samples both from Field A (after

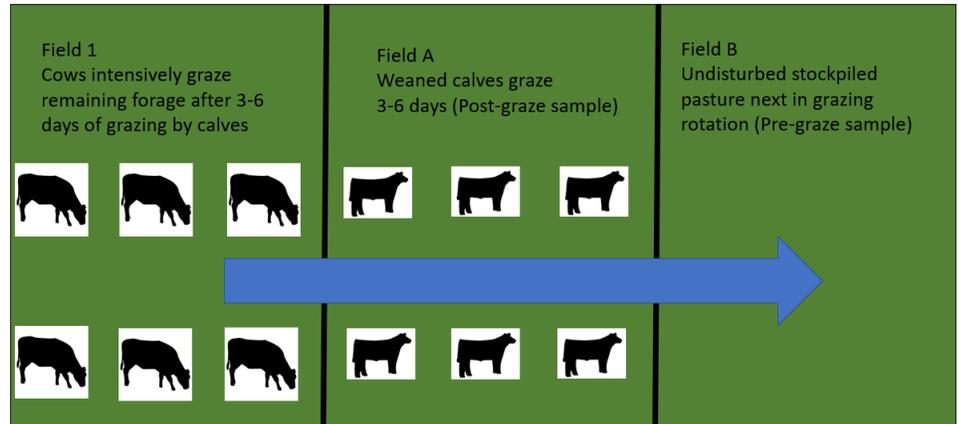


Figure 1: Depiction of a Leader-Follower Grazing System

calves grazed for six days) and from Field B (before calves began grazing).

Even though Fields A and B are different, the pasture in the fields were similar enough in initial quality for comparison of the pre- and post-grazed stockpiled forage. Figure 1 describes this grazing system and location of where we collected forage samples. Forage test results are presented in Table 1.

As expected, forage quality for the ungrazed stockpile in Field B was greater than the post-grazed pasture in Field A. The difference in forage quality between pastures is due to selection by the calves.

By using the leader-follower system, they are given opportunity to choose the best grass. If calves were forced to continue to graze Field A, we would expect forage quality to decline further, because no regrowth occurs during the late fall/early winter.

Although we did not weigh the calves, the forage test results allow a good prediction of how much weight they may have gained. We also can use the information on forage yield and quality of the post-grazed stockpile to know how long the 26 cows can now graze on Field 1, with the goal of reducing hay need.

How well does leader-follower grazing work to add weight to calves and reduce weaning costs?

Field B pre-grazed stockpile had a total digestible nutrient (TDN) percentage of 67.1% and crude protein (CP%) of 15.2%. This level of nutrition should support average daily gains of well over two pounds per day for growing calves with unrestricted intake.

However, because nutritional quality declines over time (as shown by the Field A post-graze sample), we would predict lower more moderate average rates of gain over the 3 to 6-day grazing period.

Based on an average forage quality estimate from the pre- and post-graze samples, we would predict that 6-cwt steers would average about 1.6 pounds a day.

In fact, this has been the operation's average for weaned calf gains on stockpiled grass from September to December in previous years using this system. When the grass is no longer high enough in quality to put these gains on calves, they are sold.

This low-cost system of management avoids

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Table 1 – Forage Test Results of Calf-Grazed and Undisturbed Stockpiled Forage							
Field	Date	Est. DM (lbs)	DM%	TDN%	CP%	NE _m	NE _g
A - post calf-grazed stockpile	11/17/2019	435	50.8	61.7	9.3	0.61	0.62
B – pre-grazed (undisturbed stockpile)	11/17/2019	2100	38.8	67.1	15.2	0.77	0.75

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the expense of weaning in a dry lot and using hay and supplements to add weight gains, and it keeps the nutrients (from manure and urine) in the field.

What about the cows?

After weaning, cow nutrient requirements decrease immensely. These reduced nutrient requirements make cows ideal to “mop up” forage left behind by the calves in any given

pasture. Unlike the calf group, the cows should be managed to graze more intensely, either by strip grazing or splitting the field to increase stock density and increase forage utilization.

In our scenario, the producer split Field 1 into four sections, and the cows grazed each section for at least 10 days. Under this grazing management the 18-acre field provided grass for the cows for 42 days.

