Pasture Rest, Rotation Schedule, Stock Density,

and other hotly debated topics

Photos by Author

—Ulf Kintzel

"The eye of the master fattens the cattle" —Proverb

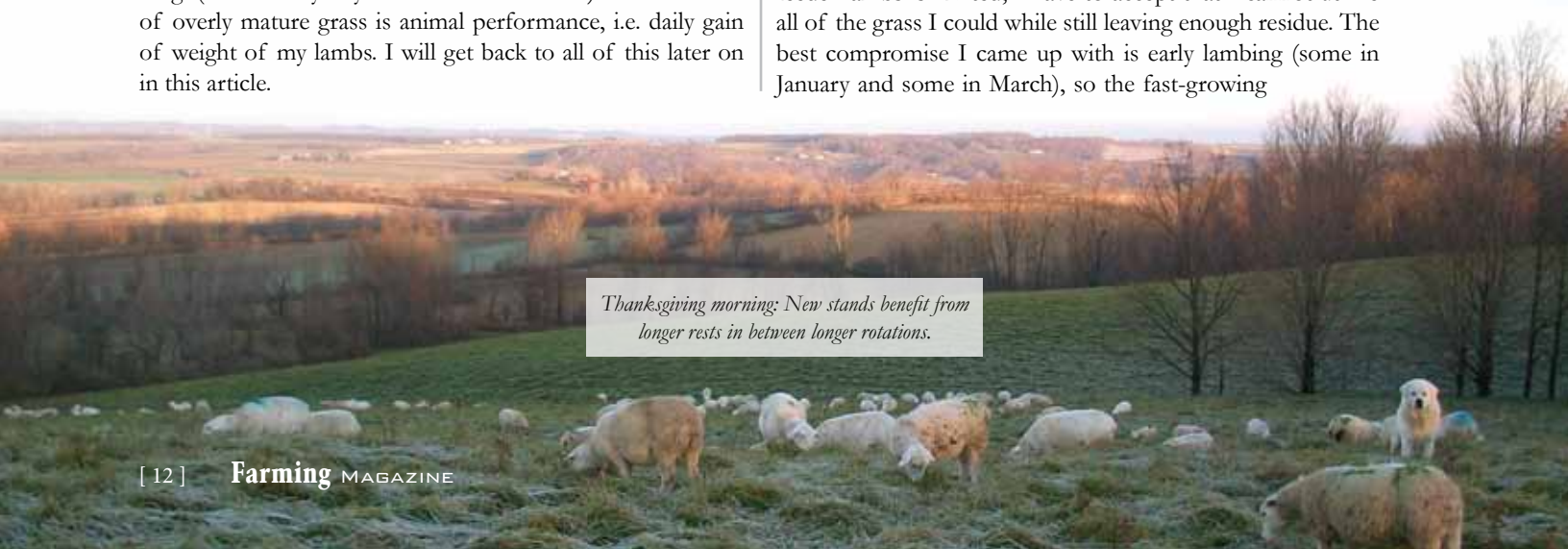
At a field day last summer hosted at my farm by the Northeast Organic Association a young fellow who works at a farm that grazes beef and sheep asked me about the length of my pasture rotation. I answered 35 days. I didn't want to exaggerate and picked a rather low number, well knowing that at times my pasture rotation is at a week or even ten days longer. His answer was quick, telling me that this is short and he had heard 90 to 120 days is desirable. It made me revisit this topic for my own purpose and eventually led me to writing this article.

Conventional wisdom for a minimum pasture rotation when grazing sheep has always been three weeks, the underlying reason for it being the cycle of internal parasite, most notably the Barber Pole worm, and less the actual need for pasture rest. Based on my experience, I always felt it should be more. Also based on my personal experience, I thought there is a length for pasture rotation that is too long because the quality of the grass and legumes will reach a peak and then worsen and lose quality. A too long pasture rotation also leads to certain plants decreasing, most noticeably legumes like white clover. A friend pointed out to me that the density of the sward will also decline in a pasture rotation that is too long. (This is why hayfields are never dense.) Another issue of overly mature grass is animal performance, i.e. daily gain of weight of my lambs. I will get back to all of this later on in this article.

