SPECIAL SAMPLE EDITION

THE STOCKMAN GRASS FARMER

THE GRAZIER'S EDGE

The international publication for a healthy planet and people through profitable grass-based livestock production.

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Determining Water Demand for Irrigation

By Jim Gerrish

MAY, Idaho: The term transpiration describes the plant's metabolic use of water in the process of life.

Water leaves the soil profile by two other avenues. Leaching is the downward movement of water out of the rooting zone. Evaporation is the direct loss of water from the soil through vaporization. The combined water loss from the soil via plant metabolic transpiration and evaporative loss of water vapor from the soil surface is called evapotranspiration or simply ET. When we think about the ongoing water demand of our pasture, ET is what we are really thinking about.

Evapotranspiration can vary on a daily basis as it is driven by ambient temperature, soil temperature, relative humidity, wind speed, as well as the type of plant cover on the landscape. Where irrigation is common practice, most weather stations report the daily ET rate along with the expected ET rate for the next several days. Irrigation system design is tied closely to the historic ET rate for the farm or ranch location. The forecast ET rate is based on the expected ambient temperature, the expected relative humidity, and the expected wind speed.

As a general concept, the more bare ground that is exposed to direct sunlight, the higher the evaporation rate is going to be. Bare soil readily absorbs heat resulting in elevated temperature in the first several inches of the soil profile.

For bare ground in midsummer, the soil temperature a couple of inches below the surface can easily be 30-40 degrees F warmer than at the surface resulting in high evaporative water loss. For a pasture with a dense stand of growing plants and adequate litter cover, there is little heating occurring in the upper part of the soil profile. This is one of the reasons we put so much emphasis on the importance of creating and maintaining litter cover on the soil surface. A covered soil is a cooler soil and our objective is to minimize evaporative water loss so there is more water

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Look at your profit centers and crunch your numbers to decide if custom grazing is for you. See p. 7.

Benefits of Silvopasture in Grazing Operations

By Greg Judy

CLARK, Missouri: What are silvopasture benefits in grazing operations?

Most of our farms have some areas that are covered in non-productive overgrown brush and trees. We have focused on thinning the brush and inferior trees in these areas to allow the sunlight to enter the previously closed canopy. There are many advantages to performing this exercise.

1. You now have an area on your farm that can grow forage instead of non-productive brush and trees. If you bought the farm, pay taxes on it every year and get no return from it, that is not the way to keep your farm in the black every year. Applying some management to these non-productive brushy overgrown areas contributes to your bottom line every year.

2. Your animals now have an area to escape heat during the summer and shelter during the winter. Shade for animals can be a big deal in extreme summer temperatures especially when humidity reaches 90-100%. If animals are subjected to these conditions without any relief day after day, your daily animal performance suffers. Put yourself out there on a miserable hot muggy day and see how comfortable you are. With managed silvopasture, abundant shade gives the animals relief. I love walking by our animals on a terrible hot day and watching them relax in comfort on our silvopasture areas. Heals your soul knowing that your animals are happy, comfortable, and content.

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Meadow Talk

Impact: High or Low

By Joel Salatin

First, a caveat. In no way is any of this intended to denigrate any grazing practitioners or experts in our family. This is an honest tension in grass farming. I would even call it one of the biggest taboos in our grass family. If you practice good managed grazing per recommendations you've seen in these pages, you, like me, no doubt struggle with the balance between these competing interests.

Here is the tension: take half, leave half versus heavy disturbance.

Some gurus in our intensively managed grazing movement preach the take half, leave half message; others preach the high density pounding theme. A newbie embracing the management intensive mission receives mixed messages. Allan Savory and Holistic Management uses many pictures of heavy impact disturbance followed by magnificent multi-species regeneration.

Our grass family patriarch, Jim Gerrish, notes that leaves are the plant's solar collectors and you can't grow grass without leaving some. South African grazing guru

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Water Demand

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reserved in the soil for plant metabolism.

Wind regularity and speed are two other important factors driving ET. Because water vapor follows the gradient of moving from higher concentration to lower concentration, as the wind blows across landscape it is moving water vapor away, the gradient is continuously being increased. Evaporative water loss will almost always be higher on a windy day compared to a calm day.

Similarly, wind moving across a plant canopy is reducing the relative humidity immediately above the plant leaves so the gradient is encouraging even more rapid water movement out of the stomata into the atmosphere. This is why windbreaks used to be a common conservation practice on the Great Plains. Reducing wind speed and impact with windbreaks is an effective water conservation tool.

The type of plant community determines what the metabolic demand is going to be. We broadly classify forage plants as being either cool-season or warm-season plants. This classification is based on two different photosynthetic pathways. The first sugar produced in the photosynthetic pathway of cool-season plants consists of three carbon atoms along with hydrogen and oxygen. This is referred to as a C3 sugar. Warm-season plants first create a four-carbon or C4 sugar.

Irrigation is only effective to the point that water can enter the soil at a rate equal to or greater than the application rate.

Because warm-season (C4) plants developed in hotter environments where water was usually in shorter supply, they evolved to be more water-efficient plants compared to C3 species. It often takes a lower volume of water to produce one ton of forage in a C4 pasture compared to a C3 pasture.

It isn't always that clear cut as the C4 pasture may experience higher temperatures, be growing on a less mineral rich or lower organic matter soil, or be affected by several other factors. Most of the time in the transition zone where both C3 and C4 plants grow equally well, it will take less irrigation water to produce one ton of feed from the C4 pasture compared to the C3 pasture.

Once we understand what drives water demand in our pastures, we can start planning and managing those pastures to optimize water supply to try to meet those demands. Supply management begins with getting the water into the soil. These principles apply whether we are working with natural rainfall or with irrigation.

Infiltration is the movement of water from the soil surface into the soil profile. We want our soils to have good infiltration capacity. If there is poor infiltration, water pools on the soil surface or begins to move across the surface as runoff. What is the value of a two-inch rainfall event if the soil can only infiltrate a half-inch of water during the time period the rain is falling? If only half an inch enters the soil, that is the value of the two inch precipitation event. This is what we call effective precipitation.

The same principle applies to irrigation. Irrigation is only effective to the point that water can enter the soil at a rate equal to or greater than the application rate. We have two approaches to irrigation.

One is flood irrigation where we allow water to run across the surface of our field. Typically, a flood irrigated field is laid out in sections or "lands," which is the space between two ditches. Initially water infiltrates right where we start the water flow from the upper ditch. It will continue to infiltrate until the soil surface becomes saturated and no more water can enter the soil. Then it will flow downhill and infiltrate into the soil across another stretch until that surface becomes saturated and overland flow continues downhill.

At the top of the land, water has continued to infiltrate deeper into the profile until the entire profile is saturated. We end irrigation on this land when the lower end of the land has likewise become saturated and our flood water is flowing into the "tail" ditch. The duration of an irrigation event is determined by the time required to saturate the soil to a target depth.

There are several variations on

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Thank you for your interest in *The Stockman Grass Farmer Magazine!*

See pages 17-18 for our books!

We are the only monthly publication for professional graziers, those making a good living from pasture-based agriculture. If you are interested in more profit from your grassland produced in a healthy sustainable environment, that's what *The Stockman Grass Farmer* is all about.

More profit… from the grass up.

SGF is filled with real success stories each month that show increased profit does not come from buying more tractors, a bigger bull or more fertilizer. Increased profit comes primarily from knowledge of how to mesh your ruminants with the natural environment and building your ranch or farm from the grass up. Let the animals do what nature intended them to do!

A ranch built from the grass up is not only profitable but easy to operate, needing the barest minimum of machinery and labor. The quality of life produced by a correctly structured grassland farm is excellent. Want relief from the anxiety of dips in market prices? SGf can help give it. Many of our readers report production costs so low the market price barely matters.

A major editorial emphasis is the need to structure the grassland enterprise so that it makes money 10 years out of 10. Detailed marketing, budgets and financial analysis are unique and popular aspects of SGF.

Management-intensive grazing can increase your per acre production between 20 and 40 percent. An increased stocking rate is the most painless way to lower fixed costs. After the initial subdivision expense this increase is almost a pure profit for management and is why management-intensive grazing is becoming the skill that is separating the professional grazier from the rest.

We do not sell or give away our subscribers' names.

While per acre increase in stocking rate and gain are usually listed as the primary benefit of management-intensive grazing, a few others are:

1. A better return on total investment through a higher stocking rate, increased per head production and lower death losses from better animal observation.

2. A lower labor input due to a more even year long work load and no high peak periods due to massive haying or feeding.

3. A general conservation of the environment due to less over-grazing, better utilization of rainfall and fertilizer due to faster pasture cycling and the ability to preserve important preferred species of grass.

4. An increased sense of peace of mind on the part of the grazier. You can see your feed bank out ahead of you and by measuring the grass regrowth can make buying and selling decisions far in advance of the actual "crunch."

The Stockman Grass Farmer is published monthly, never less than 28 pages and usually between 36 and 40 pages. Wherever you live, you'll find articles of interest. SGF covers all of North America, including Canada and Mexico. Whatever your current species, if it grazes, you'll see it covered in *The Stockman Grass Farmer*.

SGF sponsors schools and seminars that allow you to personally meet and hear the ranchers and farmers who have successfully made the transition to for-profit grassland agriculture. We offer you the opportunity to network with other profit oriented graziers at our events and to read about them each month.

Get started grazing with a subscription to *The Stockman Grass Farmer Magazine*!

Water Demand

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flood irrigation. The simplest is what is termed "wild flood." With this strategy there is almost no human control over where water flows. Wild flood has the lowest water use efficiency in terms of acre-inches of water required to produce one ton of forage. As we add more human control over the flow of the water across our flood irrigated field, usually the water use efficiency improves. Each incremental increase in water use efficiency generally comes with increased infrastructure and labor cost.

With sprinkler irrigation, we apply water to the soil surface in a defined area for a restricted time period. The objective is not to saturate the soil but fill it to field capacity. The application rate is matched to the soil's infiltration capacity as best as we are able to do and the duration of the irrigation event is however long we expect it to take to put a target amount of water into the soil.

As a general guideline, we do not want to see surface movement of water in a sprinkler system. If there is routinely surface runoff on a sprinkler irrigated field, application rate is exceeding infiltration rate and water use efficiency is reduced.

To produce an equivalent amount of forage, flood irrigation is a high water demand but lower equipment cost system compared to sprinkler irrigation, which has lower water demand per ton of forage produced but higher equipment cost.

Understanding water demand as ongoing ET and how water use efficiency changes with the irrigation method are the first steps to developing and managing an effective pasture irrigation system. ■

Jim Gerrish is an independent grazing lands consultant providing service to farmers and ranchers on both private and public lands across the USA and internationally. He can be contacted through www.americangrazinglands.com. His books are available from the SGF Bookshelf page 17.

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Benefits of Silvopasture

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3. Animals have a wider range of plants to graze in silvopasture areas. With the sudden opening of the tree canopy to allow sunlight to enter the formerly closed canopy, green plants start to appear. You will in time have a beautiful savannah type setting with lush forages growing right up to the trunks of your remaining trees. There are many other plants that are in the soil bank that will start to appear. You will have to control the unwanted plants unless you have goats or hair sheep. They eat the sprouts about as fast as they come up with managed grazing techniques applied. Animal health improves with a variety of leaves offered to them to harvest. The deeper-rooted sprouts are mining minerals deep in the soil profile up to their leaves, which are harvested by animals. These deeply mined minerals that were once out of reach for the grass/legume plants are now available to these plants compliments of the animal manure that included the rich leaves. The diversity of plants in silvopastured areas is staggering.

4. You have increased your rest periods on your farm by adding more grazeable acres. Any time you can increase your grazeable acres on your farm without buying or renting more land, that is a 100% plus for your bottom line. When you need to expand your recovery time between grazings because of drought or dormant non-growing season, these areas will do that for you. We have found that in drought conditions that our silvopasture areas are much more green than open pastures exposed to full sun. You can walk through a silvopasture late in the morning and your boots are covered with moisture. The sun does not get a direct hit on those areas which allows the plants to stay hydrated longer each morning with a fresh wet sprinkling of dew.