Leader-follower grazing can be an effective tool to add weight to weaned calves on stockpiled grass. The key to leader-follower grazing is to move the “leader,” in this case the weaned calves, to a new field before forage quality and availability declines to the point where they are no longer gaining efficiently. If we can do that, then the “follower” cows will have enough quality grass to meet their nutrient requirements not only in mid-late gestation, but early lactation as well.

The Importance of Proper Hay Storage

by John Benner, Virginia Cooperative Extension, Augusta County

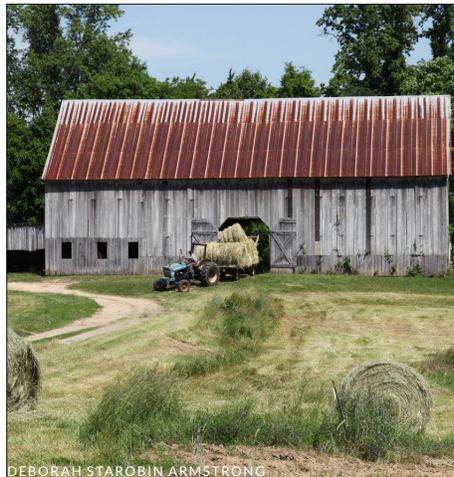
We have just spent hours and days in the field harvesting hay. We set aside time to service our equipment properly prior to heading to the field and had all tractors and implements ready in order to avoid a breakdown. We made the right decision in terms of how much hay to cut down and when. We had good weather to ted, rake, and bale, and we successfully avoided (the majority) of afternoon thunderstorms prior to baling.

So, what are the next steps? How do we preserve the quality of hay for feeding next year and beyond? How do we reduce the amount of dry matter losses from the time we cut hay until the time we start feeding? The answer to both of these questions is proper hay storage.

It has been estimated that the total amount of value lost in hay storage and feeding in the United States has totaled \$3 billion. To reduce our share of this dreadful sum we must take action to properly store hay from the time we harvest it to the time we feed it. Here are a few considerations to reduce hay storage losses.

Store the best hay in a barn. Many of us make or purchase more hay than we have barn space for. To optimize this space we should put the best hay in the best storage. If purchasing or making twine wrapped hay, consider placing this in the barn. Make notes on how much hay was placed in the barn, from what field, etc. Submit a forage test to determine quality and help formulate feeding plans.

Consider laying down rock in hay storage areas. Storing bales on top of rock or gravel reduces the amount of moisture wicked up into the bale from wet soil. In my experience, most bales that are stored on top of soil



with covering do worse from the ground up than the top down. This action should be considered if your hay storage areas are permanent. Permanent hay storage areas should be well drained, and located near hay harvest and feeding areas to minimize transportation from fields and to cattle.

Bales also may be placed in north-south arrangement to equalize sun exposure through the course of a day. It is generally best to place the bottom layer of bales ends down with the flat face on the ground to reduce moisture wicking and rot of twine and net wrap. The next two levels can be stacked with faces out and round side on the bottom and top.

Cover hay. Whenever possible, cover hay. According to a survey by the University of Georgia, hay covered with a tarp may experience 5-10% dry matter loss, when compared to 15-40% for net wrapped hay left outside.

Twine-wrapped hay stored uncovered outside losses were even more, as much as 20-40%.

Tarps are not cheap and do need to be replaced, usually lasting as long as 3-4 years. However, they certainly do pay for themselves in reduced waste.

If hay cannot be covered, it should not be stacked. Stacking hay without covering it only traps moisture directly inside of bales, wasting as much as 40% of net weight of hay.

If covering is not an option, wrap hay.

Wrapping dry hay bales is yet another preferred method of storing hay. Similar to stacking hay and covering hay with a tarp, wrapping hay is a proven method of reducing losses. University of Georgia expected losses from this method are around 5-10%. If hay is to be left outside in a row on the edge of a field, it may be the most favorable option to bring a wrapper to the field and wrap the bales in line. Similar to wrapping for baleage, 6-8 layers of wrap would be preferred to help preserve dry matter and reduce losses.

