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Range 101: Rangeland Ecosystems of the World - Tallgrass Prairie by Sandy Smart

The tallgrass prairie of the U.S. Great Plains is considered by some “True Prairie” or “bluestem prairie”. Gerald Tomanek, Emeritus Professor of Botany of Fort Hays State University, distinguishes the true prairie and tallgrass prairie by shear height. The species do not differ much, but typically shorter growing grasses such as, little bluestem and sideoats grama grow much taller in the tallgrass prairie. The most common grasses identifiable to the tallgrass prairie are switchgrass, big bluestem, indiangrass, little bluestem, and sideoats grama. Other grasses include dropseeds and needlegrasses. The tallgrass prairie historically stretched from southern Manitoba through eastern portions of the Dakotas, Nebraska, Kansas, Oklahoma, and Texas. It was boarded by forest and woodlands on the east and mixedgrass prairie to the west. Portions of the tallgrass prairie stretched across southern Minnesota, Iowa, northern Missouri, Illinois (The Prairie State), southern Wisconsin, northeastern Indiana, and southern Michigan. This region of the tallgrass prairie is known as the “Prairie Peninsula”. Many believe fire and summer droughts kept forest at bay in this high rainfall region.

Today, not much of the tallgrass prairie remains (<4%). Most has been converted to agriculture because the fertile soil and high rainfall support high yields of row crops and small grains using dryland farming techniques. Places such as the Flint Hills of Kansas and the Osage Hills of Oklahoma still have large tracts of prairies because this region’s rocky, shallow soils are not well suited to tillage. In South Dakota, we are fortunate to have about 15% tallgrass prairie remaining East River. The counties that make up the Prairie Coteau region have the highest amount remaining. This is due to past glaciation, creating poor drainage and rocky soils. Pete Bauman has mapped the remaining native prairie sites (see Vol. 18 Issue 1 and Vol. 19 Issue 1). Brookings County where I live has about 15,000 acres of native prairie left. One of my favorite prairie flowers is Prairie smoke (pictured right). The reddish tinge and wavy flower looks like fire and is a nice reminder of how important fire played a role in shaping this ecosystem. Fire is an especially important tool to fight encroachment of exotic cool-season grasses such as Kentucky bluegrass and smooth brome grass.



Prairie smoke in Deuel County, SD.
(Photo by S. Smart, 2007).

Thistle War by Rick Smith

I define a weed as something I don't want or don't have use for. A question could be, do my livestock have the same opinion? All of our responses will be different depending on the species of weed, the location of our operation, and the livestock/wildlife species we care for. It becomes very important to distinguish that all weeds are not of the same cost or value to control, nor do they each exist, proliferate or cause harm to the same degree or manner in a grassland system. Therefore it becomes very important to pick your weed and pick your response accordingly.

Canada thistle, musk thistle or plumeless thistle in my system are ones I truly would like to eliminate. At the same time I have other non-grass species that exist probably performing tasks that I don't fully appreciate. As of yet, I have not found a livestock only grazing management system that can successfully eliminate the thistle's existence. A tight window exists when Canada thistle forms buds that livestock seem to relish by nipping them off (see photo to the right), but the window is only a few days. Ten days after the purple shows you have viable seed to deal with. Any form of rotational grazing that keeps livestock out of a pasture during this small 10 day window precludes taking advantage of this grazing tool. Another method to get some use out of the Canada thistle is to mow pre-bud stage and livestock will graze the wilted plant until it dries. Works for cattle, horses and sheep with a small patch, but if it dries out, it becomes ground litter and by fall you will have a new crop sprouted from the roots anyway.

Often we equate weed problems in general to poor grazing management techniques, that result in overgrazing or poor grassland health. In my observation, thistles thrive in high nutrient environments, grass or no grass, managed grazing or not. A few years ago we setup a research site to evaluate 0, 45, 90, 135 lbs/acre levels of urea fertilizer blocked off with three different simulated grazing patterns; continuous, take half leave half, and flashing across repeatedly only taking the top third of plant. After the test was over and the fence removed, two years later the sections with the 135 lbs/acre fertilizer rate applied at all types of grazing was solid Canada thistle where none had existed before. Now, I understand why thistles pop up around mineral feeding stations, watering areas, working corrals, or where hay rings have been accumulating excess manure and urine. All of these areas have great grass growing, but often have thistles also.