5. Wildlife are drawn to these silvopasture areas because of the explosion of new plants. I am a wildlife geek, I admit it. Does my heart and soul good to see wild animals and birds using these new improved areas of silvopasture around our various farms. I am also an avid hunter who realizes the advantages of creating edge habitat with openings in the forest. New plants that come up in these areas are great food resources for wildlife. One possible income producing asset for your farm can be selling exclusive hunting rights. It is a great way to capture solar energy from your management of silvopasture. You are harvesting it through a deer or turkey instead of a domestic animal. Hunters pay huge sums of money to have the opportunity to harvest a trophy animal without having to deal with other possible hunters in the field.

6. The remaining quality trees will have less competition for sunlight, moisture and nutrients, which will allow them to grow faster for possible lumber sales. The other positive effect of thinning trees is that they produce a heavier mast crop in the fall. A white oak tree with 100' spacing will produce twice the number of acorns as a crowded tree. If you are looking at acorn finishing some pigs, this would be a huge payoff in the fall for your pig operation.

7. With summer heat, silvopasture areas have partial shade, which lowers the lignin value of your forages. The partial shade effect of letting the tree canopy act as a sunscreen allows the grass and legumes to grow with lower levels of lignin. Animals can digest plants much better with lower levels of lignin, which adds to their daily increased animal performance.

8. It dramatically improves the aesthetics of your previous brushy areas. We get many comments from our landowners on our leased farms on how their previously unmanaged brushy areas now look like a park setting. This is a big selling point we use when we approach a new prospective landowner about leasing their land. If you can develop a silvopasture area on your farm and bring the new landowner over to show it to them, that is a huge plus in your favor. You need to build the vision in their mind that their farm brushy areas could look like this in the future with your management. Just having spaced healthy trees with the junk un-productive trees removed is a beautiful setting.

9. It improves the future value of your property. Sometime in the

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future if you sell the property with these established silvopastured areas on them, the land value will be dramatically increased simply because it looks nice. With land prices skyrocketing lately it is nice to increase the productivity of your present land while knowing that the future value of your land is increasing at the same time.

In wrapping up, I would encourage you to scout around your own farm for these hidden treasures that you can use to implement your own silvopasture areas. Start out with a small sample trial area and have fun with it. Your animals will thank you the next time your summer temperatures get here, and they need a comfortable place to escape the heat. ■

Greg and Jan Judy graze South Poll beef cattle, parasite-resistant hair sheep, pastured hogs, and layers on 1620 acres in Clark, Missouri. The farm includes 10 leased farms and four owned. All animals are direct marketed as meat and seed stock sales. Contact Greg at gtjudy4099@gmail.com or visit greenpasturesfarm.net. His books are available from the SGF Bookshelf page 18

Stockers Can Add Value Without Breaking the Bank

By Eric Bailey

COLUMBIA, Missouri: Stocker cattle make up just 12 percent of the 4.25 million head currently part of the beef industry in Missouri. But these cattle could add as much as $78 million to Missouri's economy, according to the Missouri Beef Value-Added Study, a 2016 University of Missouri Extension report for the Missouri Agricultural and Small Business Development Authority.

MU Extension has a goal of doubling the economic impact of agriculture while sustaining the state's natural resources by the year 2030. Alternative uses of Missouri pasturelands like stocker cattle systems could go a long way towards helping accomplish this goal. Missourians can rely on stocker cattle to make idle land profitable. Stocker cattle systems put weight on cattle economically by using pasture forages during the early spring and fall as the main source of weight gain.

When looking at the beef industry in Missouri, we've got the cow-calf operations where we raise calves and then the majority of those are destined to become steaks someday.The stocker cattle industry acts as a niche transition between the cow-calf operation, the feedlots and the packers by putting weight on these calves as cheaply as we can.

This can be a game-changer for Missouri producers because less money would be invested in things like grain, hay, equipment and buying new land. Another benefit of stocker cattle is that the producer would not have to run cow-calf pairs year round. Farmers who have forage in the spring could run a set of stockers from early February to early July, and then they could look at running additional stocker cattle from October to the end of the year, depending on the quantity and quality of forage.

I am taking a 500-pound calf and I am hoping to deliver a 700-pound calf. I am shooting for 100 days. And I am hopeful that I will put about 200 pounds of weight on them in those hundred days with minimal feed supplements.

Producers interested in stocker cattle should visit with cow-calf producers in their area who want to add value to their farm by using available but idle land around them. Individuals can also contact their local MU Extension center with questions.

Many successful stocker operations begin as custom grazing for an owner on a leased farm. That's a low-cost of a way to get in the cattle business. ■

Eric Bailey is a Missouri University Extension state beef specialist at Southwest Research Center. He oversees virtual town halls on forage and livestock as well as stocker cattle research.

What is Custom Grazing?

By Steve Kenyon

BUSBY, Alberta: Custom grazing is an arrangement or a contract between two parties where a livestock owner pays grazing fees to another for the management of the animals on pasture.

The custom grazier would have control of the land, manage the animals and deal with water and fencing. The labor and equipment costs would be included in the grazing fees. In contrast, a cattle owner might just rent the land from a land owner and do all the work himself. This is just a land rental, not custom grazing. The difference is in who is doing the management.

The main part of my business here at Greener Pastures Ranching is custom grazing. I lease land from landowners and I graze other peoples' cattle in a regenerative manner. You might say that my business is just in harvesting sunlight. What I try to find is land all together in one area and graze them together as one pasture. These smaller pieces of land are owned by multiple landowners. This way I can offer custom grazing to larger herds. The labor and equipment costs divide out much better on a larger herd than it does on a small herd.

Are you a custom grazier? On paper, yes you should be. Now the question is, do you custom graze someone else's cattle or do you use your own? If we are running a farm business, the only way to know where you are making a profit is to break down your farm into profit centers. Grazing is just one profit center. On our own farms we need to use the market price for grazing that we charge out to ourselves.

Let's look at a simple example. We own the land. We graze the pasture and we own the cattle. We wear all three hats. That is three separate profit centers. Which part of this farm is making a profit? We need to break down each part separately in a gross margin to see. Is it the real estate part that is making a profit? Or maybe it is the grazing? Or is it the ownership of the cattle? Each profit center will have revenue and it will have some costs. Hopefully that is a big number minus a little number, then you will have a positive margin. The land will have rent as the revenue and will have it own costs. Part of the costs to the grazier is the land rent and the revenue comes from the cattle as grazing fees. The grazing fees are a cost to the cattle owner and he receives revenue when he sells the cattle. Simple right? Three profit centers. Three hats.

If that seems complicated, let me tell you my story. Many years ago, I owned a small herd of cattle. I owned one quarter of land but did not have enough animals to stock it. I found a neighbor who needed a little extra pasture so I topped up my pasture with some custom grazing. I was able to charge $1.25/pair/day.

I was struggling to keep the farm afloat, working off farm and not sure why it was not working. I decided to take the Ranching for Profit school. That was the first place that I learned how to do a gross margin. I came home and crunched some numbers. I found out that I was losing money on my cows and I was making money on my custom cattle. The reason that my cows were losing money was that I was paying too much for pasture, and it was my pasture on my land. What?

I had to account for the opportunity cost that I could be making at $1.25/hd/day grazing someone else's cattle, so I had to charge that to my cows. I soon realized that in my area under my conditions, it was more profitable to custom graze someone else's cattle than it was to own my own. And it had less risk. That's what I have done ever since. I began to grow my custom grazing business through land leases. Remember the three hats? I now have land owners that are just in real estate. I am the custom grazier and I have customers who just own the livestock. Three separate businesses.

We are in different areas. This may not work the same for you on your farm in your environment. Your margins will be different. It depends on the demand. It depends on the price. It depends on a lot of things. That's why it is so important to do your own numbers. Maybe custom grazing will not be profitable for your farm.

Will I always custom graze? Not necessarily. It depends on the market values within the different profit centers. If markets change, then maybe my profit centers will change. My cows at the time were not making a profit because the biggest cost was the pasture costs at $1.25/hd/day. The demand for pasture set the price at $1.25. What if the demand dropped and I could only get $0.80/hd/day? The margin of the grazing profit center would be far less and would most likely no longer be profitable. In turn, the pasture cost for the cattle owner now drops, which makes the cattle margin better. At this point, maybe I would be farther ahead to buy cattle again. Don't take my numbers to heart, I am just using random numbers to make the point. Which profit center works best for you in your environment? The margin will give you the answer.

I began to grow my custom grazing business through land leases.

There are many other reasons why you would or would not custom graze. The point is, we need to crunch our numbers in order to figure out where we are making a profit. It is your job to decide which profit centers work for you, on your farm in your environment. God bless. ■

Steve Kenyon ranches in Busby, Alberta, Canada, and can be reached at skenyon@greenerpastureranching.com. Www.greenerpasturesranching.com or on Facebook at Greener Pastures Ranching. His book The Calendar of the Year-Round Grazier *is available from the SGF Bookshelf page 17*

Develop your Grazing Skills ... From the Grass UP!

Cow-Calf Cost Control: Five Rules of Thumb

By Jordan Thomas, Ph.D.

COLUMBIA, Missouri: Are your cow costs out of control?

In my role as the state cow-calf extension specialist for the University of Missouri, I often refer to our annual cow-calf planning budgets in presentations. Usually, the point is not to refer to a particular line as a benchmark for how to do things, but rather to make a point about how broken typical production models for cow-calf operations really are. To me, the numbers are pretty bleak.

Do you know what your costs of production actually are? Have you tried to total them up and express them on a per cow basis? You might be spending more than you realize. I am going to talk through five rules of thumb in a series of articles of which this is the first. However, let me emphasize that these are just that: rules of thumb. This is not peer-reviewed research or be-all-end-all dogma about how to have a profitable operation. We don't generate a profit just by minimizing costs, but rather by creating a spread between revenue and costs.

Profitability involves both sides of the equation. I offer these rules of thumb for cost-control largely to help give you an internal compass: what kinds of management decisions drive costs down, and what kinds of management decisions drive costs up?

Some of these rules you have likely heard before, but here they are in no particular order:

1. Don't start from behind: Only retain replacement heifers or purchase replacement females that will calve at the very start of your calving season.

2. Buy every cow every year: Plan as though every cow will automatically be sold after weaning her calf, and only "buy her back" (i.e., continue to own her) if confirmed pregnant to calve early in the next calving season.

3. Pack the next calf a lunch: Manage timing of weaning and any supplementation decisions so that cows return to a Body Condition Score of at least 5 and ideally 6 by their next calving.

4. Calve in sync with "nature": Align the calving season with the forage growing season, so that high quantities of high-quality forage are available at low cost.

5. Let the cows do the harvesting: Maximize the number of days per year in which cows graze rather than being fed harvested feedstuffs; consider stored forages (i.e., hay) especially as a resource to be used only sparingly.

Let's start at the bottom of this list and work up: let the cows do the harvesting. If you consider yourself a grass farmer before you consider yourself a cattle producer, you have already taken one very critical step forward in how you think about the cost structure of your business. You have recognized that, regardless of the current state of the land under our boots, our business opportunities are dependent on optimizing its productivity. We are not just in the energy harvesting (grazier) business; we are in the energy capture (forage growth) business too. Capturing solar energy and storing it on the farm in the form of forage is critical, and our goal is to capture as much total energy as possible.

The next critical leap forward is in recognizing that the energy we capture in the form of forage does not have a fixed value year-round. A blade of grass in January is (usually) worth more than a blade of grass in June. Note that this is counterintuitive, however, since the forage will almost always be higher in its feed value in June.