Consider building a hay barn. Barns are expensive but may pay for themselves over time through reduced hay storage losses and expenses from other means, such as wrapping hay or covering hay. As David Fiske, the late superintendent of McCormick Farm used to say, “Pay me now or pay me later.”

Both the [University of Wisconsin Extension](#) and [Iowa State University Extension](#) have developed Excel tools to evaluate hay storage costs.

Finally, hay stored over time, especially in less than ideal conditions, eventually loses quality. This drives up hay waste at feeding time as animals avoid extremely weathered hay. Do have a plan to store your hay, because in the long run, good storage will save hay, time, and most importantly, money.

Plan Now for Fall Pasture Management Strategies

by Jeff Semler, University of Maryland Extension

Now is the time to start planning for over-seeding, frost seeding, or fall pasture renovation. You are already walking your pastures to check on lambs or calves so look down and assess your forages, forbs, and weeds.

The goal is to have your stand be diverse but not weedy. While some graziers call what you call forbs weeds, we can all agree there are weeds and they need control. Some of those plants include horse nettle, red cedar, multiflora rose, poison hemlock, and thistle to name a few.

Although there are many schools of thought when it comes to the amount of clover in a stand, I think we can all agree that our stands should consist of at least fifty percent grass, forty percent legume and forbs, and ten percent or less weeds.

Our typical grasses are cool season perennials. The most popular and productive are orchardgrass, fescue, and bromegrass. Kentucky bluegrass is also common but is not as productive, and in some cases can indicate over-grazing. Perennial ryegrass can be very productive but in much of our area the summer heat and dry periods tend to take out most of this specie.

Legume preferences can be even more contentious. Again, common choices are alfalfa, red clover, white clover, vetch, and birds foot trefoil. By choosing what you like, you will do a better job of managing your pastures.

The biggest area of disagreement among livestock producers is in the area of forbs. You heard it stated one man's treasure is another man's trash; in pasture circles, one man's forb is another man's weed. The status of these plants is certainly in the eye of the beholder. Two forbs that have been elevated from weed status to feed status are chicory and plantain. The New Zealanders have improved these plants through selection and now have forage varieties of each. We will leave the other plant species for you to decide whether you like them or hate them.

As you walk your pastures observe the stand composition. Does your stand need more grass or more legumes? Is it too weedy? The answer to these questions will determine whether you will over seed, frost seed, or renovate.

Your decision could be as simple as over seeding some grass in the fall or frost seeding some clover in late winter. In either case, you

should graze very closely so as to open up the canopy and make it easier for the new seedlings to compete.

If you have a very thin stand of grass and legumes and an abundance of weeds, then renovation may be your choice. In renovation, the first step is terminating the existing stand. This can be accomplished with tillage, herbicide, or the combination of both.

After termination you should establish your grasses first by seeding them in late August or early September. After assessing your stand in early December you can determine if the stand is ready for legume frost seeding or possible spring weed control. Weeds should be controlled first before frost seeding.

Remember weed control does not always have to involve herbicides. Proper timing of clipping, grazing when weeds are young, and carrying a hoe are all effective. And yes sometimes herbicides are part of our toolbox. Spot spraying is a great option. Think of the cardio benefits of a backpack sprayer— who needs a gym membership?

So as you enjoy your personal pasture walks this summer, take time to assess your pastures.



ALSTON HORN

What Would it Take to Scale Up Pastured Meat Production?

by Franklin Egan, PASA Farming

Raising animals outdoors on deep-rooted, perennial pastures can have significant benefits for the environment, animal welfare, and human health.

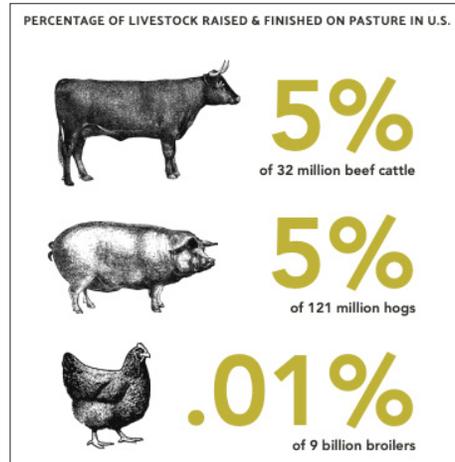
Yet, today, pastured meat remains a niche market. It's estimated that less than 5% of the 32 million beef cattle, 5% of the 121 million hogs, and 0.01% of the 9 billion broilers produced in the U.S. in 2017 were raised and finished on pasture. What would it take to make pastured systems the mainstream model of animal agriculture? And how might scaling up affect land use and the environment?

