



# Grassroots

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## Range 101: Winter Grazing Planning By Sandy Smart

Ranching in the northern Great Plains is a tough place to work especially in the winter. Traditional winter feed costs can make up 60% or more of the annual cow expense due to the costs of making and feeding hay. A typical ranch operation might feed for 90-120 days or more depending on severity of winter. Jim Gerrish wrote an interesting book entitled "Kick the Hay Habit" which he lays out alternatives to making/feeding hay. I've also heard many stories from folks who have attended Dave Pratt's Ranching for Profit School talk about these very issues. So what can we do? I'm going to talk about three things ranchers in South Dakota have tried to reduce winter feed costs: strip grazing stockpiled pasture, swath grazing forages, and bale grazing.

**Strip grazing stockpiled pasture.** You might wonder why bother to strip graze stockpiled pasture instead of just turning livestock out to graze unrestricted. Jim Gerrish had a great slide in his talk he gave during a Winter Road Show asking the question "what will a cow graze on day one when you turn them out to a winter pasture vs. what will she graze on day 100?" The answer is "whatever she wants on day one and not nearly what she needs to on day 100." Since the grass is not growing, livestock graze the best portions of the plant first and consume more stem later on. Strip grazing allows the animals to consume the best parts with the not so best parts of the plant together. Thus, you can get more "mileage" out of your pasture. Anyone who has grazed corn stalks knows this well. They pick the corn first, then the leaves and husks next, and then they beller to get moved. Strip grazing evens out the forage quality by moving more frequently, thus extending the grazing days.

**Swath grazing forages.** Swath grazing involves a bit of preplanning. The idea is to cut or mow a swath of forages (could be grasses or legumes) in late summer or early autumn to preserve the forage quality at the time of cutting. Then the swaths are grazed in winter. I have seen Larry Wagner do this well at his place. Pictured to the right is an example of quality of forage underneath the surface. This technique really works.



Winter in Harding County (Photo by S. Smart, 2002)



Larry Wagner showing a swath of grass/legume mix cut in August and what it looks like in October (Photo by S. Smart, 2010)

## Winter Grazing Planning Continued by Sandy Smart

Larry would then run a polywire parallel to the swath so the cattle would graze one swath at a time. The fence keeps the cattle on one side of the swath and reduces feed waste (see picture to the right).

**Bale grazing.** You've probably read a couple of articles about bale grazing which has been featured in the *Grassroots* newsletter in the past. It's worth bringing up again. Bale grazing involves setting up the bales in a hayfield or pasture ahead of time and then running electric fence to allocate a certain number of bales for the herd. One question you get is how much feed waste do you get and does the spot choke out the grass/legume production for next year. The answer is it depends. You can get quite a bit of waste (maybe 15-20%) and the spot can be bare the next year (see picture bottom right). However, the spots go away and the organic matter and nutrients increase the production in subsequent years. Doug Sieck from Selby, SD has been bale grazing for a number of years and he is a good person to visit with if you have questions.

Hopefully you've noticed a pattern regarding the three options for extending the grazing season. Grazing stockpiled pasture is the cheapest but has a lower harvest efficiency and lower forage quality. Swath grazing involves cutting which costs more money, but it increases the forage quality, harvest efficiency, and using a strip grazing method reduces waste. Finally, bale grazing is the most expensive, but has the best forage quality, and similar harvest efficiency as swathing. Feed wastage can be higher depending on how many bales you give the herd to graze each day. All three options are good alternatives. One thing I didn't touch on is buying hay and feeding it or bale grazing. This option might cost more than if you put up your own hay, but you get the added benefit of importing someone else's nutrients to your ranch. It also frees up time in the summer and you don't have the added cost of machinery and depreciation (although when you purchase someone else's hay you're probably paying their machinery costs and depreciation). The hard part about purchasing hay is that you are increasing risk due to volatility in the market and freight charges can be significant as energy costs increase.



Cattle grazing a swath in January of grass/legume mix cut in August. Larry (on the 4-wheeler) is moving the polywire to the new swath (Photo by J. Williams-Wagner, 2009)



Cows bale grazing (top) and patches created by bale grazing the next growing season (bottom). Photos by D. Sieck (2012, 2015).