Depending on the species and climate, standing forage may weather somewhat and deteriorate in its feed value through the winter, but its economic value may actually be greatest to the operation even when its feed value nutritionally is lowest. Read that sentence again. Read it again until you realize how weird it actually is. Don't chase the feed value of forage: chase the total economic value the forage can bring to the operation.

As a rule of thumb, let the cows do as much of the harvesting of forage as possible. Can you harvest high quality forages mechanically or produce exceptional quality harvested feeds? Of course. But there are costs embedded in the production of those feedstuffs: fuel, fertilizer, storage, feeding, manure management, equipment maintenance, depreciation, labor . Even just the opportunity cost from not investing those resources in other more profitable opportunities needs to be considered. As a general rule, maximize the number of days per year in which the cows are doing the harvesting rather than having the feed brought to them.

Along the same lines, it is often far cheaper to provide supplementation for cows grazing lower quality forage than it would be to feed a high-quality stored forage. Grass-focused producers with an aversion to concentrates or byproduct feeds can have a blind spot here. If you want to avoid those resources, good quality alfalfa can be an excellent supplementation (and to some degree substitution) strategy when cattle are grazing low quality pasture or range.

These kinds of strategies are alive and well in the West but seem to be forgotten in much of the Midwestern, Southern, and Eastern USA. The bottom line is that it is often more economical and sustainable to bring energy/protein onto the farm to supplement grazed forage than to incur all of the economic and ecological costs associated with diets based around feeding stored forages.

When in doubt, build a plan in which you let the cows do the harvesting. It may not always be the most profitable decision, but that's a good true North for your internal compass. And as always, run the numbers. ■

Jordan Thomas, Ph.D. is the University of Missouri Beef Cow-Calf Extension Specialist in Animal Sciences. Contact him at ThomasJor@missouri.edu, or 573-882-1804.

Just Answering Sheep Questions

By Abram Bowerman

SPICKARD, Missouri: One of the perks about writing for SGF is the responses I get to my articles.

I list a few questions here along with my answers. Of course, like anything, it depends on your situation.

Q: Two questions connected: How can you keep up with your work; do you have anyone helping you? Also, can you keep busy here with what you have going?

A: Obviously these two questions come from different people. I view my 400 ewes as employees. They do most of the work. The same goes for the cattle. With so much free help, at times I'm not very busy. This is when I read, write, attend grazing seminars or develop permaculture. It's all about time management. One can get a lot done with good planning.

Q: What fencing do you use for sheep?

A: If a farm I lease has a barbwire perimeter fence, I usually install a single 12.5 gauge high tensile wire offset 12" from the barbwire and 4"-16" off the ground. Interior subdivision is done with 12.5 gauge high tensile wire, three strands, which are all hot, placed at 12", 22", and 32". This works well for sheep, cows, and hogs.

For daily paddock shifts, I use "true blue" O'Brien polyposts spaced about every 30 feet, and polywire on Gallagher geared reels. I usually use two strands of polywire spaced at 10" and 17". If the grass is over two feet tall, I add a third polywire at 24" to keep the sheep from walking over the fence.

Q: What do you call late spring for lambing?

A: After last frost. This will vary by latitude and elevation, which is why I never give a date that the collective USA flock could successfully lamb on pasture.

Forage management with any species of grazer should be management intensive.

Waiting till frost free to begin lambing ensures warm weather and plenty of forage. Allowing your flock to begin grazing at least 30 days before lambing will do more for the growth and health of your lambs than anything else I can point you to!

Q: What breed of sheep should I buy?

A: It depends on your production limitations and your market outlets. If adaption is your concern, look for a sheep developed in an environment similar to your own. For example, a breed developed in an arid country will likely work well in Colorado or West Texas. For the fescue belt, try to find a breed or composite that has naturalized in that area for at least twenty years.

Q. Should I be using MiG, mob, or AMP grazing practices for my sheep?

A: All three: Forage management with any species of grazer should be management intensive. You definitely need to mob down some food for the soil life, and if your grazing isn't adaptive, you will either be hurting your livestock or degrading the soil, at least 50% of the time.

Q: What mineral program do you recommend?

A: Grass, weeds, and brush are the ultimate program. Minerals in the organic form (in plant and animal life) are approximately 90% bio available. Minerals in the inorganic form (like what you buy in a bag) are approximately 20% bio available. Keep in mind that if it is not available it may be mildly toxic. So give your stock every opportunity to mineralize themselves through their forage. That's my recommendation. Grass Farmer Supply sells an all-in-one sheep mineral you can use for supplementing forage deficiencies. I also like Sea-90 sea salt. It's been balanced by nature and has the same mineral profile as healthy blood. Sea-90 contains approximately four times as much mineral and trace elements as do the rock salts.

Q: What are Grass Master Hair Sheep?

A: Ten years ago, I discovered a small gene pool of Katahdins here in northeast Missouri, with a history of almost zero human interference since sometime before 1990. No one wanted them. The push at the time was for size and growth, and that was not what nature intended for this flock. However, like all "landraces" these Katahdins were uniform in reproduction capabilities and servivability, but were not very uniform in carcass quality and temperament. Recognizing the potential of this gene pool to fill in a gap in the lightweight fat lamb market, I've spent the last decade controlling matings and culling undesirable animals.

Today we can accurately predict what the lambs will look like at maturity. In 2019 we renamed this gene pool Grass Master, in recognition of their excellent performance in year round grazing systems. In 2019 we also made the decision to switch 100% over to Grass Master genetics. Grass Master rams are being used to improve others' flocks of Katahdins, St. Croix, and Dorpers. For more info on the breed refer to my article in SGF, February 2020. ■

Abram Bowerman is a full time grass farmer who promotes finding natural, low labor solutions for challenges facing shepherds. To contact, write him at 543 NE 90th St., Spickard, Missouri 64679.

Epigenetics: Key to Your Best Genetics Yet

Allen R Williams, Ph.D.

STARKVILLE, Mississippi: Let's start by defining Epigenetics.

It is the study of changes in organisms caused by modification of gene expression rather than alteration of the genetic code itself. Put more simply, epigenetics is the influence of environment on the degree of gene expression.

Genes occur in pairs and code for specific traits or combinations of traits in the body. Most genes can have significant variation in the degree to which they express themselves. This is very important to remember as we discuss the impact of epigenetics on animal performance. What factors can alter degree of gene expression? Primarily environmental factors such as diet or nutrition, climate, disease, toxins, deficiencies, and other environmental influences.

EPIGENETICS INFLUENCES EVERYTHING

We have to understand that epigenetics can influence any living organism that contains DNA. This includes our livestock, plants growing in our pastures that our livestock eat, insects, soil microbes, and humans. Just like with the Rule of Compounding, which states that there are no singular effects and these effects are never neutral (either positive or negative), epigenetics does not produce singular effects. They are compounding and cascading in nature and are either positive or negative, never neutral. Therefore, epigenetic changes can lead to very positive traits and resilience in our livestock (and in our soil microbes, our plants that the livestock rely on, and in us).

The benefit is that the entire ecosystem that we rely on as farmers and ranchers becomes far stronger, better able to perform, and significantly more resilient in the face of stressors. However, negative epigenetic changes can interfere with normal developmental processes, lead to decreased immunity and greater disease pressure, and lower resilience.

NEGATIVE EPIGENETIC TRIGGERS

When livestock are exposed to infectious agents, toxins, or nutritional deficiencies, there can be profound effects on either the exposed animals or their direct offspring. When detrimental environmental factors affect the embryonic germline during pregnancy the result can be transgenerational effects traced all the way to the F3 generation. These effects often occur due to direct environmental insult at critical periods in the development of an organism.

Pesticides and other chemicals in the environment can have significant transgenerational epigenetic effects on body systems such as the circulatory system, nervous system, endocrine system, and digestive system. This has been known to lead to cancers in animals. When these insults occur during critical periods in development, then negative consequences can result in humans, animal, insects, and plants. Epigenetics can even affect hybrid vigor.

So, what can cause epigenetic effects? Chemicals, animal supplements, and even reproductive technologies. Chemicals can create epigenetic effects either almost immediately, if at toxic levels in a single application, or over multiple application periods. Research results have shown that synthetic fertilizers, herbicides, pesticides, and fungicides can produce multigenerational epigenetic effects in plants, animals, humans, insects, and microorganisms.

Supplements that we supply to our livestock can also produce epigenetic effects. Supplementing simply because a salesperson tells you to do so can have impacts far beyond what you might imagine. If the supplementation alters the proper mineral:vitamin ratio it can create deficiencies or toxicities. These, in turn, produce negative epigenetic effects.

Research has also shown that reproductive technologies can alter the degree of gene expression. For example, cryopreservation (freezing) of sperm and embyros can damage DNA in sperm cells and decrease their motility, and can increase the risk of abnormalities in embryos. These abnormalities can be transgenerational and are often exacerbated in inbred (i.e., linebred) strains of livestock.

Epigenetic effects impact animal health, fertility, milk component production, calf performance and lifetime health, longevity, soundness, and endocrine system functioning. They can even decrease an animal's ability to exhibit resistance to internal and external parasites.

No doubt that the negative effects of epigenetics can create havoc among all living organisms and can help explain a number of the disorders that we experience. However, there is good news. There are also positive epigenetic effects. These positive epigenetic effects can also lead to positive transgenerational impacts in plants, animals, insects, microorganisms, and humans.

POSITIVE EPIGENETIC TRIGGERS

How can we influence positive epigenetic effects in our livestock, the soil microbial population, in the plants that our animals eat, and, ultimately, in us?

It is as simple as following the Six Principles of Soil Health and the Three Rules of Adaptive Stewardship (https://understandingag.com/adaptive-stewardship-what-does-it-really-mean/). No need to over-think things and make this complicated. The simple truth is, the way we manage our farms and ranches on a daily basis determines whether we will experience positive or negative epigenetic effects. The decisions we make matter. The health of our soil matters. Whether we build a resilient herd or flock that can fend for themselves, or we crutch them up and make them reliant on us matters.

First, know your context. What are your key goals and objectives? What is the history of land use on your farm or ranch? How degraded are your soils and your ecosystem (all are degraded to a certain extent)? What are the family and employee dynamics? How diverse are you in your production systems or enterprises? What are you socio-economic factors? Believe it or not, these do have an influence on epigenetics.

Second, are you keeping your soil covered or armored? Is it protected from extreme heat and cold and from excessive evaporation? Is it protected from wind and rain erosion? Are you providing enough residual plant material at all times to support a multiplicity of life at the soil surface? One of the best places to start in building soil health, ecosystem health and positive epigenetics is through keeping the soil covered at all times. This doesn't mean just two to four inches of plant growth. That is not near enough. If you are routinely grazing or mowing too close, you will create negative epigenetic effects.

Third, minimize soil disturbance. You may say that you do not till, disk, plow, so you are not disturbing your soil. However, if you apply synthetic fertilizers, or applied manures (stored manures), or graze or mow too close (or graze any one pasture too often), spray herbicides, fungicides or insecticides, you are creating soil disturbance. Be careful

and thoughtful about what you do and what you apply.

Fourth, keep living roots in the soil all year long. This is as important as any of the other principles. Living roots support a thriving soil microbial population, mineral cycling, water cycling, and healthy ecosystems. Keeping enough plant residual at all times to keep living roots that have enough depth and mass is important. More root mass and depth support more microbes. More microbes support more plant nutrition. More plant nutrition supports healthier and better fed livestock and that supports positive epigenetics.

Fifth, increase diversity. This includes diversity in everything out there. More plant species diversity. More soil microbe diversity. More insect and bird species diversity. More livestock species diversity. More diversity has a profoundly positive impact on epigenetics. Our propensity in agriculture to create monocultures and low diversity pastures and cropping systems has led to significantly negative epigenetics.