Our [new study](#), produced in partnership with 10 pastured livestock farms in Pennsylvania, explores how much land and feed it takes for these farmers to produce a pound of grass-finished beef, pastured pork, or pastured chicken. The project was funded by a Sustainable Agriculture and Research Education (SARE) grant and the Shon Seeley Memorial Fund.

Results varied significantly—for example, while one pastured beef cattle farm was capable of producing 71 pounds of meat per acre of pasture and hay, another farm was producing just 31 pounds of meat per acre. The most efficient of the pastured poultry farms the study examined produced 1,760 pounds of meat per ton of feed, while the least efficient produced 540 pounds of meat per ton of feed.

Considering these results, many pastured livestock farms likely have the ability to become significantly more efficient at translating feed and land into marketable meat—and thereby improve their yields and bottom lines. Farmers can improve their systems by considering what their high-performing peers are doing.

Bill Callahan of Cow-A-Hen Farm in Lewisburg, Pennsylvania relies on locally adapted genetics as a key way to boost the efficiency of his pastured cattle herd, which has been exclusively bred on-farm for 25 years. He carefully selects mother cows based on breeding success and calf survival. While many farms favor cows that birth large calves, because large calves can lead to higher value stocker cattle or to more marketable meat



per animal, Bill finds that with smaller calves he has very few problems with cow and calf mortality. Additionally, smaller-bodied animals take less time to mature, helping maintain cash flow on the farm.

Another author of the study, Brooks Miller of North Mountain Pastures in Newport, Pennsylvania, finds that predator control is a key aspect of an efficient pastured poultry operation. “Losses from predators anywhere in the production cycle significantly increases the total amount of feed needed to bring a bird to market,” said Miller. In 2016, Miller developed a new brooder design using second-hand steel shipping containers. These containers virtually eliminated losses of chicks to weasels, rats, and other predators. He’s also installed automatic feeders and waterers in the brooders. He finds that by keeping feed and water consistently available, chick growth and survival rates have also greatly improved.

While it’s clear there’s room to scale up pastured livestock production at the farm level, is there room to scale up at the state level? How many acres would it take for pastured livestock farmers like the 10 in our

study to provide meat for all of Pennsylvania’s 12.8 million residents?

Considering the benchmarks identified by the study, and assuming all residents are consuming the USDA recommendation of six ounces of animal protein per day (many likely eat considerably more meat on a given day, some less, and some eat none), a rough calculation shows that all of the state’s existing cropland would need to be converted into perennial pasture plus an additional 7.2 million acres of pastureland and 1.2 million acres of cropland outside of the state would need to be utilized.

In contrast, if all of these animals were raised using confinement methods, 4.9 million acres of pasture and 434,000 acres of cropland in Pennsylvania would need to be converted, plus an additional 885,000 acres of cropland outside of the state would be needed—in other words, still a large land-use footprint, but far less land than the pastured model requires.

This means that if we all chose to eat pastured meats, we’d have more land in deep rooted, perennial pastures that protect water, enrich soil, improve animal welfare, and support human health. Yet we’d also have to convert substantial areas of cropland that could be used to grow food grains, vegetables, and other crops.

Pastured livestock systems still have plenty of room to scale up in Pennsylvania and nationally as a farming method. But if it’s going to be our default method of meat production, we’ll also need to make informed choices about how much meat we choose to consume to enable a healthier and more environmentally sustainable model of meat production to succeed.



North Mountain Pastures designed a custom brooder to prevent loss from predators.