*Sandy Smart is the Ag and Natural Resources Program Leader for SDSU Extension located in Brookings, SD.*

## The Green Side Up: Is prescribed fire a tool that is consistent with soil health and carbon sequestration concerns? by Pete Bauman

One of our board members recently posed a question about the carbon cycle and fire. The concern being that fire obviously releases carbon into the atmosphere that might otherwise be sequestered (stored) deep into the soil profile. Wouldn't this then be counter to our organizational goals? A very legitimate question given the current state of climate concerns across the globe. Intuitively, it seems like a no-brainer that smoke coming off a grassland fire would pump carbon particulate matter into the atmosphere, but not much about fire science is actually intuitive. Here's some facts to consider.

**What's in the smoke?** The majority of 'material' in smoke is water vapor with the remainder being a mix of compounds and particles depending on the type of fuel that is burning. The exact amount of water vapor is highly dependent on the moisture content of the fuel. In grasslands, burning green grass in May produces smoke with a much higher water vapor content than does burning dry grass in the fall. The remaining compounds in the smoke, including carbon from the plant, remain relatively unchanged.

**What about carbon?** Here's where things get interesting, and we need to go 'deeper'. In preparing for this article, I reviewed several resources and spoke directly with Dr. Ryan Limb, Associate Professor of NDSU's Range Science Program. He and his colleagues are in the midst of a long-term research project assessing the impacts of both fire and grazing on a broad array of plant community dynamics including nutrients and biological cycles. This research is being conducted at the NDSU Central Grasslands Research Extension Center near Jamestown, ND. Dr. Limb and his colleagues are striving to shed some light on the truths and myths of the role of fire in our northern prairie systems.

- *Grassland carbon sequestration.* The primary mechanism of carbon sequestration by grasslands is capture of atmospheric CO<sub>2</sub> through photosynthesis. Through this process, carbon is eventually transferred into the roots of the plant into the deeper soil profile (beyond about 12 to 18 inches deep). This process represents true carbon sequestration or storage.
- *Root depth matters.* While all plants utilize photosynthesis, the ability of a plant to capture and sequester carbon into the deeper soil profile depends on the plant. Our native plants, both grasses and forbs, are generally very deeply rooted and many have tap roots that extend deeply into the soil, well beyond 18 inches. Conversely, some of our most problematic rangeland plants are sod-forming exotic species, such as Kentucky bluegrass, which is very shallow rooted. If this plant dominates a rangeland, true carbon sequestration is compromised because its root system, while still processing carbon, doesn't necessarily 'sequester' it deeply into the ground and it remains more or less in the organic layer of the soil. Thus this carbon is generally not considered captured and can easily cycle back into the atmosphere.
- *Carbon in the burning plant.* Carbon released by the burning plant, whether alive or dead, is somewhat irrelevant to the total soil carbon sequestration question. The carbon that makes up the above ground 'body' of the burning plant is released into the atmosphere through smoke, but it cannot be assumed to be carbon that would have otherwise been sequestered into the deeper soil profile. Rather, this is plant material that would have either possibly been grazed (and the carbon would cycle 'above ground') or it would have generally broken down over time and become part of the duff layer and eventually part of the surface organic layer of the grassland. In any case, the majority of the carbon that makes up the physical plant is eventually released as atmospheric carbon, not sequestered into the deeper soil profile.
- *Can fire increase carbon sequestration in grasslands?* It depends on some variables, but the fair answer is yes, fire can actually increase a grassland's ability to sequester carbon. One example would be a native

## The Green Side Up Continued by Pete Bauman

plant community that is not as productive as it should be, thus not sequestering carbon. Lack of production could be due to poor management or invasion by exotic species that compete with the native grassland population. At any rate, fire is proven to stimulate native plant community production and diversity, increasing both leaf area and volume, stimulating seed production and root growth, and in some cases plant density. If well-timed, fire can also drastically reduce the competition from invasive plants which may not be contributing to carbon sequestration anyway. Stimulation of the deeper-rooted native plant community via fire can ultimately result in a plant community that has greater ability to sequester carbon over time and space.