Sixth, integrate livestock. Most of you reading this article are reading it because you have livestock. However, are we managing those livestock appropriately for positive epigenetics? The best influencer of positive epigenetics in livestock through management is the adoption of adaptive grazing practices. This has been time tested and works extremely well if you implement properly. If you do not fully understand adaptive grazing, then take time to educate yourself. You cannot implement what you do not know.

RESULTS OF POSITIVE EPIGENETICS

By managing your farm or ranch to influence positive epigenetics, you create livestock that have tremendous vigor, immunity, proper phenotype, and resilience.

Why are these cattle still performing when other cattle in the region have long since failed? They have strong epigenetics that allow them to survive and thrive when others have long since failed. Gabe Brown has worked for many years on building positive epigenetics and has closely followed the Six Principles and the Three Rules.

SUMMARY

If you want to build very positive epigenetics on your farm or ranch, it is as simple as implementing the principles and practices that have been proven to build superior epigenetics. You are not going to build that by buying the "right" bull or heifers. You are not going to do it through artificial insemination or embryo transfer. You are not going to do it through feeding some "silver bullet" supplement or some secret soil microbial treatment.

There is only one way to accomplish the building of superior epigenetics. Learn, implement, and practice routinely the Six Principles and the Three Rules. ■

Allen Williams is president of Grass Fed Insights, LLC and one of the founding partners in Soil Health Consulting, LLC, Understanding Ag, LLC, and a partner in Joyce Farms, Inc. He is also a 6th generation family farmer. He can be reached at allenwilliams@joyce-farms.com or 662-312-6826.

Stecklers Consider Multi-species Grazing One of Their Best Tools

By Becky Gillette

ST. HENRY, Indiana: In an effort to provide the health benefits of grassfed milk to more people, Steckler Grassfed Farms embarked on what Jerry Steckler describes as "the adventure of creating artisan cheeses that tantalize the palate and enrich our bodies with Omega 3, CLA and a host of other vital nutrients not found in conventionally produced cheeses."

The artisan cheeses are produced from 100 percent grassfed, raw milk, fresh from their Dutch Belted dairy herd. The cheese is aged for a minimum of 60 days to develop its delicious flavor and smooth, creamy texture.

Their most popular cheese is their Bright Meadow Cheddar, which Jerry said is aged two-plus years with a wide flavor profile complete with hints of citrus and a wonderful nuttiness. He likes that it pairs great with so many things like wine, beer, fruits and salads.

Their third eldest daughter, Shelly Hedinger, came on board in 2011 as assistant cheese maker and took over the master cheese maker position in 2014 along with the lead for cutting and packaging. While she has since moved on to concentrate on raising her family, the farm still follows the requirements of a master cheese maker which include a keen eye to the changes in the milk as they move through the seasons. Extreme cleanliness, as well as attention to detail are two critical factors that maintain the flavor and quality that people enjoy in their cheeses.

Other products the farm offers include raw grassfed pet milk, and grassfed beef, lamb, whey-fed pork, turkeys, broilers and eggs. The laying hens cover a large swath of the pastures over the course of the season, which not only produces pastured eggs, but disrupts parasite cycles that could impact the other animals. No antibiotics, hormones, steroids, or other foreign additives are given to any of the animals.

They consider multi-species grazing one of their best tools. "We've had sheep here now for nearly 30 years and have never treated them with any de-wormer," Jerry said. "Likewise, we have no need to deworm the cattle."

One thing he wishes he'd done better was getting younger folks involved earlier and sharing the responsibilities.

There are a number of challenges, but most can be overcome. "The one holding us back is probably running enough scale to be cost effective," Jerry said. "It is also important to balance production to sales."

Their perennial pastures are a mix of orchard and bluegrass, timothy, red top and the ever-present fescue. Additionally, all pastures have 30-50 percent red and white clover. When fescue becomes too dominant, they will work up the field, plant it with barley, and then back with the before mentioned grasses and alfalfa, which dies out over the next three to four years as clovers re-populate. They don't use annuals.

One bit of wisdom that he suggests all grass farmers follow is don't be afraid to "waste" some grass. "The livestock in the soil need to eat, too," he said. "The better we treat them, the more they reward us."

In 1986, the Steckler family moved to St. Henry, the same community where Jerry was born and raised with 16 siblings. Jerry initially adopted the mindset of many other American farmers that big agriculture was the way to go. They began planting and harvesting crops to feed his growing herd of Holsteins. "However, we soon realized that the labor-intensive work of conventional farming was quickly wearing down the family and the methods of conventional mass farming weren't fitting into our desire

to work with God's design in harmony with nature," Jerry said. "The answer began to appear through a man named Alan Henning, a pioneer grazer from New Zealand who taught us the basic concepts of rotational grazing. Hence, in 1994, Steckler Grassfed Farms was born."

At that point, they reinvented the way they operate and haven't looked back since. They moved from confinement feeding to intensive rotational grazing of their dairy herd, which means they are moved twice daily to a new fresh salad bar of grasses and legumes. "As the years progressed, chemicals were omitted and other species were added connecting us with nature as originally intended," Jerry said. "We continue to learn through other individuals such as Joel Salatin, as well as nature itself. The good Lord guides and directs our footsteps along the way."

They had Holsteins as they transitioned from confinement to grazing and then crossbred them to Dutch Belteds as they cut back on grain feeding. The Holsteins weeded themselves out over time as they require the extra energy from grains.

"So, Dutch Belted works for us," he said. "We started out using AI for several years and are now a closed herd, saving bulls from our best grazing 'type' cows. We calve mid-March thru mid-May. I keep reserve hay on hand for the short term, but am quick to reduce herd numbers as the season goes on, if needed. In 2012 we sold the lower end of the cow herd and all but four of the sheep flock. Sheep rebound quickly."

The Stecklers rotationally graze a Dutch Belted closed herd.

Marketing is multi-faceted. They distribute through Piazza Produce, based in Indianapolis, and sell wholesale to local stores/restaurants. They sell retail in their on-farm and online store. They are also a vendor on Market Wagon, an online market, and have some drop point customers, as well as some CSA customers. Customer knowledge about grassfed runs the gamut, but most have some knowledge of the benefits.

Jerry absolutely loves their customers. Young families are some of his favorite customers because he feels like he can have a very positive impact on their lives. "That's the best part of this for me," he commented. "I like educating the new folks on the supreme wisdom of God's design and how the more closely we follow His design, the more completely the food nourishes our bodies. Our regular customers are so appreciative and are my cheering squad. They keep me motivated.

"It's so gratifying to be able to work in this piece of God's garden and watch the soil improve under grazing management, seeing the rain water build up in the pastures, giving it time to drink into the soil, and the runoff is so clear. That's the payoff."

He said while he's made plenty of mistakes over the years, those have been smoothed over by the Grand Design. One thing he wishes he'd done better was getting younger folks involved earlier and sharing the responsibilities.

One of their handiest tools are the speed reels for the polywire cross fences coupled with the step-in posts. The Speedrite speed reels are made by Datamars from Auckland, New Zealand. The PLASSON Livestock quick-coupler water hook-

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Getting Started With a Grazing System - Management

By Victor Shelton

INDIANAPOLIS, Indiana: Why manage pasture? Why rotate at all? It is mainly to be able to take some control of the forages. Smaller blocks of forages are easier to maintain in vegetative form than larger blocks. It also helps allow for adequate rest between grazing periods for the forages.

If you have only one paddock, animals are free to graze and roam wherever they like and graze as long as they like. Having more than one paddock allows time for the forages to rest and regrow before being grazed again. This rest is needed to allow the plants to recover. This lets the plants collect energy from the sun, grow new roots and more forage. Maintaining root reserves is important for maintaining vigor and health of the plants, especially during droughty periods. Providing rest also supports less grazing tolerant species stay more productive.

Managing your forages helps you provide higher quality and quantity of feed resulting in improved animal performance opposed to if the same acreage was continuously grazed. Why? Because you are keeping it vegetative as well as higher in crude protein, energy and essential nutrients.

We talk about take half and leave half. This is still a pretty good rule. We want to move the livestock from the paddock they are in before they eat it to the ground. The plants need that reserve above ground to collect sunlight and continue to grow. Solar energy is converted into grazable forage. You might even go as far as to say we are solar energy farmers. So, we are maintaining the plants in a "growing" state and, at the same time, when the cows are turned into the next paddock there is ample supply of forage for them to graze and intake is not restricted.

Animal health and profitability go hand in hand. Take care of the livestock with good pasture management and the animals will take care of you. One of the biggest advantages of managed grazing is the ability to extend the grazing season with less labor. I believe in letting the animal do as much work for themselves as possible. Why should I carry all that feed to them? They have four legs and are certainly mobile. They can often go some places that I don't even want to travel, especially on foot and that is impossible with some equipment. But more importantly, if they are working, then most likely you are not. If they are

Stecklers

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up is another device that makes the day run more smoothly. Their local source is Grazing Systems Supply.

It is also important to have good book-keeping. "My eldest daughter, Charmian Klem, has an excellent talent for keeping our books in order, certifications up to date and coordinating special projects," Steckler said. "She has been a valued team member since 2012. My other children and their spouses also help out when needed. Now the grandkids are getting old enough to help out, too. My wife, Marsha, was also instrumental in holding everything together until she passed in 2015."

Jerry is looking toward retirement and slowing down a bit from the current all-consuming schedule. He is working on a plan for continuance of the operation. None of the children so far are interested in continuing to milk cows. So, he is looking for someone who might be interesting in taking over the dairy.

For more information, see the website https://www.stecklergrassfedfarms.com/, send an email to stecklergf@gmail.com or call 812-686-8496. ■

Becky Gillette is a staff writer based in Eureka Springs, Arkansas.

grazing, you are not feeding, just supervising.

I like to tell people that if a wheel is turning, then they are spending money. So, the less a tire has to turn the better. Most people see more increased profitability as they extend the grazing season and start cutting back on the amount of hay they are feeding. All said, quality, well-managed pasture helps maintain healthy, satisfied cows that know what their job is and enjoy doing it.

Nutritionally, these cows need protein, energy, minerals, vitamins and water. Ruminants are able to break down forages in their rumen, which is their largest stomach. The process is mainly fermentation. This enables them to break down plant fibers and extract needed nutrients. Part of the management is making sure we are providing a healthy environment for the microbes. These microbes (bacteria, fungi and protozoans) need a stable stomach acid level, a stable carbon-to-nitrogen ratio and the required minerals and vitamins in the correct amounts. It sounds complicated, but most mixed grass/legume pastures kept vegetative with moderate fertility will provide just the right combination of nutrients.

Keep the forage vegetative! Growing forage is usually higher in protein and energy. If you let it mature completely, it will be low in both protein and energy. If it is endophyte infected tall fescue, then it may also be much higher in the toxic alkaloids. Generally, with most cool-season grasses/legumes as the forage matures, energy is usually the most limiting element. Warm-season grasses are just the opposite. They tend to lose more crude protein as they mature and therefore crude protein tends to be the most limiting factor. Minerals tend to be more available when less mature. As I have stated before, take soil tests, fertilize accordingly and let the pasture pay you the dividends that it can.

Keep your eye on the forage, manage the forage, and, if you do, the forage will take care of the livestock.

What really is the absolute management bottom line? It's cover and stop grazing height. You knew I was going to say that. Well, it's true. It is pretty much that simple. Keep your eye on the forage, manage the forage, and, if you do, the forage will take care of the livestock.

Maintaining cover and leaving adequate residual after a grazing event is one of the most important management tasks and it can certainly have a major impact on the bottom line.

As a quick refresher, stop grazing height is the shortest forage left, not the tallest! For most cool-season forages, that is four inches. So, have the shortest be four inches and there will be at least a third of the forages of at least six inches or more. Maintain soil cover. You don't want to see any bare ground and you want a good dense stand of forage and residue to keep the soil cool and reduce evaporation.

Keep livestock numbers flexible. Sadly, too many grazing livestock, especially during low production periods of the year, is the most damaging to the system and the bottom line. It's not about maximizing a grazing event but maximizing a grazing season!