NC Choices Launches Resource for Consumers to Find Local Farms Selling Meat in Bulk

NC Choices, an initiative of the Center for Environmental Farming Systems (CEFS) and North Carolina State Extension, launched [MeatSuite.com](https://meatsuite.com) in the midst of the evolving COVID-19 crisis to assist consumers looking to stock up on locally-raised meat and support nearby farmers.

On MeatSuite.com, buyers can search for nearby farms in North Carolina selling meat in bulk quantities such as whole, half, or quarter animals. Consumers can search by location, species, and farm practices and the site is free to use for farmers and consumers.

MeatSuite was first launched in New York in 2012. North Carolina boasts over 1,000 farms registered as meat handlers meaning they can sell meat raised on their farms direct to the consumer.

NC Choices Director, Sarah Blacklin says, “North Carolina is a strong agricultural state with no shortage of local meat producers. However, in light of COVID-19, there’s a need to connect consumers and local farmers now more than ever before, many of whom might not sell at open farmers markets or have an active online presence.” The need to facilitate that connection in NC led Blacklin and her

team to launch MeatSuite several months earlier than originally planned.

While national processing plant closures and consumer stockpiling have led to bare shelves in some grocery meat departments, North Carolina’s farms are at the ready with bulk bundles of beef, pork, lamb, goat, chicken and even rabbit.

National supply chain issues also pushed the NC Choices team to launch the site early. NC Choices knew that local farms have meat available, that locally-raised meat supports the state’s economy, including its small-scale processing facilities, and that bulk sales are a win-win for both farmers and consumers.

Since farms selling in bulk work directly with nearby processors, few people are handling the product from farm to consumer. This reduces costs to the consumer and helps avoid processing bottlenecks due to labor shortages across the supply chain. Since bottlenecks are mostly occurring on the cut and packaged side of the processing business, buying meat in bulk can be more efficient for both farmers and consumers. Plus, the farmer sells more meat with less time through bulk transactions.

Due to NC Choices’ recruitment efforts during the pandemic, many more farms across the state have created profiles on the site to list their bulk meat products, particularly “bulk bundles.”

A bundle is a package of assorted meat cuts. Bundles come in a variety of sizes to best suit consumers’ budgets and needs. To date, there are nearly 100 farms from across the state on the site, with more added every week.

At a time when people are concerned about the state of the food supply, bulk purchases allow consumers to secure a long-term supply. For example, 100 pounds of beef might supply a family of four with two meals per week for a year. Plus, bulk purchases don’t necessarily require a lot of freezer storage. An empty standard freezer will hold about 150 pounds of cut and packed meat equivalent to about a quarter beef or a whole pig.

Have less space? Divide a bulk order among friends. Whether a 10-pound bundle of ground beef or a side of pork, farmers can help consumers understand the different options and get started with buying local meat in bulk.

Remember the Four Principles of Pasture Management

by Jeff Semler, University of Maryland Extension

Pasture is a key component of livestock operations and one definitely worth managing. At first glance, grazing a pasture may appear as simple as placing livestock in a fenced area with a water source. However, practicing effective grazing management is an art and a science.

Pasture conditions and types vary widely from native grassland to improved forages, with stands comprised of many diverse plants or perhaps just a simple mixture of a few grass or legume species. Regardless of the pasture type, focusing on a few key principles can help maintain forage productivity, ensure stand longevity, sustain a healthy plant community, conserve water, and protect soils. Here are four main factors to remember.

Balance forage supply and livestock demand. Avoid overstocking a pasture by ensuring there is adequate forage available



for the number of livestock and the length of time they will be grazing. There are many different stocking rate formulas that can help producers determine a starting point for their stocking rates. In addition to grazing, remember to factor in a utilization rate to account for trampling, wildlife, or insects. General guidelines for native pasture suggest a utilization rate of 25-50%, and for improved pasture, a utilization rate of 50-75% is a built-in buffer that allows the pasture to sustain itself.

Distribute grazing pressure across the pasture. When left on their own, livestock will prefer to graze moist, productive areas of a pasture and avoid dry hilltops where the forage quality may be lower. Livestock can be managed to graze a pasture in a relatively uniform manner using different methods depending on forage type, topography, and goals. Temporary or permanent fencing, placement of salt and mineral, and stock water locations can all be strategically maneuvered to effectively move livestock.