I had been reluctant to put a number on the ideal length of pasture rotation until one day I came across an article written by Jim Gerrish. In this article he propagated—and I am paraphrasing, hoping to recall correctly—a rotation length of about five to almost six weeks with the exception of pasture establishment and stockpiling. Pasture establishment benefits from a longer rotation, and stockpiling obviously takes longer than six weeks. A longer rotation schedule under normal conditions does not create an additional benefit as far as total yield is concerned. In fact, forage quality decreases. Bingo. I couldn't have summed up the topic any better that had been moving so vaguely for so long in my head.

My article could actually end here; everything has been said. Perhaps I ought to add a thought or two....

In reality, my pasture rotation is less clear-cut and a bit more complicated. In the spring and into early summer when the grass grows rapidly I also rotate more rapidly. An old German saying goes: "When the grass grows you ought to move the sheep fast." I barely meet that five-week benchmark during that time. I do so in order to keep up with the quality of the grass. If I were to rotate any slower, I would be grazing mostly seed stems by the time I rotate once around. That would be counterproductive. Instead, I would rather leave more residue than necessary in my early rotations by rotating rather quickly and frequently. The ideal would be a higher stocking rate during the spring flush time. However, since I have my own ewes and lambs and since the option of buying feeder lambs is limited, I have to accept that I cannot utilize all of the grass I could while still leaving enough residue. The best compromise I came up with is early lambing (some in January and some in March), so the fast-growing



Thanksgiving morning: New stands benefit from longer rests in between longer rotations.

lambs and the heavily milking ewes can take down the fast growing-grass.

The ideal stocking rate varies greatly and is dependent on what the season bears at the moment, how much grass is growing at any given time. On a sheep farm with its own ewes and their offspring an ideal stocking rate is not achievable since buying feeder lambs and de-stocking are both limited options if they are even options. Any chosen stocking rate is a compromise. Again, I have found the best compromise is having early lambs that will eat grass at full throttle when it grows the fastest. You will waste little grass that way during the spring flush. The additional benefit to having lambs that graze well in the spring through early summer is the daily gain of weight that is best at that time. Finishing lambs is always easiest during these months because of a better balance between protein and energy. Ideally, many lambs should be sold off by the time the summer slump hits, and most should be sold off when the fall flush starts. Finishing lambs during the fall flush of perennial pasture is very hard, and daily gains are often low. Adult ewes respond well to this young and immature grass and are not negatively affected the way lambs are. The onset of the fall flush is a good time to start stockpiling. For that reason it is also a good time to have fewer sheep at the farm to be able to set pasture aside for this purpose. If enough pasture can be set aside, stockpiled pasture may very well carry me through early or mid-January, until heavy snowfall prohibits me from grazing anymore. I am writing this article in mid-January and I have yet to feed any hay to the flock that is outside and will be lambing in March.

The downside of early lambing is the need of barn space and labor during the cold months. Both are not an issue for me but might be for someone else. So, what is the magical stocking rate number? On my farm I have a stocking rate of under three ewes per acre. It is this low for this reason: When I started farming at this location just five years ago, the fields were so "milked out" that nutrients were missing, organic matter was too low, and stands were not dense at all. A higher stocking rate was not possible. However, due to excellent soils and better management the carrying capacity has increased many-fold and the stocking rate can now be increased. A stocking rate of three ewes per acre is desirable now that my pasture has been well established. However, I will not strive for the four or even more ewes per acre that the books will tell you my land can carry. If I were to go to this stocking rate, I would in my opinion inevitably run out of grass at times when it slows growing and I will not be able to stockpile as much pasture as I currently do. That would mean far more hay feeding days than the one hundred I currently have. I calculated that feeding hay far longer will pretty much eat up the profit gained by more sheep. In addition, it would affect my cash flow negatively since I purchase all of my hay. A higher stocking rate will also mean that I need to look for outside input as far as fertilizer is concerned. I don't currently buy fertilizer as a matter of choice.