Keep on grazing. ■

Victor Shelton is an NRCS State Grazing Specialist in Indianapolis, Indiana.

Factors That Affect the Flavor of 100% Grassfed Beef

By Will Winter, DVM

ALBANY, Minnesota: Many variables affect beef quality.

The three most important differences are flavor, tenderness and overall nutrient density. Beef color is also important and relates to all three of these qualities. Realize that flavor and tenderness are inversely proportional; tender meat, comes from less-used muscles like tenderloin, or very young animals, like veal.

Hard working muscles from mature animals have the most flavor. The less expensive cuts, like roasts from shoulder and rump, contain more flavor and even more nutrition, but at the cost of some tenderness. Proper cooking techniques can create both tenderness and flavor. Almost universally, slightly older animals have more and better "beef" flavor than young ones.

Different breeds of cattle vary not only in tenderness qualities but also in flavor profiles. The same is true of different livestock and farm management techniques as well as the geographical location of the farm. These variables are issues that we study constantly in our effort to achieve the best possible results. Raising good tasting, healthy meat is almost an art form.

In addition, beef eaters vary in their flavor preferences. One hundred percent grassfed beef producers must realize that we have an uphill battle in marketing because most meat-eaters have a decades-long history of what they deem tasty. Human taste buds begin to go numb after many years of eating commodity, status-quo, relatively-flavorless meat. When that happens people jack up the flavor factor with too much salt, steak sauces, and fake-flavor chemicals to get any sensation whatsoever.

Unfortunately, substantial variation exists within the "100 percent grassfed gourmet beef" description.

As it turns out, the number one selection criteria for the grassfed beef movement is NATURAL FLAVOR. Buyers identify flavor as the most common reason for their purchase. Flavor beats nutrition, environment, and animal welfare issues.

Unfortunately, substantial variation exists within the "100 percent grassfed gourmet beef" description. It can and certainly should be great tasting; however, in some rare cases it can be nearly inedible. Most people would call that off-flavor "gamey" or at least unpleasant. Much of it is way too tough as well.

Regional differences exist too. I believe that the plants eaten by, say, Texas cattle might make the beef from those ranches less desirable to my Minnesota friends and customers since up here it seems people are afraid of flavor. In fact, many Texas ranchers don't even castrate their bull calves and their customers appreciate the extra dose of flavor. We wouldn't be able to get away with it here.

Cattle raised and fattened on High Plains mountain pastures also have a higher consumption of such plants as sage, piñon even pine, whereas beef from Southern cattle can manifest flavors found in Bermuda and Bahia grasses. Actually it's all delicious in general but people do acquire tastes relative to their region.

Various forages create different flavor notes in the meat from cattle that eat those plants. Dietary influences on meat take far longer than milk, which responds within a day. Wood-fired grills can easily mask these subtle flavor differences imbedded primarily in the fat.

Closely following flavor variation is what, for lack of a better term could be called "nutrient density." Increased levels of essential nutrients are why a 10-12 ounce grassfed steak often has the satiation equivalency of a 24-32 ounce feedlot steak.

Grassfed meat, when raised properly, will have more vitamins, more minerals and more essential nutrients than any feedlot meat could possibly contain. In fact, people with a refined sense of taste and smell can even pick out flavor notes from a finishing diet of corn and soybeans, and it's definitely less

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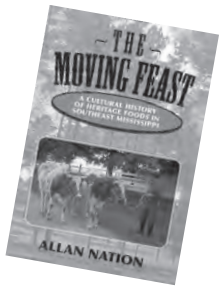
The Moving Feast

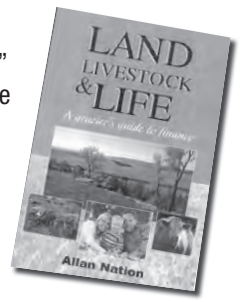


Describes how the agricultural practices, climate, land and human culture influenced what our ancestors ate. *Stockman Grass Farmer* readers who were intrigued by the two-part food history from Al's Obs will find *The Moving Feast* even more insightful and entertaining. People everywhere once fed themselves without petroleum inputs by working with what God gave them in their locality. We can do that again." **140 pages. Softcover. $20 1 lb.**

Paddock Shift, Changing Views On Grassland Farming

is a collection of **Allan Nation's monthly Observations**. These essays were selected for their timelessness and are as relevant today as they were when first written. Condensed and revised, PADDOCK SHIFT is now available in two formats. We can mail you a copy or email you a PDF. **171 pages. Softcover. 1 lb. $20.00 printed copy or PDF.**

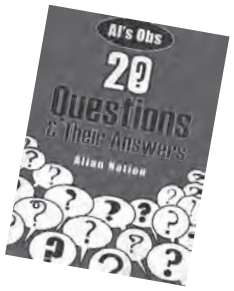
Land, Livestock & Life



A grazier's guide to finance is presented as an incredibly complex "whole" made up of a lot of separate businesses that you must be good at to make a profit… the land, the livestock and the lifestyle. For more insight and analysis into land-based financial issues such as protecting yourself from falling real estate prices without selling your ranch, order *Land, Livestock and Life,* A grazier's guide to finance, by Allan Nation.

224 pages. $25.00. 1 lb.

20 Questions



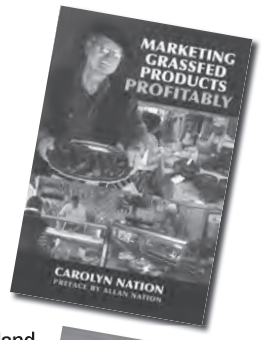
fills readers' requests for more Obs. Each chapter can help teach grass farmers how to become more profitable. Allan applies business ideas to the production of pasture based livestock. Topics range from the practical to the philosophical and were selected for their timeless nature.

213 pages. Softcover. $22.00. 1 lb.

The CALENDAR of the YEAR-ROUND GRAZIER

Steve Kenyon shows how all successful agricultural businesses start with good management, and good communication within a business is essential for success. **70 pages, 1/2 lb. , $18.00**

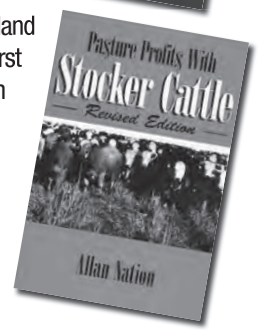
Marketing Grassfed Products Profitably



By Carolyn Nation. You know how to produce grassfed products, now learn to maximize profits using marketing strategies such as branding your products, creating value-added products, where to sell, database marketing and organizing a buying club.

363 pages. $28.50. 1 1/2 lbs.

Pasture Profits with Stocker Cattle

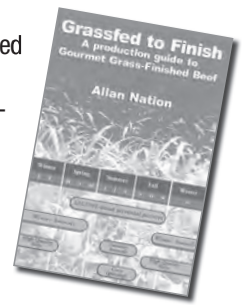


By Allan Nation. Allan shows how to profit without making hay, buying land or equipment, and without retained ownership of animals. This is the first book ever written on stocker cattle, profiling Mississippi grazier, Gordon Hazard, who has been able to accumulate and stock an 1800-head ranch solely from retained stocker profits with no bank leverage.

224 pages. $24.95. 1 lb.

Audio version, abridged, 6 CDs $40.00, postage included.

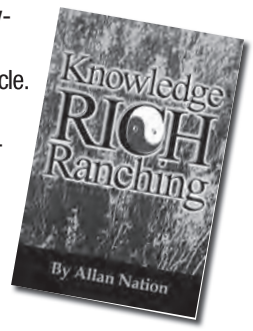
Grassfed to Finish



Allan Nation debunks the myths and misconceptions about grass-finished beef and shows that grain is totally unnecessary for a gourmet "killer" product. From conception to post harvest, *Grassfed to Finish* shows producers how to create a truly tender, flavorful, gourmet-quality product every time, year around.

S299 pages. $33.00. 1 lb.

Knowledge Rich Ranching



How real ranchers financially succeed in the ranching business is covered by Allan Nation.

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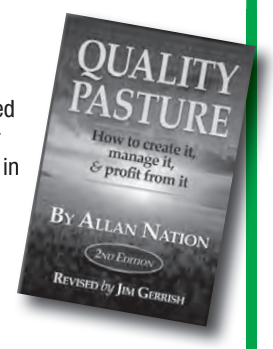
By Allan Nation
Revised by Jim Gerrish



This 2nd Edition revised by Jim Gerrish includes some of Allan's original chapters almost intact. Others have been edited, updated or newly written by Jim to cover current knowledge and thinking in the pasture-based community.

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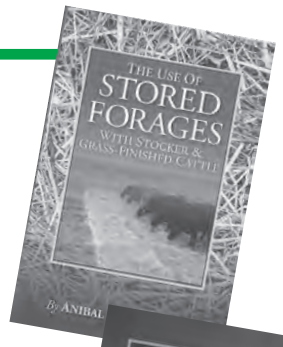

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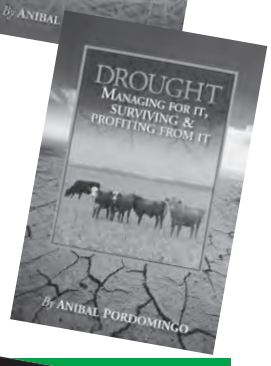

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Forage quantity declines in a drought but forage quality may actually improve as Anibal Podomingo shows in this books how it is possible to successfully continue grass-finishing of beef animals in a drought as well as keep your cash flow coming. Learn what to plant to survive a drought and using legumes as a key component of pasture.

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Based on his personal experience, Greg Judy shows how to make a living from the land without owning it. He describes his successes as well as his mistakes to help others on the road to profit. By leasing land and cattle he went from 40 stockers to over 1100 head and was able to pay off his farm and home loan within three years.

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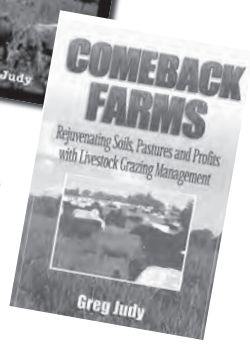

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Allan Nation left behind an unfinished manuscript about family business. It was the kind of book he said he wished he had when he began his business career. In his world travels he captured the essence of family businesses with a special focus on family farms.

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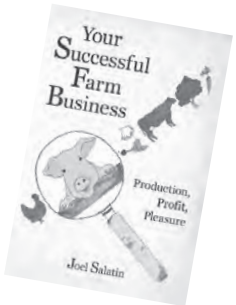
By Joel Salatin

Your Successful Farm Business

Production, Profit, Pleasure



Joel offers fresh views into his beliefs and farming methods so that anyone who is determined and passionate about their dream can achieve the same kind of success they see at Polyface today. He describes the theme of this book to "articulate the common threads of success for beginning farmers and what made a farmer thrive." If you want to improve what you are already doing or itching to get started, this book is for you!

336 pages, 1 1/2 lbs. $30.00

Salad Bar Beef

A fundamentally fresh way to look at the symbiosis between farmer, field and cow, this book is now a classic in the pasture-based livestock movement. Joel's production model describes herd effect, mobbing, moving, field design, water, manure, soil fertility and even pigaerating, **368 pages. $30.00. 1 lb.**

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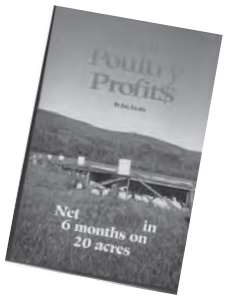
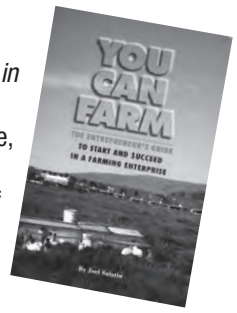


A hard core how-to book, this includes all the stories and tips from brooding to marketing. Centered around meat chickens it includes a section on layers and turkeys. Many would say this book started the American pastured poultry movement.