Provide rest for pasture plants during the growing season to help plants recover. Forage plants need time to rest to allow them to replenish their energy reserves and prepare for the next grazing event. If plants don’t have adequate time to recover, pasture productivity can dwindle, and pastures can

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become susceptible to weed infestations, soil erosion, and winterkill.

Avoid grazing during sensitive times.

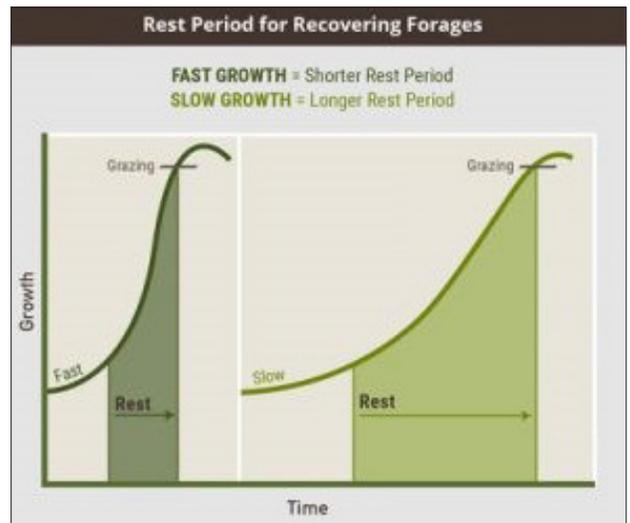
Grazing too early can set a pasture back for the whole season. A general rule of thumb is for every day grazing is deferred in the spring, you gain two days of grazing in the fall. Other situations such as grazing wetlands or species-at-risk habitat, may benefit from deferring grazing until nesting season is over or flood potential has subsided.

Litter is often called a “rancher’s insurance policy” because it helps pasture systems retain moisture in dry years and can help maintain forage yields.

Manage pastures to retain adequate “litter” cover. Litter is the dead or decaying plant residue left from previous growing seasons

and is a valuable resource in both tame and native pasture stands. Litter insulates the soil, keeping it warm in the winter and cool in the summer. As it breaks down, litter provides nutrients to the surrounding plants, and it is a wonderful safeguard for reducing soil erosion and water loss due to evaporation.

There are many different types of grazing systems promoted by groups and individual producers, including, but not limited to, rest-rotation, AMP (adaptive multi-paddock), intensive, or strip grazing. While each system has its own benefits and drawbacks, almost all systems factor in the four key principles of grazing management. By carefully managing pasture as the valuable resource that it is,



forage production and range health can be sustained for this season, and for many years to come.

This is adapted from the Beef Cattle Research Council (BCRC Blog), www.BeefResearch.ca.

Assessing Risks to Wildlife from Common Grassland Herbicides

by Matt Booher, Virginia Cooperative Extension

I was spot-spraying autumn olive that had encroached into the field when I noticed a bobwhite quail scurry through the grasses and into the fencerow. Over the next weeks, my family and I watched and listened to a covey of them as they moved about our property, the first time in decades.

Wildlife are abundant around my unimproved hay meadows, even though we haven’t actively managed for them. I work with lots of farmers who are in a similar situation, as well many who are intentionally trying to improve habitat and promote wildlife.

In addition to wanting what is best for quail, pollinators, rabbits, songbirds, and trout, we all seem to have one other thing in common: the threat from invasive weeds. You can probably relate. I often see well-intentioned landowners refuse to use herbicides, under the assumption that all chemicals are equally harmful to wildlife or that their effects are simply unknown.

Unfortunately, many of these people end up using a lot of herbicide to stop a small problem grown large. Some even rotate out of perennial grassland into annual crops in order to clean up out-of-control invasives.

As a former commercial applicator and now as

an Extension agent, I always operated under the assumption that when used in accordance with the label, most herbicides present no risk to wildlife. I’ve come to realize that neither of these positions is good, since they are based on assumptions rather than science. I decided to research the risks to wildlife of grassland herbicides, with a goal to identify some options that can be used with a high level of confidence in their safety to wildlife.