My preference for control of weeds that both I and my livestock don't want is to graze intensively what livestock like, move livestock out, followed the next day with non-residual 2,4-D. This seems to achieve my best lasting results without eliminating what my livestock indicate are the good broadleaf plants. Pick your own chemical, insect, mowing or trampling strategy but don't let thistles go to seed.



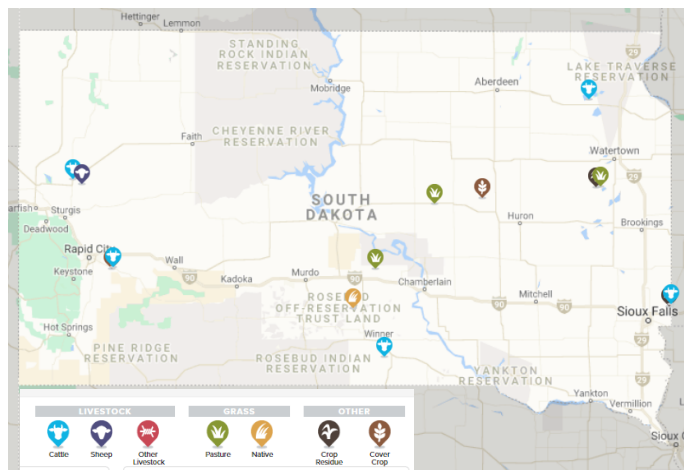
Canada thistle with the flower bud and upper leaves eaten off in a low density, mob grazing system at Gabe Brown's farm near Bismarck, ND (Photo by S. Smart, 2019).

Rick Smith ranches near Hayti, SD.

The South Dakota Grazing Exchange by Sarah Scroggins

The South Dakota Soil Health Coalition (SDSHC) has officially released a new online portal and accompanying educational resources, created to connect livestock producers and those with available cropland or forage to graze. Integrating livestock onto cropland and proper grassland management are both key steps in increasing overall soil health. The website <https://sdgrazingexchange.com> is a completely free, publicly accessible map, developed through a grant agreement with the USDA-Natural Resources Conservation Service. The site offers a platform for producers to connect throughout the state of South Dakota and the surrounding region.

Do you own land or have pasture, native grass, crop residue or cover crops available to be grazed? Are you a part of an organization whose membership or clientele would be interested in knowing about this type of tool? Or do you need extra grazing land or forage for your livestock this year? Take a look at the South Dakota Grazing Exchange! Getting started is easy, simply access the website address listed above, click the “Create Account” button in the upper right-hand corner of your screen and connect with other producers to work out the details and improve your soil health. The map overlay shows sites where fields are available for grazing as well as producers who are willing to move livestock to grazing sites.



South Dakota Grazing Exchange map. Producers upload their profile (livestock owner, pasture owner, or cropland owner) and it is mapped out so others can make connections.

Additional educational resources included on the site include fact sheets on a variety of topics related to livestock integration, crop residue, and cover crops, contracting resources, as well as the contact information or links for organizations that can provide additional technical assistance. Integrating livestock onto cropland and proper grassland management together form one of the **five basic principles of soil health**.

Why should you consider returning livestock to the landscape?

1. Fall or winter grazing converts high carbon annual crop residue to low carbon organic material; balancing the carbon/nitrogen ratio and managing crop rotation residue for no-till seeding.
2. Reduces nutrient export from our cropland and hayfields, recycling the majority of nutrients, minerals, vitamins, and carbon.
3. Aids in weed pressure management.
4. Grazing cover crops and/or crop residues allow livestock to be taken off perennial grasslands earlier in the fall, extending the grass recovery period, and providing higher nutrition diet for livestock.
5. Grazing reduces livestock waste associated with confinement; helping manage our water quality and nutrient management concerns. Allowing cattle and sheep to be herbivores by securing their energy needs from plants.
6. Spring or summer grazing, annual and/or perennial plants, with short exposure periods followed by long recovery periods; allows the plants to regrow and harvest additional sunlight and CO₂.