398 pages. $30.00. 1 1/2 lbs.

This book is a great introduction for Joel's ***Your Successful Farm Business!***

You Can Farm



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The Grass Farmer Network

GRAZING ALFALFA

Dear SGF:

I am now in my second year of rotationally grazing sheep and cattle in southern Michigan. I sowed a four-way mix of fescue, timothy, perennial rye and alfalfa. However, each July after grazing and then mowing a section of our pasture, when the forage returns mid-summer, it presents itself as a nearly 100% alfalfa stand. I have been told by several experienced graziers to make sure to feed the cows hay in the mornings prior to moving them to fresh alfalfa, and to be especially cautious grazing on mornings with heavy dew.

Having this much alfalfa all at once presents several grazing challenges, not the least of which is my desire to "Kick the Hay Habit" instead of feeding hay in a season when I have, literally, tons of forage available. I'd appreciate your thoughts on this.

Todd Butler
Onsted, Michigan

Jim Gerrish replied: My first guideline for managing grass-alfalfa mixtures used primarily for grazing is to always base your management on the needs of the grasses, not the alfalfa. Grazing or clipping short (i.e. less than 4") will favor increasing the amount of alfalfa. Leaving residual >5-6" will favor grass over alfalfa.

Alfalfa has a slightly higher optimum growing temperature than any of the grasses you listed so short grazing or clipping during the summer months favors the alfalfa even more.

Yes, feeding dry mid-quality grass hay is a good tool for minimizing bloat risk when grazing high percentage alfalfa fields. I would have it available free-choice to livestock at all times while they are on the alfalfa fields. Delaying grazing of alfalfa to mid-bloom generally minimizes bloat risk but you do give up quite a bit of nutrient value of the alfalfa by doing so.

For new pasture seedings, we strongly encourage the use of birdsfoot trefoil and various clovers rather than alfalfa.

ELECTRIC NETTING

Dear SGF:

I'm looking for tips for moving and planning electric netting (I have six 165 ft long pieces) for 18 sheep on a six acre field with permanent perimeter fence. Also, the best way to get power to the fence. Is single strand polywire ok or do I need to run 300 ft of insulated wire?

Sean Bonsall
Facebook post

Joel replied: Electric netting set-up is part skills and part art. You'll get good at it with some practice. We always lay the pieces out flat on the ground first to rough out the circle and then go back and set it all up. Here at Polyface, we use a Premier energizer on our netting set-ups since we don't have a permanent grid. You can run a feed wire over from a hot perimeter wire if you have a permanent grid; if the polywire doesn't give you the oomph you need, then go to a heavier feed.

INOCULATING SEED

Dear SGF:

I am wondering whether anyone has experience with ways to reduce the hand labor involved in inoculating seed. I have a fifteen acre field that I plant in May with a warm-season mix, and again in fall with a cool-season mix. Mixing inoculant into 750 pounds of seed is time consuming and involves a lot of heavy lifting. I'd love to hear what other growers are doing to reduce this effort at planting time.

Lee Good
Harrisonburg, Virginia

Joel replied: The most common poor-boy mixer I've seen for this is a home-scale cement mixer; it turns slow and has leverage for dumping ease.

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Flavor

Continued from p. 16

interesting than the flavor essences that derive from good green grasses. A good BBQ sauce can even cover up feedlot beef off-flavors derived from manure and urine exposure.

I've addressed minerals in the past to ensure healthy livestock, but these also develop a full complement of micro-nutrients in the meat. Deficient meat leaves the eater full but not nourished. No doubt this is one of the leading causes of obesity, which is actually a form of malnourishment. Stuffed but starving inside.

I encourage producers to add pure Apple Cider Vinegar (ACV) to either the water or livestock feed. I've always advocated this addition to enhance vitality, immunity and health. But now I've learned that livestock that get a little daily dose of ACV digest their forages better, up to 20-25% better, which means just the savings in feed costs alone will more than pay for the cost of the ACV. In addition, the ACV leads to a cleaner taste of the meat, and even brings out more of the desirable flavors. Old textbooks from a century ago tout the value of using ACV during the last stages of finishing.

Adding garlic to the feed is a way to treat for parasites, both external and internal, improves liver health and immunity, and adds flavor to the meat. Again, another win-win. Similar herbs that are used for herd health reasons, such as cinnamon, cayenne, and ginger, enhance natural meat flavors and, since they are liver cleansing herbs, bring out more natural, desirable flavors.

One of the important jobs of the liver and kidneys is to remove impurities, waste and toxins. Animals raised outdoors eating the forages they are designed to eat have a clean and powerful liver. Grassfed breeding animals live and produce offspring many years longer, and their meat tastes better at any stage of life.

Nutritionally, liver is almost a superfood. But too many people don't eat it because it tastes bad. This aversion is a result of sick livers from feedlot animals, poorly cooked. Liver from healthy grassfed animals is completely different. For proper cooking, soak liver in milk for a bit before cooking, slice it extremely thin (1/4 inch), roll it in flour and cook it gently in hot lard or bacon grease. Caramelized onions take it to the next level.

Cultivating a taste for natural foods that don't need to be doused with MSG, or other flavor-enhancing sauces is a great thing. If any meat is over-cooked, e.g. "well-done," it's not going to have much flavor that survived the assault. All these things "dumb down" your natural instincts and body wisdom. Gently cooked highly flavored meat reconnects our taste buds as well as our ability to smell so that these valuable sensory organs will once again be able to recognize fresh, safe, unadulterated and nutritious foods.

Once this level of flavor appreciation and understanding has been acquired, or reacquired, virtually no one goes back to commodity product. ■

Will Winter is a veterinarian, holistic herd health consultant and livestock nutritionist as well as traveling teacher focusing on sustainable livestock production and traditional nutrition. Reach him at willwinterdvm@gmail.com or practicallivestocksolutions.com or 612-756-1232

Network

Continued from p. 19

NUTRIENT APPLICATION

Dear SGF:

We have about 85 acres of grass that we run 365 cow pairs and yearlings on. Soil tests shows a need for calcium, sulfur and boron. Would it be better to apply these nutrients in a foliar spray or a dry pelleted form? If foliar application would be best, do you have any suggestions on which supplier to purchase from?

Thank you for your publication. We have a received a lot of great information over the years.

Mike and Mary Wilbers
Bonnots Mill, Missouri

Joel replied: If your 85 acres are indeed carrying 365 cow pairs, I can't imagine that fertility is lacking. As to application types, each expert has a preferred recipe and we recommend you connect with agronomists who share your values for that answer.

BASIS OF SOUND GENETICS

Dear SGF:

How much does DNA parentage tests cost in the USA?

Why is longevity so important to long-term profitability?

Also, regarding 10% legumes, 40% forbs, 50% grass species in native prairie, is this by mass or number of plants?

Dominic Elsworth
From the Digital Department

Allen Williams replied: Test costs depend on the company or lab that you use, but costs typically range from about $14 to $30 per animal. Labs within the USA that offer this service include Identigene, Neogen, VHL Genetics, DNA Solutions, and UC Davis.

Longevity is the number one factor determining net profitability in a breeding herd. In beef cattle, the average cow does not break even on her investment until she has her 5th calf. However, the average beef cow in the USA only has 4.2 calves before they are culled for any reason (includes heifers failing to breed for the first time, failing to rebreed, bad udders, feet and leg problems, etc.). Therefore, the average cow never makes any money for her owner. If a cow can have 10, 12, 15 or more calves in her lifetime before being culled, she is making an excellent return on investment after the 5th calf. The more cows I have that can produce 10+ calves in their lifetime, the more net profit I will realize.

We typically assess pasture species by total biomass of plants growing in the prairie. What we have to recognize is that in true native systems, the legume component was generally less than 15% and often below 10%. There are significant numbers of free-living nitrogen fixing microbes in the soil that do a great job of fixing N without association with legumes. This was common in all our native grasslands. Many "improved" grasses no longer have this association and cannot fix N without the legumes in the mix. Forbs are very important due to their high phytonutrient content, medicinal factors and anti-parasitic components. The absence of forbs will result in livestock that experience more health issues and greater parasite load.

GRAZING IN DROUGHT

Dear SGF:

I run a cattle ranch in Southern Oregon. Drought limited my irrigation with a late May start and an August 1 end. I rotationally graze, have halved the herd to 24 pregnant cows and have 48 acres of pasture still at 8-12" that is drying out quickly. My best guess is little or no rain before November. Should I graze down to 4" now? As the pasture dries out, do I need to consider supplementation? Presently the cattle are verging on too fat and are due January-March.

Lynn Gladman
From the Digital Department

Joel replied: Once pasture quits growing, whether from drought or cold, the longer it stays standing and unused, the less nutritious it will be. If it won't grow anyway, you may as well harvest what you can as soon as you can and wait for it to grow again. Supplementation depends on how good the forage is; watch the animals' contentment and rumen fill to determine if some hay is necessary.

IMPROVING SANDY SOIL

Dear SGF:

I am a small beginner beef raiser trying to turn sandy soil into pasture and being able to bale some good hay. I need to know how to get my sandy soil into good fertile soil.

I have the feeling that my cows need more than the grass I'm giving them. I do give them some whole or ground corn but not very much. I don't believe the grass has much nourishment in it. I have been getting some clovers and some alfalfa seeded into it but not much.

Richard Wolfrath
Wittenberg, Wisconsin

Joel replied: The key to soil development is carbon, and the quickest way to increase carbon is either compost application or on-site biomass development. The quickest way to stimulate biomass is running poultry intensively across the ground. The other key is daily moves controlled grazing to let the forage develop tall enough to develop a big enough root structure to feed the soil biology either directly or indirectly (decomposing root hairs).

EDITOR'S NOTE: We would love to hear from you! Send us your questions and comments. Tell us what articles you would like to see more of. Email: sgfsample@aol.com or mail to; SGF, PO Box 2300, Ridgeland, MS 39157.

THINKING OUTSIDE THE FENCE

Moving Round Bales by Sled

Thousand-pound round bales can be difficult to move without a tractor with hydraulic lift. Recently when the tractor I normally use to move round bales was in the shop I had to invent another way to move a round bale to feed my cattle.

A quick and easy solution was found by taking a wood pallet and converting it into a sled. I turned it over, extracted the middle rib and added runners and hooked it up by chain to my other tractor. After installing a few screws in the runners, within minutes I was ready to try it out.

I toppled over a round bale onto the sled and pulled it into the pasture pen. Cattle are now happily feeding from the round bale on this pallet sled.

Joseph Heckman, PhD, Ringoes, New Jersey ■

Send your photo - at least 1mb - and ideas to sgfsample@aol.com or PO Box 2300, Ridgeland, MS 39158 and we'll send you $35 if used.

Low Stress Weaning Strategies in Sync with Nature

By Heather Smith Thomas

SWIFT CURRENT, Saskatchewan: Weaning time has traditionally been traumatic for calves, mama cows and ranchers, but stockmen are finding better ways to wean than putting calves in a corral and taking their mothers away.

Weaning creates physical and emotional/security stresses for the calf, and the emotional trauma can be harder on him than suddenly being deprived of milk. A big calf doesn't need milk anymore, but still feels dependent on mama, and insecure without her. If confined in a weaning pen, calves pace the fence and bawl, often running frantically back and forth. There are other weaning strategies that are easier on calves.

Art McElroy winters his calves with the cows on his farm in Saskatchewan. "I fought Mother Nature most of my life, whether it was winter calving, or fertilizing and battling every weed and bug with herbicides and pesticides. I never succeeded. Working with Mother Nature is a lot more fun than working against her. Now we calve in June and July, and this changed our thinking about how we wean and market calves, and how we develop heifers.

He usually doesn't wean calves until April or May. They stay on their mothers all winter. This saves a lot of feed and labor and is better than grain-feeding to develop their rumens and enable them to become good foragers. "They learn a lot from their mothers, as well," he said.