My stock density is determined by what rotation I want to have. During the growing season, I usually have a rotation of anywhere between one and two days. Exceptions of rotations of three or four days apply and are usually dictated by outside influences, such as duties as a father or as a husband or simply because I like a weekend off or I am on my annual vacation. (Yes, this farmer loves his vacation in a cabin on a lake, going fishing, swimming, mushroom picking, bird watching...but I suppose I am digressing.) As a rule of thumb, a hectare (2.5 acres) of pasture feeds approximately 200 to 250 sheep for about a day and will still leave enough residue. Right after I made this statement I want to withdraw it in part. I have never bothered calculating tonnage of feedstuff per acre, pounds of livestock per acre, grazing days, and other figures to determine stock density. I have, however, in the last 27 plus years developed a pretty good feel for how long I can graze my flock in a particular location or fenced cell. Pretty unscientific, eh? I don't dismiss calculating tonnage per acre, pounds of livestock, and number of grazing days. I just don't do it. If you just calculate but fail to get your experience through observation, you want to prepare yourself for a hard landing. This is a good moment to tell a story: A neighbor who started raising some sheep on land he had just turned from a brush lot into pasture asked me how many sheep this land would carry. I gave it some thought and gave him my approximate number. The same question was posed to a government agent working in this field but entirely without personal experience. She crunched the numbers, developed a grazing plan, and came up with a number exceeding my estimate by far. Of course, this number was far too high and was based solely on a calculation without any experience and observation whatsoever. What's the moral of that story? You now know why I chose the proverb at the beginning of this article. Calculations cannot stand by themselves without experience and the power of

White and red clover are highly desirable for grazing sheep successfully.

observation. Calculations will only serve you well if you are able to observe and have some experience in this field. In short, if you never rotated a cow or sheep yourself, don't bother making a plan set in stone. It will not stand the test of time.

I can pretty reliably tell how long my sheep can graze in a certain field by just walking through it and looking at it. That does not mean I don't err at times. I most certainly do. Outside influences such as dry versus wet weather can change my projection as well. Wet days mean more wasted and rejected grass, while dry days mean that more grass is utilized. To counter this margin of error I have the next grazing cell always prepared in advance. Since I work alone I do this most times anyway, simply because I may get sick or hurt or busy the next day and I don't want someone else to be burdened should I be incapable or unavailable to do the job. If the cell that my sheep are grazing does not last until the next morning as I had thought, I will rotate them already the evening before. If on the other hand, no sheep makes an attempt to enter the next cell when I open the fence and call them, I may leave them in the old cell for another half day.

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The stock density varies depending on season, length of grass, and amount of precipitation. As a rule of thumb, the more feedstuff there is per acre, the higher the stock density can and should be. Nowadays there is a lot of buzz around the so-called "high stock density grazing" or "mob grazing" which leads to more even distribution of manure but also to a lot of trampled and wasted grass. Proponents of it argue that nothing is wasted since trampled grass is building organic matter, retains moisture, and the "plant litter" feeds and protects microbes. Let's remember that organic matter is mostly built by the roots that die off by the same length that the animals graze the plants down. The trampled grass is mostly water, and while it will build some organic matter, it fades in comparison to the organic matter built by the root system.

Five to six weeks' pasture rest seems ideal.

Anecdotal evidence is being reported, stating that mob grazing combined with rest periods far exceeding the usual 35 days, and frequent rotating (once or twice a day), improves soils and fertility much faster, retains more amounts of water and moisture, and keeps temperatures cooler at the bottom of the sward than does "normal" rotational grazing. Clearly, the proponents of mob grazing are convinced about it. I'd like to see the empirical evidence. Until then I remain skeptical that mob grazing is superior to management-intensive rotational grazing or MiG. Meanwhile, I see the many disadvantages that in my opinion makes mob grazing inferior over management-intensive rotational grazing. While I list it, let's remember where I am coming from: I have good soils, I do practice strict rotational grazing, and I leave enough residue after grazing. That means my farm that I use for comparison is not the one of an overgrazed, set-stock grazing system with damaged soils as it is often cited when compared to mob grazing. I want to compare apples to apples.