The Green Side Up by Pete Bauman

Reducing or eliminating chemical inputs can save dollars, but how? The Answer maybe easier than we think.

For the two or three people that generally read my columns, you know that I'm a staunch advocate for keeping our native grasslands 'green side up' when it comes to converting native pastures to cropland. I've seen plenty of that in both high and low grain markets, and so I'm surprised that it still catches me off-guard, but it does. With the present economic and climate situation, low prices and high water, why we still have land going under the plow is somewhat of a mystery, but I think it centers on not understanding the true value of diversity on the land.



Rock clearing in preparation for prairie conversion to cropland near Clear Lake, SD (Photo by P. Bauman, 2019).

And so, another, possibly more complicated threat to keep the green side up, is curbing our dependence on chemicals for rangeland management. Now I have, and do still on rare occasions, use chemicals too. The problem isn't so much the use of chemicals as much as it is the general lack of understanding of how, when, where, and why to apply them and a realistic sense of what we believe they will accomplish. More or less, most pasture chemical management is like using a hammer when you really need a scalpel. Its cliché, but true. This 'browning' of the prairie is often coupled with poor grazing management, and thus our native diversity of flowering plants and lush native grasses slowly gives way to a 'converted' grassland full of non-native grasses and largely devoid of flowering plants – plants which have a place and which livestock will use when given the chance.

Through a recent grant by NRCS's Collaborative Conservation Grants, the SD Grassland Coalition and partners have begun work on an educational program that will highlight the pitfalls associated with 'chemical first' pasture management. A major theme of this project is to not only identify the downside of broadcast chemical miss-management, but also to acknowledge that weed problems can persist and offer tangible advice on identifying root problems and real-world, workable solutions.

Those solutions are highlighted, in part, on the Rock Hills Ranch near Lowry, SD, where father and son team Lyle and Luke Perman have taken great strides to understand the underlying drivers that make their ranch successful, including plant diversity and ecology. Ultimately, success hinges on understanding the carrying capacity of their ranch. From this knowledge, opportunity abounds, because not all species of plants are factored into the carrying capacity for cattle. Further, some species of plants not palatable to cattle are true weeds of real concern like leafy spurge or wormwood sage, while others are native plants that might be out of balance or underutilized like buckbrush (or goldenrods farther east).

The Green side Up Continued Page 6

Adjusting to Ranch Life by Garnet Perman

Coming into a ranch/ farm business from a non-agricultural background presents additional relationship challenges because in addition to adjusting to married life, the newbie is also assimilating to a new community, a new family, and a very different lifestyle. This article contains the collective wisdom of several “town girls” who made this adjustment. Usually it’s a young lady making the transition, but the basic principles can also apply to young men joining their wife’s family operation.