My philosophy has been a long, slow evolution. The cow business is low margin and the beef industry's way of raising cattle has built some tremendous expenses into growing a calf. Hopefully there are some young people coming along who are open to innovative ideas," he said.

"Reading articles by innovative thinkers has helped me put pen to paper and understand where my costs are. One of the ways we try to reduce our cost is by leaving the calves on the cows all winter. There is no cheaper place to develop a heifer than on her mother," said McElroy.

"We try to winter graze as much as possible, which reduces the cost of raising that heifer and she is also out there learning from her mother. The daily gain is minimal through winter but with the grass-based

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Producer Profile...

Sackmann Cattle Company

Jeff Sackmann and son Trevor evaluating pastures and pairs in late spring on one of their many small irrigated pastures.

Name: Jeff and Jaime Sackmann
Ranch: Sackmann Cattle Company
Location: Warden, Washington
Phone: 509-760-2832
Email: jeffandjaime@yahoo.com
Website: www.sackmanncattle.com
Managed Grazing: Five years.
SGF Subscriber: Two years
Acres in Pasture: Approximately 200 acres (2/3 irrigated) permanent summer pasture during growing season.
Paddocks/Average size: We have 28 "named" pastures at 10 different locations. Irrigated pastures range in size from 1 to 17 acres. We will have between 7 and 10 different groups of cattle that will move usually every 2-5 days to paddocks 1/2 acre to 5 acres in size.
Forages: Summer irrigated pasture forages include orchard grass, perennial ryegrass, festulolium, clovers, brome and endophyte free fescue. Non-irrigated summer forages include cheat grass, reed canary grass, crested wheat grass, kochia, blue bunch wheat grass, quackgrass and basin wild rye. Starting in August, we can graze bluegrass fields (after seed harvest). In the fall and winter, we graze volunteer wheat and regrowth of timothy, orchard grass and alfalfa hay fields as well as cornstalks. In the spring, we graze cover crops like triticale into late May (if the next crop is beans).
Centerpiece Operation: The centerpiece of our cattle operation is 150 fall calving registered Angus cows. Our family farm is comprised of about 1,000 irrigated acres and the primary cash crop is alfalfa hay (95%+ is sold).
Additional Operations: 50 spring calving commercial cows for kids fair steers and locker beef. Steers and heifers from both spring and fall herds are grass finished for direct beef sales.
Marketing: 50 bulls per year are marketed in an annual production sale in March with our sale partner, JR Ranch in Othello, Washington. Females have been sold private treaty and through production sales. We are planning to have a female sale again soon. Kids sell their fair steers (including extras entered in carcass contest) at two local county fairs. Grass finished beef is sold by word of mouth and social media.
Main challenge: Increasing size and scale of the operation in an ultra-competitive area. The reason we have so many winter grazing options in this area is because we usually have relatively mild winters, abundant irrigation water during the growing season from the Columbia River Irrigation Project (absolutely necessary with our 6-8" annual rainfall) and good soil.
This is a very productive, competitive farming region. Cash rents for pivot irrigated ground for crops including but not limited to: alfalfa, timothy, corn, potatoes, onions, beans, peas, sweet corn, bluegrass and several different seed crops range from $400 to $1200 per acre which is tough to compete with. Off season grazing options are possible but takes a lot of time and effort building relationships with neighboring farmers. Planning is difficult because they have so many options of crops to grow and all of those changing markets that they often take a long time to decide (or change their plan) at times that make grazing management difficult. We have to remain flexible at all times.
What advice has helped most: Talking to other people who have utilized cover crops and intensive grazing.
Goals/Vision: Increase the size, scale and profitability to provide opportunities for the next generation.
Favorite Resources:
Portable Corral: The OK Portable Corral (product of Titan West, Inc.) is an essential piece of equipment for catching cattle to move to different fields.
Fencing: Gallagher fencing equipment such as polywire, reels, and step-in posts have made cross fencing much easier. Most of our Gallagher products have come from Pearson Farm & Fence in Moses Lake, Washington. They also have helped us with K-Line projects.
Seed Mixes: We have good luck with mixes from L & H Seeds in Connell, Washington.
Irrigation: We have pivot, hand lines, wheel lines and K-line. No flood or rill, but everything else.
Nutrition: Jaime is also a livestock nutritionist. We are in an area that is very low in Selenium, Copper and Zinc coupled with every possible antagonist for absorbing those minerals. We use salt based (lacking much ground with salt accumulations), free choice mineral formulated using both traditional and chelated trace minerals to meet the needs of our cattle and soil/forages.
Angus: The right kind of Angus cattle thrive in our grazing system. ■

Low Stress Weaning

Continued from p. 21

genetics we've been using for the past 10 or 12 years and trying to downsize cows, which is a long, slow process, it works," he said.

"I had to go through a mental shift, thinking in terms of return per acre rather than the traditional unit of production or the cow, to get my thinking around downsizing the cows and why it is important. We only have a certain amount of forage, but if we have more small cows, producing more calves, this equals more total pounds to sell than fewer big cows with bigger calves," he said.

This meant a shift in understanding what has the most value whether it's the 560-pound (or bigger) calf or a 400-450 pound calf and understanding the costs associated with each animal. "I see some tremendous results. Two winters ago I had to feed for 100 days, but the winter before I only had to feed about 30 days. The winter before that, I fed just one bale to 150 cows. Where we live, we have an environmental advantage; if we preserve grass and forage in the summer for winter grazing, maybe eight out of 10 years we can do a lot of winter grazing." You just have to be prepared for the odd winter now and then when you have to feed some hay.

"Burke Teichert talks a lot about lowering expenses. Wintering a heifer on her mother is one way to do that, and also the healthiest place to keep her for the winter," he said. This can also reduce other costs, in not having to treat sick calves or have death loss from disease. That healthy heifer will go on to do better for the rest of her life, compared to one that was compromised by illness.

"Normally I don't wean until end of April, and the calves go back out where the mothers were half a mile from home, either grazing or bale grazing - and the cows stay in the yard. The calves just head back there to the grazing, and may hike back and forth a bit, but it's very low stress weaning," said McElroy.

"I had to go through a mental shift, thinking in terms of return per acre rather than the traditional unit of production or the cow."

By that age they don't need milk anymore and the cows are not milking much. "I don't know how much milk those calves are actually getting, and by that age they are more independent than a younger calf. They have learned about grazing from mom. After about a day and a half I move the cows clear away and the emotional tie is not as strong. I think the stress of weaning is mainly breaking that tie," he said.

"To separate them at weaning, all I do is put them in a corral, open a gate and let the cows go back out past me. With our stockmanship they are all trained to walk past me. I can let the cows go out, and stop the calves, and do this all by myself. I put the cows in a nearby pen, and then the calves go back out to where they grazed with their mothers. It's a very quiet process compared to having a bunch of bawling cows and calves in the fall," said McElroy.

"Health issues are minimal; I don't remember if I've ever treated any. They don't bawl, they don't wander around in the dust, not eating or drinking. The stress is so much less," he explained.

"I run the heifers with my grass yearlings until time for breeding. That's where these calves with grass genetics really shine, with compensatory gain. They make up for their lower gains during winter, and they do it very nicely with our rotational grazing and high-stock densities. I am very pleased with how they perform," said McElroy.

These calves were born in late May-early June, so they have enough age by the time they are separated that they are not dependent on mama anymore. "I really like this method of raising heifers. We breed 45 to 50 heifers every year and if I end up with 30 bred heifers out of that group I am happy. I assume they are the ones that were born in the first 21 days." They come from fertile cows, are fertile heifers, and old enough to breed early.

"I read about the way a lot of people develop bulls and heifers for breeding and the amount of feed they put to them, and it is very expensive. You can get a high percent of those heifers bred but are they actually fertile or is it fed into them?" They probably won't be fed that way later in life out on someone's ranch and probably won't breed back as well as they should.

"I have some young cows that fall out during that second year, because I don't sort them off in winter and feed them better. I could get more of them to breed back if I hauled them more feed, but we live in a tough environment and I want cows that can do it on their own. Some people don't think these animals will perform well in the feedlot but I know that if any animal can produce very well on grass, it will do very, very well in the feedlot."

He has never had any trouble selling his calves. "I haven't followed them through to see how they grade, but from the standpoint of profitability and quality of life on the farm raising them, I am going to keep doing it this way," he said.

His calves that are born in June are labor-free. "I don't do anything with them until November or December when the cows come home. They calve five miles from home and I only go check on them twice a week to see how they are doing."

People who calve in March or April couldn't leave the calf on so long because the cows need time to recover. "My cows have at least six weeks, from mid-April until early June to put some weight back on (with green grass) and get in good shape again for calving. We want them in the best shape possible when they calve, so they will rebreed. At that time of year they can do it on grass, and when a cow starts lactating you need to pour the feed to her or have good grass," he said.

He sometimes sends calves to a feedlot in Alberta that feeds natural cattle. "All of those cattle have to be weaned on the home ranch six weeks before they come to that facility. They do well with this kind of weaning." ■

Heather Smith Thomas ranches in Salmon, Idaho and is the author of Horse Tales, Cow Tales, and Ranch Tales *available at heathersmiththomas.blogspot.com*

Portable Fencing Can Be Easy and Profitable

By Russ Wilson

TIONESTA, Pennsylvania: When we were first introduced to portable fencing and a higher level of grazing management, I had very overwhelming thoughts. After doing a lot of research, I started thinking maybe it wouldn't be so bad.

We started out with a few mini reels from Kencove, a few geared reels, fiberglass sun guard step-in posts, braided polywire, jumpers (to make the fence hot), cheap plastic gate hooks, and a few O'Brian step-in posts.

Moving the cow herd once a day took two of us one and a half hours every day. This included setting fence, tearing out back fence, and moving the water tank to always keep water with the livestock. Pastures were always back fenced unless the temperatures were below freezing. At that time, we would have set an alley for the livestock to return to the water. It was not easy at first, but we stuck with it. Almost immediately we saw results. The grass was growing back quicker and was thicker.

We yet did not really understand what was happening. We still had some issues. We had bare spots by the stock tank. There was still some over-grazing. Being bull-headed, stubborn, and determined, I started to change things up a little at a time. Sometimes completely starting over with something different.

One, I started by making the paddocks square. We could utilize more of the pastures without having as much impact on the soil with this shape. Bare soils has always bothered me. Bare ground equals less forages and erosion of vital minerals within the soil. It also hurts our most important form of livestock, the microbes and insects that keep our ground thriving so we can grow more grass.

If you want to make a change in the forages, the easiest thing to do is change the management of the livestock.

Two, we started grazing some less desirable forages like aster and golden rod despite protests from the livestock. The cows would just stand and bawl. My wife and I joked that our workers were going on strike. We still get initial refusal sometimes, but most of the time the livestock eat whatever is put in front of them.

The third and most important thing we did was step up the management. I observed the cows and researched their behavior. I wanted to understand why they did what they did.

Fourth, we wanted to graze longer into the year. At that time, our grazing days were 160 days per year. So, we started in the areas with less desirable plants by making the paddocks long and narrow. We could tramp them flat without having to clip them. Huge win for us!

After tramping those plants down, we started to see amazing things happen. Those undesirable plants were starting to disappear on the regrowth. The grasses and legumes were coming back. Lesson learned: if you want to make a change in the forages, the easiest thing to do is change the management of the livestock. It is also less costly than replanting or reseeding every year.

Now for those ugly dead spots in front of the stock tank. We switched to moving the livestock twice per

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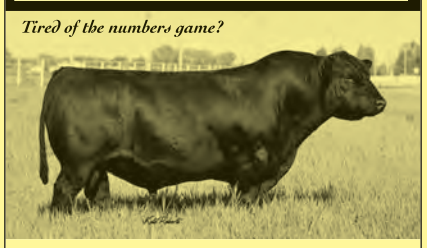

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Portable Fencing

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day. We also eliminated the alley to go back to the water. The water tank now moves with the cows. We use a 25-gallon plastic tub that even my kids can pick up and move. By that time, we were figuring out what temporary fencing materials worked best. Moving twice per day resulted in three hours each day for two people now.

