

Tradition and the Wild Perspective for Modeling Modern Farms

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My father lived on a farm in rural KY during the Depression. Back then, people made do with what they had or they did without. Buying in feed for animals wasn't frowned on, it was nigh impossible when any money made went to feed and clothe families, not farm animals. Times were tough back then but the tough survived. And they did it by ingenuity and understanding how to use what God gave them. Modern farming dismisses the old methods for the most part. Fattening hogs on acorns just isn't done anymore, there's no money to be made for Big Ag. But the traditional methods do have value and can save us both time and money when we incorporate them into a grazing system that fits our farms.

There are many tricks our ancestors used when grazing livestock that turn out to have science behind them after all. I'm going to outline some things I do to turn otherwise-unusable areas of land into nutritionally balanced and beneficial grazing for my animals. Every farm is different and you will want to explore the many opportunities your farm provides to feed your animals while nurturing the land and wildlife. Hopefully I can get your thoughts turning back toward the traditions that were the backbone of our country's small farming communities and help bring those traditions back into use.

When our ancestors arrived in the New World, they brought Old World livestock and some measure of farming methods with them. These methods were then adapted to the new situations they found here. Depending on where each farm was situated, a farmer was able to make use of pasture, woodlots or open range to graze the stock and keep them healthy without expensive inputs. Over time, farmers bred for animals that survived and thrived on their farms and in their situations. Different breeds were created, breeds we now consider heritage, many of which are rare or threatened conservation status. There are two main points in the above narrative we can take away for our own use in making good decisions for grazing. One point is that farmers brought basic techniques but were willing to adapt them to differing situations. The other point is that farmers were willing to breed for hardy animals that survived on their farms. I'm going to dissect these two points so you can see how to formulate a plan for your own situation based on experience and common sense.

When I moved to my farm in northern Minnesota, the first thing I realized is it was nothing like the other areas of the country I had lived and farmed in. The farming techniques I had used in other areas didn't always apply. I needed to figure out what would work here for sheep and goats and do it quickly. I have a degree in Wildlife Science and this tends to invade all other areas of my life. My first thought when looking at the farm was: "How do wild herbivores use the available plant communities?"

If I could understand how the white-tailed deer used the habitat here, I could figure out how to better use the farm I had. I decided to mimic nature, my theory was that the deer manage to not only survive, but thrive here and I wanted my animals to excel. I needed to understand deer in order to know how to emulate their behavior on the land. Were there differences in deer life cycles than in my sheep and goats?

White-tailed deer (*Odocoileus virginianus*) are an edge species, in the same family (Cervidae) as elk, moose and caribou. Sheep and goats share the same Order as deer, Artiodactyla, but sheep and goats are in the Bovidae family. Like goats, deer are intermediate feeders, not quite true browsers, and choose grass, various forbs (flowering plants), twigs, buds and other high nutrient food sources as they eat. Sheep are technically grazers but do very well with a diverse range of plant species as part of their diet.

Deer have been shown to eat over six hundred different species of plants (Pierce, et al., 2011)! Plants in their diet include various oak saplings and acorns (*Quercus*), clover (*Trifolium*) and alfalfa (*Medicago*), grape vines (*Vitis* spp.), green briar (*Smilax* spp.), Virginia creeper (*Parthenocissus quinquefolia*) and prickly lettuce (*Lactuca* spp.) (Pierce, et al., 2011). Contrast this with most pasture plantings that include less than twenty-five different species of plants. Native plant species are your friend. They are already established and are adapted to do well in your ecosystem, climate and soils. Make that work for you!

Deer are migratory: yearly, seasonally and here, use white cedar (*Thuja occidentalis*) swamps for winter cover. They also frequent upland deciduous woods for browse, and fields and crops for food seasonally as available. Home range size varies, approximately thirty-nine to more than eight hundred acres (Rongstad and Tester, 1969, p. 371). Livestock would be much more migratory if their pasture systems allowed daily and seasonal movements. More movement benefits the pastures and reduces exposure to parasites in grazing animals.

My farm consists of an almost-equal mix of deciduous and coniferous woodland, pasture and wetland. This gives me a lot of options when it comes to grazing. One thing I've found is that textbooks on livestock shy away from grazing in woodlots, although there is now a movement for silvaculture in agriculture that is being promoted as new. It's not new, it's age-old and was the traditional way our ancestors used the land.

From the above information about deer, you can see that using browse species as part of the diet for grazing animals may have some benefit. Let's look more at that idea and see if it holds up.