1. The feedstuff usually decreases in value when it grows beyond five to six weeks. The fiber content is rising which makes it less palatable. Feed intake decreases. Daily gain of weight decreases. This is prohibitive when growing and finishing lambs.
2. A good amount of feedstuff that should be consumed by the livestock is trampled instead and therefore wasted; wasted in the sense that consumed feedstuff has more value than when it is trampled.
3. Valuable plants will decrease in numbers. White clover, which is valuable as feedstuff as well as a legume to fixate nitrogen from the air, is one of the first casualties.
4. The sward will lose density.
5. The return for the land will be less. A grazing rotation of five to six weeks means that the same cell is grazed about five to six times per year. A grazing rotation that demands 90 to 120 days' rest period in between grazing allows for only twice a year grazing.

As a point number six I would like to discuss the practicality of mob grazing. It requires by nature that the flock or herd needs to be rotated frequently, perhaps once or even twice a day. I will leave a dairy farm aside in this discussion since twice daily rotating is very practical if the cows are milked twice a day anyway. But let's picture a sheep farm with one person running it, like mine is. If you are the one running the farm but you also have a personal life, it will be extremely difficult to adhere to such a strict schedule of up to twice a day paddock shifts. I am married and have three children. There are school responsibilities such as school concerts or parent/teacher conferences. Then there are other chores at home such as feeding the broilers, taking care of the dogs, mowing the lawn, working in the garden, bringing

the trash to the dump, butchering poultry, or weed whacking around the house. There are seasonal things going on like blueberry, apple, raspberry picking, or harvesting potatoes and other vegetables. And then there is leisure time like hiking, swimming, mushroom picking, or bird watching. And yes, I admit it, sometimes I like to do nothing at all, just hang out or read a book. That's not exactly the stereotype people have about Germans, I know. I hope you get my drift by now. If not, I can provide a list two or three times as long that will tell you why I can't and why I don't want to adhere to a twice-a day paddock shift. Since I don't milk cows, I don't have to do a twice-a-day routine as a matter of choice.

Perhaps I am then in the wrong business, not committed enough to this one, the one of raising sheep on pasture.There are many business models for sheep farming, and I am sure just as many for managing a beef herd. The problem with some is that they are complicated or cumbersome. Whatever is complicated and cumbersome is not likely to be sustainable. What is not sustainable will not thrive for many years to come, making a profit for the person running the business. In addition, you may start disliking it. None of us is so committed to his or her farm that we want to do it every day. We all need time away from it. Even those who lecture us about new business models are not running their businesses every day. In fact, many of those spend more time traveling and lecturing people about their business than running it. In essence, I don't find a strict once-or twice-a-day pasture rotation practical for the many businesses that are run by just one person without any other employees.

In summary, I tried to list what has worked for me and what I observed, incorporating what has worked for others over the years on their farms. To me, the way I graze and manage the farm is not a dogma, not pseudo-religion, and perhaps not even a philosophy. I always like to choose a very pragmatic approach. What I have learned thus far is by far not all that can be learned, and therefore what I do is not static. New knowledge may lead to some changes. There are many other business models that work and have worked for others. Mine is just one of many. On the other hand, there are some new models that are propagated as better approaches but have yet to stand the test of time. They are often promoted for financial gain with a lot of intensity and volume, yet they just strike me as the flavor of the month that surely will fade. In talking to young farmers and start-up entrepreneurs I realized that it is difficult for many of them to distinguish between the former and the latter. My advice is this: try some things out, make your own experience including some mistakes, and stick with what worked. It is that simple.

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