We started only using the Kencove mini-reels due to their small size and portability. Most of our temporary fences are less than 300 feet, so the mini-reels were perfect. We started using the O'Brien step in post almost exclusively. They were a bit bulky but easy to stick in frozen and dry soil. The fiberglass posts were now used for bracing when setting ends and corners.

By utilizing the side-by-side our biggest time saver became apparent. An organized side-by-side is essential. Customizing the side-by-side by adding a hook to hold reels while setting fence, installing a fence jumper (custom made to be optimal for our needs), building and mounting a garden hose reel, adding a couple baskets to hold the reels and toolboxes, and custom making a homemade reel winder, which can reel up to 600 feet of wire in about one to one and a half minutes. The side-by-side compares to a mobile office or shop. It is equipped with every thing I may need in the pasture.

Currently we move the cows with a management mindset. If the forages are poorer, we may move the livestock more often. It takes only one person one and a half hours per day to set, tear out, and keep the stock tank with the livestock on average.

Finally, after discovering how easy this was and the little time needed to move livestock and keep them grazing, we stopped making hay. Not making hay made new pastures, carrying capacity doubled from 45 animal units to 90 animal units on 135 acres. 305 days of grazing is our seven-year average.

In 2020, we made it closest to our 365 days of grazing yet with 320 days. Moving the livestock more was the key. Our water infiltration went from an average of 10" per hour to 60" per hour in some fields, mainly the native plantings. Giving longer rest periods between grazings made the plants healthier with more robust root systems. Rest periods on average are 100-110 days of rest.

Root systems are like geotextile fabric. Having the water infiltration and larger roots helps to negate the pugging and soil damage. Part of our management as we are grazing is that the dry soils are saved for wet weather and the wet soils are grazed in dry weather. A few pastures are also saved for shading during hot weather.

Learning how to set fence efficiently and learning basic management principles has made farming livestock much more profitable and less time consuming. I can spend the time doing things I want to do vs things I have to do while still making a living to support my family. I challenge everyone to step it up a little. It can pay big dividends in profitability, free time, and family time. ■

Russ Wilson can be contacted at www.russwilson.net. See also Facebook and weekly YouTube videos.

Meadow Talk

Continued from p. 1

Ian Mitchell-Innes is perhaps the leading proponent of the take half, leave half message.

Dick Richardson, Holistic Management educator formerly in South Africa who has now moved to Australia scoffs at that notion: "have you ever seen an animal eat only half a plant? When it's something they like, they eat it; apparently nobody told them to leave half."

In our own experiences here at Polyface, we now have half a century of experience under our belts and have tried most techniques we've heard. You can make a lot of mistakes in 50 years. But you can also observe lots of things.

In classic Jim Gerrish form, I'm going to start the discussion with "it depends." Just like Solomon's injunctions about a time for this and a time for that in Ecclesiastes, different times and situations call for different protocols. In complete deference to all these great experts, let me try to unpack some of these nuances.

Here are the times when you want to take half, leave half:

1. Fast growth cycles when you want to move fast, not impede regrowth, and forward bank a stockpile for slow growth periods. In his inimical style, Ian Mitchel-Inns says, at least half a dozen times per hour of presentation, "move the cattle."

2. On nearly homogenous forages, like irrigated alfalfa or annuals like sudex. When the forage sward has less variety and is more similar

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Meadow Talk

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in type and age, fairly even grazing is easier to achieve.

3. Fragile or finishing stock, like beef finishers or grass dairy cows. These extremely high performing animals need ice cream, not the box. They need leafy tip carbohydrates, not stems.

4. Drought conditions to leave vegetation protection, leaf area, and preserve soil moisture. Plants always recover faster when not eaten close to the ground; light pruning is less shocking than heavy pruning.

Here are times when you want to heavily disturb:

1. Uncapping soil in dry times, especially if rain is in the forecast. Regeneration around mineral feeders and water troughs, or even around some hay flakes, is almost miraculous if you can time it right.

2. Extremely weedy pastures exhibiting large variations in forage height and type. Animals always eat dessert first and in a highly diversified pasture getting all the plants pruned is almost impossible without pressure.

3. On dormant stockpile to open up the sward and stimulate both germination of seeds and additional tillering of clumped forages. Opening the forage canopy can stimulate thicker and more diversified swards.

To be sure, on our farm the most shocking disturbances have been unplanned. When you have 500 cows in a three acre paddock for the night and you get a three inch rain at midnight by 8 a.m. the ground might look like slurry. Slogging around in a thick soup, your initial reaction is that you've destroyed that paddock forever. Perhaps the worst field we ever did that to, during a winter snow melt where we simply couldn't get the animals anywhere else, the field literally looked plowed. No vegetation visible.

Sometimes the ways of nature are far too mysterious to comprehend, and therein lies the artistry of grass farming.

The next spring, it was 100 percent weeds. They grew well and we grazed through it during some dry days in the summer. The cows were not happy. We pushed them. The following year, that entire 15-acre field was 100 percent timothy, the thickest, prettiest stand of race horse-quality timothy you could ever want. Something about that disturbance and the subsequent year of deep, tap-rooted weeds stimulated the latent seed bank and whispered in the ear of every timothy seed: "conditions are great for you to grow; you can sprout this year."

Sometimes the ways of nature are far too mysterious to comprehend, and therein lies the artistry of grass farming. We'd love to have cookie cutter recipes, but alas, we're in different climates, rainfalls, soil conditions, plant types and these nuances create the phrase "it depends."

Johann Zietsman, author of *Man, Cattle and Veld,* advocates that if pushing your cattle makes them not look good, you need to change your genetics. He says this in the context of creating high density disturbance in order to move the ecology forward. In general, lifetime accumulated experience indicates that in order to move ecology forward we need heavy disturbance and in order to finish beef, we need to prune more lightly. In any case, Zietsman's admonition to select animals that look like "10 pounds of sugar in an eight pound bag" rather than "eight pounds of sugar in a 10 pound bag" has a lot of merit.

Early in the spring, when most forages in a given field are palatable and similar in height and type, light pruning is key. But if you have a patch of honeysuckle, autumn olive, thistles, burdock and blackberries, you'll move ecological succession forward faster by pushing the stock to nip beyond their comfort zone. We've watched ours eat thistles, multi-flora rose, sourdock and other things considered completely inedible by conventional neighbors.

If you do that every day, however, you'll have low conception rates and slow-growing unpalatable beef. A herd of dry cows can be pushed for heavier impaction much more than a group of stockers. Pick your animals, your timing, and your place to unleash your ecological succession plan with impact.

Captain Jim Bridger, when dispatched to survey the Black Hills, wrote in his journal that his cavalry unit somehow got behind a herd of seven million bison that left a swath of dirt behind them. He said it took several days to find forage for the horses, so wide and complete was the devastation. I call that high impact ecological exercise.

The only way I know to consistently practice a light pruning without losing your sward to unpalatable species is to mow the fields after grazing. Otherwise, your fields will get weedier and less productive. Ecology needs strategic exercise. The New Zealand grazing guru who truly mentored Allan Nation in grass farming, Vaughan Jones, said pastures routinely need "deep massage." That's what he called occasional high impact disturbance. You can't get that if you lightly graze.

I remember Greg Judy, our family hero, telling me "you want every plant either trampled or eaten." But he doesn't do that all the time. It depends. Gabe Brown often says that his most important rule is "do something different." He's not talking

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about doing something different than your neighbors; he's talking about you and me doing something different on our farms. Experiment. Run trials on your own farm.

Facing this tension, Dick Richardson developed a program he calls "Sabbatical Grazing." Let's say you have 10 fields. Year one you start at field 1 and when it regenerates to proper grazing height and palatability, you move the herd back to it and regraze, regardless of whether you've gone through all 10 fields. You repeat that process throughout the season, which means field 1 might get grazed six times in the year and field 10 only once (you finally get to it on stockpile and it's all blown out in grasses, weeds, and browned-off clover).

Year 2 you start at field 2 and repeat the procedure. Year 3, start at field 3. His point is that this forces you to do some perfect grazing and some clean-up heavy impact grazing every year, on different places, that ultimately offers both perfection and exercise to every field over time. I haven't done that, but I find it intriguing in light of this light vs. heavy impact tension. I'd be happy to hear from anyone who has tried it.

The interesting thing in all of this is that these observations take a long time. The frustrating thing is that what farmer A in Nevada got with recipe XYZ is not necessarily what Farmer B in Rabun Gap, Georgia, with 100 inches of rainfall a year, will get with recipe XYZ. Therein lies lifetime learning; it takes time to accumulate experience, run your own observations on your own land in your own bio region and your own soil and forage conditions.

Goodness, the reason we have the number of remedial tools, from keyline plows to pasture renovators to batwing rotary cutters is to make up for livestock management deficiencies. All of us want to do with animals what we can do easily with these machines. But it's not easy and it's not the same in every context. ■

Joel Salatin is a full-time grass farmer in Swoope, Virginia, whose family owns Polyface Farm. Author and conference speaker, he promotes food and farming systems that heal the land while developing profitable farms. To contact him, email polyfacefarms@gmail.com or call Polyface Farm at 540-885-3590. His books are available on page 18.

Drought Advice

By Kit Pharo

CHEYENNE WELLS, Colorado:

If you are ranching in a drought area, you need to have a Drought Plan. You cannot continue to graze grass that is not growing back. Unfortunately, that is exactly what many ranchers are doing.

The sooner you sell or relocate some cows, the more grass you will have available for your remaining cows. Every herd has a bottom 10, 20, 30 and 40 percent. This provides a great opportunity to get rid of cows with obvious problems. These problems would include poor disposition, bad udders, bad feet and bad eyes. It would also be a great time to get rid of your poor producing cows and late calvers.

I recently read some university drought advice in a status quo beef publication. I disagreed with much of what was suggested. Surprise, surprise! They said to get rid of all cows that weigh over 1300 pounds. They then suggest you sort cows for body condition (fleshing ability) and feed accordingly. In other words, feed more to the thin cows and less to the fat cows.

First, I will say it is nearly impossible to feed your way out of a drought. Those who try will usually run out of grass and money. Bud Williams used to say, "You will never go broke having too much money or too much grass, but going broke is easy if you have too many cattle at the wrong time." Sell some cows, put the money in the bank and give your grass a chance to grow back.

Second, I suggest you sort cows for body condition and get rid of all thin, poor-doing cows. I would rather have a fat 1300-pound cow than a thin 1100-pound cow that won't breed back. Fertility is more a function of fleshing ability than of anything else. Fleshing ability is more a function of low-maintenance requirements than of anything else. Get rid of your tall, hard-keeping cows as soon as you can.

The best indicator of animal health and adaptability is hair coat. All of your cows should be slick and shiny this time of year. They should be so shiny you can almost see your reflection. I suggest you get rid of all cows that still have some dead hair. They are your poorest doing

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Drought Advice

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cows. While you are getting rid of cows, consider getting rid of the cows that have the heaviest fly loads.

I suggest you sell your cows in an area that has less drought and more grass. This will way more than cover your trucking costs, because your neighbors are in the same predicament as you.

When we relocated our cows last fall because of drought, we decided to send the mature cows to new locations while keeping our bred heifers and heifer calves at home. Bred heifers and heifer calves eat a lot less than older cows, and they represent our best genetics. Others, however, have taken the opposite approach. They sell their non-producing females and hold on to their producing females. I can see advantages both ways. ■

Kit Pharo of Pharo Cattle Company is a no-nonsense seedstock producer in Eastern Colorado. He shares his philosophies and opinions in a quarterly newsletter and his Herdquitter Blog from which this appeared. To join his email list call 800-311-0995 or email to Kit@PharoCattle.com.

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