Many farms have woodlots, scrub or other areas where trees are part of the acreage. In most areas, this is primarily shrubby species that are good browse for ruminants. Horses do not make as much use of tree and shrub species as ruminants (cattle, goats, sheep, llamas, alpacas, etc.) Examples of potential browse species include bur oak

(*Quercus macrocarpa*)/aspen (*Populus tremuloides*) dominant woodlands. These areas are good browse for intermediates, like goats. One great benefit to moving animals into a woodlot is that it keeps grazers up off parasite-ridden grass.

Blackberry (*Rubus* spp.) and other brambles have a nutritional analysis similar to legumes; protein, energy and minerals are all quite similar (Cebra, et al., 2014, Kindle). Browse species in studies had seventeen to sixty-seven percent digestible dry matter with most studies showing between thirty-four and sixty-four percent. Crude protein was up to thirty-three percent in browse, while legumes had protein in the nineteen to thirty percent range (Cebra, et al., Kindle). Leaves from shrubs have high crude protein, phosphorus and digestibility but lower fiber content than grasses, making them excellent nutrition for browsers and intermediate feeders and good additions to the diet of grazers (Holecheck, 1984, p. 262).

Those numbers are impressive. It looks like our woodlots have potential but how can we use those without destroying the woods?

It turns out that fire has always been a part of our ecosystems in almost all parts of the U.S. Fires help maintain forest successional stages and Native Americans made use of fire to maintain oak/hickory stands to provide valuable food nut crops. Studies show moose population density increases after fire but decreases as successional stages and tree height increase (DeByle, p. 142). Fire clears understory to benefit wildflowers and orchids and removes fuel buildup to prevent forest fires, particularly the damaging crown fires that destroy trees and burn out of control in towns.

We don't necessarily want wildfires but we want the benefit. Rotational grazing through woodlots can mimic fire if intensive grazing is used. This system allows the livestock to move through a wooded area, clearing the understory and stripping saplings and brush of leaves. By moving the animals out within a day or so, saplings and brush quickly regenerate leaves and the forest floor springs to life with woodland wildflowers and other ephemeral species. I do this on a regular basis to help animals keep off parasite-ridden pastures, provide nutrition and keep woodlands cleared and healthy. I've found that my milking does produce more milk on browse than they ever did on grain and they aren't burdened with high parasite loads.

I mentioned successional stages and it helps to understand a bit about what we are talking about here.

There are different stages of growth in forests. Some tree species are intolerant to shade (or an overstory of other trees). These tree species are early succession and pioneer species which invade meadows, old fields and prairie. Shade tolerant species come up in understory of the intolerant species and become the next successional stage. Humans have been modifying successional stages since humans first arrived on this continent. Mast (or nut producing) trees are more valuable for food sources for people, wildlife and domestic animals. Early settlers in eastern U.S. fattened free-range livestock on acorns, beech nuts, hickory nuts and chestnuts.

Successional Stages and Their Benefits:

Oak (*Quercus*)-Hickory (*Carya*): Shade intolerant. Provide browse (high in protein and minerals in early growth stages) and high energy food sources in nuts.

Aspen (*Populus tremuloides*): Shade intolerant. Pioneer species in meadows, forms thickets of clones, regenerates quickly after disturbance or logging, useful for browsing, high protein, medicinal action.

Willow (*Salix* spp.): Shade intolerant. Moose select willow as browse first, followed by aspen and fir (DeByle, p. 141). Willow is a natural dewormer and palatable to goats and sheep.

Maple (*Acer*)-Beech (*Fagus*)-Basswood (*Tilia*): Shade tolerant. Good browse and protein sources in early growth stages. Note that some maples, like red maple (*Acer rubrum*), contain higher levels of gallic acid in wilted leaves, making them toxic when wilted. Always check your woods for diseased, dying or wilted trees and plants before moving your animals in.

Spruce (*Picea*)-Fir (*Abies*): Shade tolerant. Good winter browse since they are evergreen, have medicinal uses and high in vitamin C.

Pine (*Pinus*): Shade intolerant. Good winter browse as well, medicinal action. Some species are possibly abortifacient in cattle like Ponderosa pine so do some research on your local native species before letting your animals browse.

You can see that whatever stage your pastures and woodlots are in, there is potential benefit there for your animals and you can manage your farm for whatever goals you are trying to achieve. If we jump back up to the diet of deer, we remember that they eat upwards of six hundred different species. The more variety we can provide, the more healthy our animals will be. Woodlands allow us to add much diversity, nutrition and medicinal value to the diet.

I love the electronet for rotational grazing, other farmers find electric wire or rope systems easier to manage and some farmers set up permanent paddock systems that allow them to move animals around. Investigate all options and see what will work well for you in your situation.