- *Can grazing do the same thing as fire?* Certainly grazing can shift plant community dynamics. Whether that shift is positive or negative in relation to carbon sequestration is largely dependent on the application (timing, intensity, duration) of the grazing tool. In this way, grazing and fire are similar. However, the fire tool offers the manager an enhanced ability to target specific impacts because it can be applied in a singular event across a much larger (or smaller) area. For the most part, it is inappropriate to compare fire and grazing as surrogates for each other. Both are very important ecological processes that merit use in grassland management.

**Keeping things in perspective.** All land management actions have positive and negative impacts. Our grasslands have perpetual internal threats that include such things as poor management and invasive species as well as large external threats such as conversion and negative public perceptions of grazing, fire, and other management. For perspective, The Environmental Protection Agency's website includes a synopsis of sources of Greenhouse Gas emissions. US agriculture accounts for about 10% of that total, and over half of that 10% is directly related to the current management of agriculture soils and modern Ag inputs. Livestock production accounts for nearly one-fourth of the total, with the report citing methane as the primary culprit. The report does not specifically address the fossil fuel carbon footprint involved in feeding livestock, but it does mention manure management as contributing 12% of the agricultural sector's emissions total. So in answer to the question posed in the title of this article, it is important that the Coalition continue to deliver programming and education on all tools that can help any grassland manager keep healthy grass 'greenside up' to sequester carbon; whether it be a western rancher using fire for beef production or an eastern landowner utilizing fire to maintain pollinator habitat for bees or pheasants.

The Coalition will continue to host prescribed fire trainings over the next few years as funding allows. For the upcoming spring, we will be hosting the school in two different locations. The first will be a return to the Oak Lake Station while a second opportunity is being planned for the Mitchell area. Both events will be held in mid-late May. More information on both events will be forthcoming, as will more articles in this space that address fire-related questions. Next month look for an article on how fire use relates to the desire to 'armor' the soil by keeping it covered.

*Pete Bauman is a Natural Resources and Wildlife Field Specialist for SDSU Extension located in Watertown, SD.*



## SDGC Annual Meeting by Kris Miner

The South Dakota Grassland Coalition Annual Meeting will be held on December 14<sup>th</sup> in Pierre. The Annual Meeting will begin at 10 am at Richie Z's BBQ (401 S Central Avenue). Scheduled to speak is Glenn Elzinga, Alderspring Ranch, he will be sharing on the marketing and management of organic grass-fed beef. Glenn and his wife Caryl are parents to seven daughters and have been raising organic grass-fed beef for nearly 30 years. They are usually taking care of 300-400 cattle on 1650 deeded acres and 46,000 rangeland acres in Idaho. Glenn has a university background in botany and biology, with a forestry degree. You can learn more about Alderspring Ranch and Glenn at [www.alderspring.com](http://www.alderspring.com).

The Annual Meeting Agenda will begin at 12:45 and is scheduled until 1:30 pm. The meal and meeting is free to all SDGC Members. For others interested in attending the cost is just \$35 and includes a one-year membership to the SDGC.

### An Excerpt from Glenn Elzinga (Annual Meeting Featured Speaker)

We had a few lovely rain and snow events this week. You'd think I'd reserve the word "lovely" for those glorious days of deep azure blue with long shadowed light typical of fall in our high mountain valley, but the fact of the matter is that our hearts fairly ache for the land.

This, our driest year ever, needs recovering from. It'll take several winters of deep snow and quite a few fall and spring rains to recover our low ground-water reserves.

But don't despair, dear reader. There is still hope, and it is found in the living soil. I just finished calculation of our hay and pasture yields over the past 10 years. The surprising truth is that despite the drought, we were up 20% from last year and 50% from 10 years ago.

How can this be possible? Our soil testing program gave us the answer; it turns out that because of our abundant soil biology, the sponge of that matrix held enough water to fuel the growth of more grass than ever before—because the heat of our hotter than ever summer made the processes of plant and soil biota fast-track more than ever before. Our soil measurements showed that our living soils held as much as 5 times more water than other grasslands in our valley.

Where you have heat and sun, plants will respond in spades, provided they have enough water. And we had enough water—held captive by abundantly living soil. Exciting stuff. Who knew? Drought resistance sponsored by organisms we can't even see! -Glenn

Check out their informational video on YouTube <https://www.youtube.com/watch?v=CUvtez2zT-w>



Glenn and Caryl and their seven daughters make up the Alderspring Ranch.