The EPA and the U.S. Bureau of Land Management (BLM) conduct an Ecological Risk Assessment (ERA) on any herbicide before it can be used. I turned primarily to these assessments as my source of information because of their thoroughness, and because part of the BLM’s mandate is to manage for the health and safety of wildlife.

ERAs use peer-reviewed studies to evaluate the short-term effects of various herbicides to wildlife and they are very conservative in their approach. For example, toxicity levels are often determined in association with rates at or above the high-end specified by the label.

In addition to looking at acute effects to wildlife, they also attempt to evaluate longer-term impacts on growth and reproduction, the impact of chemical metabolites, as well as

the possibility of chemicals to bioaccumulate in the food web.

ERAs do a good job of identifying risks within the context of real-world exposure scenarios, for example, via direct spray, consumption of contaminated vegetation or insects, spray drift or runoff, or by accidental spills.

While I am not an expert in topic, I’ve done my best to read and understand these ERAs for the most commonly used active ingredients in pasture and hay. Here is some of what I learned.

2,4-D is a widely used broadleaf herbicide, available in ester and amine formulations. Over the range of typical 2,4-D ester application rates, adverse effects such as reduced growth or mortality are plausible on aquatic animals (fish, insects, amphibians) in association with direct spray to water or accidental spills. So don’t apply where spray may drift or run off into surface water!

2,4-D amine presents less risk to aquatic life, and at typical application rates, adverse effects on wildlife are likely possible only in the event of an accidental spill. Non-lethal effects such as weight loss, and

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developmental or reproductive impairment, are plausible in mammals that consume contaminated vegetation or insects at typical spray application rates of either formulation. Birds and terrestrial insects appear to be substantially less sensitive than mammals to 2,4-D. See Table 1 for product and formulation information.

Triclopyr is used extensively for control of woody plants and is available in ester and amine formulations. There is a potential for subclinical adverse effects (such as reduced growth and reproductive impairment) in large mammals consuming vegetation contaminated with either formulation of triclopyr. However, triclopyr is not likely to cause adverse effects in small mammals and birds.

At high application rates, triclopyr ester can pose acute risks or mortality to aquatic insects, amphibians, and fish, while no risks are apparent for aquatic wildlife exposed to triclopyr amine across the range of labeled rates.

Dicamba is a widely used broadleaf herbicide. At typical rates used in grassland settings, no adverse effects are plausible for mammals, birds, or terrestrial insects. While dicamba is relatively non-toxic to aquatic wildlife, very little information exists to enable a good assessment of chronic risks to them.

The active ingredients aminopyralid and florypyrauxifen are practically non-toxic for both terrestrial and aquatic wildlife, even under a direct spill scenario. Fluroxypr is also considered non-toxic under spray or runoff scenarios, with expected risks present to fish and aquatic invertebrates only in the case of a direct spill.

Surfactants are often cited as posing greater

toxicity to aquatic life than many of the pesticides with which they are used. However, the standard non-ionic surfactant used at normal rates appears fairly non-toxic to aquatic life and shouldn't create additional risk beyond that of the herbicide it is used with.

In the case of basal bark or cut stump applications, it would be wise to use a basal oil rather than diesel or fuel oil as a carrier. Basal oil is significantly more expensive, but less toxic and potentially more effective.

All of the active ingredients mentioned in this article were deemed low risk for bioaccumulation.

So, are herbicides harmless tools or harmful toxins? As usual the truth lies somewhere in the middle.

We must consider scenarios where abstaining from herbicides can result in the loss of habitat for the very wildlife we are trying to protect by not spraying. Sometimes our other weed control options (e.g. burning, mowing) are less environmentally friendly and less effective than herbicides.

I'm optimistic about what appears to be the growing safety of the herbicides available to us; however, we still need to be careful stewards of our land and wildlife. Practice common sense. Use typical application rates rather than maximum rates and use individual plant treatment when possible. Follow label guidelines on stream buffers. Avoid conditions where spills or direct spray will contact known habitat. Time spray applications to limit risk to wildlife populations, for example, outside of nesting season or during cooler weather when pollinators are less active.

I hope this has helped provide some information and confidence to help you make informed decisions on your land.