- Understand that love of the land is deeply embedded in the person you are promising to spend your life with. You will **never** compete with it. Trying to do so will result in heated discussions.
- You will likely spend much time with the family you are marrying into. A multi-generational ranch family is a team in a way most other families are not. Determine to be a team player.
- Attitude is everything. Agriculture is a boom and bust business. Bust times are difficult emotionally as well as financially. Day-to-day experiences can be aggravating. Everybody whines about the weather. Learn to find something positive in all situations and cultivate a sense of humor.
- Communicate. **Communicate! Communicate!!** Learn how to disagree without being disagreeable. Ask questions. What will your contribution to the operation look like? What is your mode of operation? Organized? Detailed? Big picture? Go, go, go? Will you work off-farm? Does your prospective spouse want you to work with them in the operation? Do you have the necessary skills to do so? Is your spouse willing/able to teach you? What exactly do those hand signals mean? Is there a succession or business plan that includes the new couple? If not, why not? A failure to plan is a big red flag that can result in long term emotional and financial heartache. Evaluate often how the plan is working.
- Embrace frugality. For people that didn’t grow up on the farm the adjustment to agricultural cash flow or lack thereof is difficult. Where home improvement is considered a financial investment in town, “the house doesn’t make money” is a common refrain in ranch country. Stay abreast of the ranch’s financial situation if managing the books isn’t part of your job description. Meet with the banker and accountant as a couple.
- Isolation and the loneliness that accompanies it are part of rural living. Figuring out how to deal with it is crucial. Join a church or civic organization. Volunteer to coach a team, help with 4-H or other youth program. You’ll make friends faster. Few young people may live in the area; don’t overlook friendships with older people. They are vital sources of wisdom, know-how, empathy and encouragement. Fast food, retail shopping and big ticket cultural events are far away. Make peace with these being occasional treats.
- Assimilation into rural communities takes years. It may be decades before you are no longer introduced as Joe Smith’s daughter-in-law or Joe Smith Jr.’s wife. Getting involved in the community and/or ag related organizations will also help make the cultural shift. People love somebody who is willing to pitch in and help. You have much to offer in terms of energy and fresh insight, so long as it isn’t offered with an arrogant attitude.
- Educate yourself. Attend educational events with your spouse. Read agricultural publications. Find a subject that interests you and pursue it. You will develop into a go-to person on that topic.
- The on-farm family can help or harm the adjustment. Be willing to explain or demonstrate even what seems most obvious. Keep your mouth shut when tempted to laugh because the newbie got lost or be angry if a gate didn’t get closed. Be patient, kind, and encouraging.

Enjoy the journey! The learning curve is steep, but so very worth the effort!

Garnet Perman is a freelance writer and ranches with her husband, Lyle, near Lowry, SD.

The Green Side Up Continued by Pete Bauman

Generally, there is a misconception that persists in modern ranch management that has convinced producers that by investing in chemical inputs they will reduce weed competition, therefore growing more forage and increasing carrying capacity, increasing total production and making more money. While in theory this sounds reasonable, in reality it has led to landscape level economic and ecological costs that are astounding. Don't believe me? Just take a look around. If this system was working, we should be 'winning' the weed war with chemicals, but, simply put, we are not. What we are often left with are weedy pastures with reduced carrying capacity due to overstocking with no chance for a desirable plant to grow, so we have weeds. And the cycle just continues.

So back to the Perman's. What makes them different? Nothing, except a desire to understand more, spend less, increase profits, decrease workload, and improve quality of life. By studying and understanding carrying capacity, they realized that their ranch has a higher capacity for livestock than originally thought in the form of plant species the cattle do not readily eat. Why spend dollars fighting a futile war with chemicals trying to wipe out those plants on the unproven presumption that the ranch will grow 'more' cattle feed. Instead, why not simply take advantage of the carrying capacity that already exists by using livestock that will eat those undesirable plants? Sounds simple. Can it be that easy? Maybe.

Enter the sheep. Not just any sheep. Controlled and targeted sheep grazing specifically designed to take advantage of weedy species without competing with cattle for their preferred plants. This is accomplished through the ancient art of shepherding by man and dog made possible with modern technologies like ATV's, electricity, plastics, and polyfence. The Perman's are working with a large sheep provider through a 'package' deal that includes, man, dogs, and gear, and about 1,000 sheep. Every day the shepherd targets the grazing on forage that is underutilized by cattle. Every night he pens the sheep and the dogs take the night shift, protecting the herd from predators. As for Lyle and Luke, their labor investment consists mostly of directing the shepherd and ensuring he has the resources he needs.



Over 1,000 sheep grazing on the Rock Hills Ranch to utilize forage that cattle wouldn't otherwise graze (Photo by P. Bauman, 2019).

At the end of the day, the weeds are controlled, the sheep are healthy, the ranch looks great, the cattle are fed, the shepherd is employed, the Perman's spend less and make more and are free to work on other enterprises. It sometimes is surprising how something old can feel new again. While this system likely won't work for everyone, it does have great potential to be explored at many scales. The first step is ensuring an understanding of carrying capacities and stocking rates. Once the cattle grazing is in order, sheep may just add enough diversity to the mix to help you save money or make more, both of which sound pretty good!

Pete Bauman is an Extension Range Field Specialist in Watertown, SD.