In our discussion so far, we've looked at how we can adapt various grazing techniques but haven't really looked at how to breed for animals that work well in each situation.

Since sheep are my animal of choice, I'm going to use them as my example but you can research any livestock breed and see how they were traditionally kept. Breeding for hardiness will be similar in all species.

A History of Shepherding:

Around 7200 BC, sheep domesticated for meat. These were primarily kempy animals, not wooly. They may have looked similar to our hair sheep, katahdins or breeds like this. Since it is difficult to tell a sheep skeleton from a goat skeleton in an archeological dig, much information on early shepherding of either species is muddled and difficult to understand. Researchers suspect by 5000 BC, wool was available, usually plucked

(rooed) from those hair-type sheep (Barber, 1991, pp. 22, 24).

How Were They Kept?

When sheep were first domesticated, selection of breeding stock included initial decrease in size from the wild type to a gradual increase from selecting larger animals for breeding. People also focused on interesting appearance and horns (multi horned) and long or fat tails (Kinsman, 2001, p. 10). We still enjoy unique breeds with interesting physical attributes so this is no surprise.

Let's look at a specific geographical region. For instance, before 1770 in Scotland, there was no winter feeding of livestock. They had forage-based systems only (Kinsman, 2001, p. 29)! No winter feeding resulted in loss of animals over winter (Kinsman, 2001, p. 29). A harsh reality for people who couldn't spend time putting up hay by hand and storing it. Wethers were kept not only for wool, but also because lambs weren't expected to grow enough by first fall for butcher. Wethers were kept over and butchered the second through fourth years (Kinsman, 2001, p. 29). This is different from our modern farming methods where time is money and quantity is more important than quality.

The breed kept was chosen based on weather, climate and pasture condition. An example is the Scottish Blackface Sheep (SBF), which were kept on highlands and islands. Cheviots or North Country Cheviots (often crossed with SBF) predominated on lowland grassy hills (Kinsman, 2001, p. 31). Depending on where the farm was located, breeds were chosen that best fit the ecosystem and could thrive there.

The isle of Shetland has peat soils and harsh conditions but in the 1790s, had approximately fifty thousand wild breed sheep (Kinsman, 2001, p. 47). These Shetland sheep were small with meat like venison. They were left to run wild, flocks kept to particular areas naturally. The Herdwick sheep in England have this trait and individuals and families of sheep will return to their farm homes regularly (Kinsman, 2001, pp. 47-48).

We don't have such harsh living conditions in most areas of the U.S. and most of us would not forgo winter supplemental feeding, nor should we strive to go back to these methods, necessarily. But what we can glean from this is that shepherds of old expected, required, their sheep to thrive on little to no input. Sheep breeds were smaller and matured more slowly. Fleece naturally shed and could be removed by rooing or shearing by hand. .

We don't want small wild types but we want hardy animals. It is estimated that one quarter of the wildebeest herd in Kenya dies yearly. Wildebeest calves can run with the herd at five minutes of age (Great Wildebeest Migration). Why do we care? Because if twenty-five percent of a wildebeest herd dies naturally each year, we can assume that in order to breed for a truly hardy flock or herd, we may be looking at culling hard, up to twenty-five percent to achieve our goals. And we need to consider not culling the best but the worst, the ones who aren't thriving under our management systems. Consider

how predators cull wild populations, they look for the weak and remove those from a population. The population of wild grazers becomes stronger. We tend to remove the best for butcher or sale of breeding stock but this leaves us with the weaker genetics to propagate the next generation. Make sure when you make breeding and culling decisions that you are also considering the effects on the future of your flock or herd. This is the same whether you are raising sheep or shoats!

It is also worth a careful look at your farm. Choose species and breeds that would naturally fit well into your ecosystem and your management. Conventional agriculture pushes a few species and a handful of breeds. Using the recommendations from the agriculture industry, we often try to fit ill-suited livestock breeds into situations where their survival requires great input from us. There are many species and hundreds of breeds of livestock to choose from and we have the ability to change these breeds to suit our situations.

It is possible to have thrifty, hardy livestock that can be raised on vastly different farms using only what is available on the farm but we have to understand how to use what we have in order to achieve these goals. I rotate my sheep and goats daily, I use multi-species grazing by moving horses after sheep and goats to break up parasite cycles. I utilize the woods for high nutrition browse and I choose to breed for animals that thrive under this system. After years of doing this, I have flocks that are very hands-off. Animals do not require assistance during lambing and they do well with parasites. With careful management, pastures can survive droughts and floods, woodlands look better and are less prone to wildfires. Using the model God has provided in nature as my model for farming has provided many benefits and a unique opportunity to learn to live with the land, not just on the land.

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