Example brand name(s)	Active ingredient(s)
off-patent	2,4-D ester
off-patent	2,4-D amine
Remedy Ultra, Garlon 4 Ultra	triclopyr ester
Garlon 3A	triclopyr amine
Banvel	dicamba
Milestone	aminopyralid
GrazonNext HL	aminopyralid + 2,4-D amine
PastureGard HL	fluroxypr + triclopyr ester
DuraCor	florypyrauxifen + aminopyralid
Vista XRT	fluroxypr

Table 1. Grassland herbicides and their active ingredients.

*Mission Statement:
The Mountains-to-Bay Grazing Alliance networks organizations within the agricultural community to support and encourage wider adoption of rotational grazing and related conservation practices that benefit water quality, improve soil health, and boost farm economies.*

UPCOMING EVENTS

Summer Pasture Walk

Thursday, July 23, Hot Springs, VA
4:30–7:30 p.m.

Join Virginia Forage and Grassland Council for an evening pasture walk at The Moyers Family Twilight Farms in Bath County. The Moyers family will showcase the improvements made to their farm and grazing system with an emphasis on conversion of wild-type, toxic endophyte fescue to the advanced technology of a novel endophyte fescue. The event begins with a light dinner and costs \$10 per person. Visit vaforages.org to register.

Webinar: Fundamentals of Integrated Pest Management In the Field

Tuesday, August 8
7:00–8:30 p.m.

Integrated Pest Management is a key approach for effectively managing and controlling weeds, pests, and disease on sustainable farms. By implementing Integrated Pest Management techniques, farmers can prevent problems before they happen and better control those that do. Register by visiting the PASA website at pasafarming.org/events.

Twilight Grazing Tour

Tuesday, August 18, 6:00–7:30 p.m.
Park at 351 McCune Road
Middletown, VA

Join CBF and Virginia Graze 300 for a grazing field tour. Learn about rotational grazing, stocking density, and forage management, and see a recently-planted stand of novel endophyte fescue. Contact Alston Horn at ahorn@cbf.org or 540-487-9060 for more information. Registration is not required.

SAVE the DATE: Online Meat Marketing Webinar

Thursday, October 8
Future Harvest CASA will host ag marketing specialist Matt LeRoux for an online meat marketing webinar. We'll focus on pricing meat for different markets, including direct-to-consumer and wholesale, so farmers can calculate their most profitable sales outlets.

UNIVERSITY OF MARYLAND EXTENSION

HOW TO CHECK YOUR CATTLE FOR TICKS

A STEP-BY-STEP GUIDE

Where to Look:



How to Look:



- Using your hand, slowly feel in and around the ears, eyes, forehead, and face. Move on to the neck, brisket, behind the front legs and along the belly to the rear flank. Finally, feel around the tail head, down and around the udder, and the length of the tail.



- Be sure to apply some pressure as you run your hand along the animal. Its best to use the back of your hand versus your palm as it will be easier to feel the unusual bumps that may be ticks.
- Don't wear gloves as they can block your ability to feel the ticks, especially smaller ones.

What to do if you find ticks:

- Remove the tick from the animal:
 - Using tweezers or a leatherman pliers:
 - Grasp the tick as close to the skin of the animal as possible – **we ID the ticks based on their mouthparts so its important to have the head still attached**
 - Pull upward with steady even pressure until the tick is detached.
 - Using a tick spoon:
 - Apply slight downward pressure on the skin of the animal and slide the spoon notch first toward the tick.
 - Continue sliding the spoon forward until the tick is detached from the animal
- Place the detached ticks on to the sticky side of some masking or painters tape.
- Place the pieces of tape into a plastic bag with a damp paper towel
- Label the bag with the farm name, address, date and location on the animal where the tick(s) were found, as well as an email or phone number for the lab to contact you - **Please don't freeze**



All collected ticks should be mailed to:

Dr. Megan Fritz
University of Maryland
4291 Field House Drive
Plant Sciences Building Rm 4112
College Park, MD 20742

Questions?

Please contact Racheal Slattery, University of Maryland Department of Animal and Avian Sciences - rslatt@umd.edu

Mountains-to-Bay Grazing Alliance



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