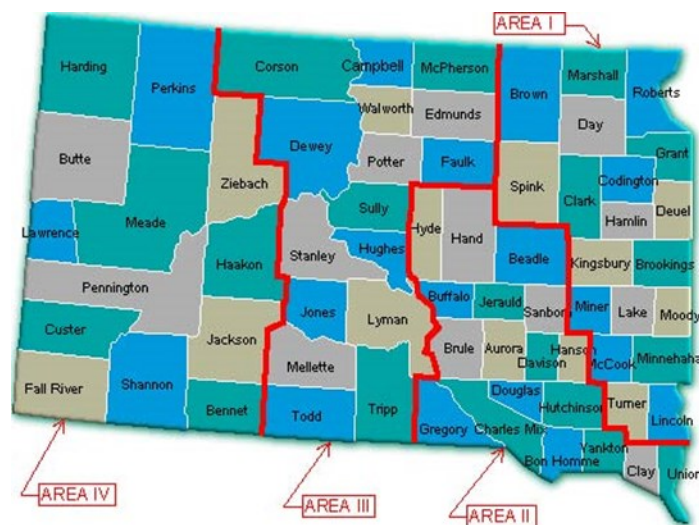


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- News from the SD Section of the Society for Range Management

By: Sandy Smart

Every year the South Dakota Section of SRM collects nominations for the Excellence in Range Management award across four regions in South Dakota (see map to right). The one-page nomination form can be found online at www.sdrangelands.com/awards.html. Typically, operations are nominated by natural resource partners like the NRCS, Forest Service, Bureau of Land Management, Pheasants Forever, US Fish and Wildlife Service, or SDSU. However, anybody can nominate an operation they feel is deserving. At our annual meeting in the fall, one operation is chosen among the nominees to compete at the International meeting of SRM. Over the years, South Dakota has had several ranches win the SRM's Excellence in Range Management Award and is a testimony to the great land ethic of our hard working ranchers, their families, and natural resource partners supporting them. This year Dan and Cindi Conner, Belle Fourche, won the SRM Excellence in Range Management award at both the South Dakota and International SRM levels. In addition, you can watch a video of their story on South Dakota's Amazing Grasslands at <https://www.sdgrass.org/amazing-south-dakota/>.



Excellence in Range Management Award nomination areas in South Dakota.

In the summer, the previous year's area award winners host a tour of their ranching operation. These tours give the host family an opportunity to showcase their rangeland conservation efforts and natural resource partners an opportunity to discuss and demonstrate technical and financial assistance to those in attendance. This summer, the SD Section of SRM recently hosted three tours; Soelzer Ranch near Piedmont, Little Owl River Ranch (Gene and Besime Springer) near Timber Lake, and Namken Red Angus near Lake Norden. The fourth Excellence in Range Management tour will be held this fall at the Conner Ranch in conjunction with our annual meeting. It should be a great time.

Topics discussed and demonstrated at the three summer tours included rotational grazing, cross-fencing, water development, grazing cover crops, grassland establishment, tree and riparian management, ranching for wildlife, and drought management.

I can't always get to every tour each year, but I did attend the Namken Red Angus tour. One interesting practice I liked was how Jared Namken would plant their drylot to cover crops to keep the dust down when they wean their calves and background them in the fall.



Jared Namken discusses the use of planting cover crops in their backgrounding lot to keep dust down during the fall/winter backgrounding phase of their operation (Photo by S. Smart, 2019).



Sandy Smart
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Calendar of Events

Event	Date	Location	Contact Person	Phone
Grassland Management School	July 23-25	Watertown	Pete Bauman	605-882-5140
Daybreak Ranch Pasture Walk	July 24	Highmore	Dan Rasmussen	605-685-3315
Happy Cow Tour	July 26	Mud Butte	Judge Jessop	605-280-0127
SD Soil Health School	Sep 4-6	Hartford	Cindy Zenk	605-280-4190
SD Grazing School	Sep 9-13	Chamberlain	Judge Jessop	605-280-0127

Please remit any comments, suggestions, or topics deemed necessary for further review to: Sandy Smart, SDSU Box 2170, Brookings, SD 57007, alexander.smart@sdstate.edu, (605) 688-4017