## Getting Through the Winter *by Garnet Perman*

Dry conditions through the spring and summer impacted grazing and haying. Producers throughout the state are figuring out how to winterize their programs to compensate for less grass and less hay. Here's what some are doing:

The Mud Butte area has been dry all year. Even the October rains that covered most of the state weren't enough to make a difference for the Stomprud Ranch. Larry Stomprud implemented his drought plan by selling some cows in June. "We probably didn't sell enough," he said. They are currently stocked about 55% of normal between cattle sold and some being held in partnership. They started feeding what remains at the ranch two months earlier than usual. Their saving grace has been the surplus hay put up in 2019. They don't plan on buying any hay at this point.

Reed Suelflow by White Lake put up CRP hay. He plans to bale graze some of that and grind some as part of a ration. He'll probably use more feeders because bale grazing wastes too much. "Bales are more expensive fertilizer with the price of hay," he observed. He destocked his place in July by sending 70 head to a feeder in July. "I'm glad I did that," he said. Cover crops weren't very productive this year. The cows are on cornstalks now and will graze some saved strips of standing corn, something he's done for several years. Their place has had some fall rain, missed a couple of good soakers.

Pat Guptill of the Quinn area grass finishes on reclaimed farm ground. His focus is matching the number of cattle to available forage. He utilizes a grazing/drought plan with trigger dates and started selling cattle in December last year. He figures they are down 2/3 of normal moisture and so sold 2/3 of the cows. Their goal is to graze year round, only using hay as a protein supplement. He rolls bales out on land that needs to be rebuilt, about 5-10 pounds per day per animal. He's found that if the cattle can move to fresh pasture every 3-5 days, they don't need as much protein. "If you leave good cover, you can have green grass such as western wheat underneath," he said. He noted that the crested wheat grass is still growing. The cows are roly poly fat," he said.

Larry Wagner of Chamberlain swath grazes on a regular basis, but not this year. There just wasn't enough to make a swath, so he will focus on stretching the feed he has. He figures he can save 20% by feeding a half ration with a bale processor twice a day. "Cows don't eat what they lay on," he said. He adds some grain to the ration for extra protein. "Protein is cheap for the good you get out of it," he said. His preferred protein is field peas when available. He always buys some hay every year preferring to mine someone else's minerals. Depending on the weather he'll feed in different pastures to increase soil health. "Soil health practices really showed up this year," he noted.

Gene Ausland lives on top of the Prairie Coteau near Andover. After an open winter, an extremely dry spring and early summer and a hailstorm that beat down a quarter of pasture, he managed to squeak through the summer without sending his "clients" home. He runs 160 head on 40 and 20 acre pastures, moving every 5-10 days. Over 8 inches of rain in August and more in the fall erased their drought and even created some issues with too much water. He winters about 50 head for a relative in his feedlot. He was able to hay all his CRP and the alfalfa made a second cutting once the rains came. Everyone I spoke to is hoping for a good layer of snow sometime this winter. Continued dry conditions, especially in the western part of the state will force some producers to rethink their drought plan further.

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



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- News from the SD Section of the Society for Range Management  
SD Section Annual Meeting by Emily Helms

The South Dakota Section of the Society for Range Management held its annual chapter meeting on Monday, October 18, 2021 via Zoom. Members and non-members signed in for a morning of informative presentations, followed by the Business Meeting in the afternoon. (While the Zoom format is convenient, we hope to move back to an in-person annual meeting in 2022.)

Presenters for the day were Patrick Kozak, Krista Ehlert, and Jeff Martin. Patrick Kozak is currently a PhD student at South Dakota School of Mines. His presentation covered the salinity issues that have begun to occur as the result of stock dams and water impoundments in Western South Dakota. Krista Ehlert is the State Extension Range Specialist and faculty member at South Dakota State University. Krista talked about the work that she, along with The Nature Conservancy, NRCS, and other partners are doing to restore riparian areas using beaver dam analogs and other low-cost strategies. Jeff Martin is the director of research for the newly formed Center of Excellence for Bison Studies at South Dakota State University. Jeff provided an overview of the Center of Excellence for Bison Studies and talked about a few upcoming studies they will be working on.

Awards Chair, Jessica Michalski, announced Excellence in Range Management awards winners. South Dakota is split into four different areas for awards. Area III had two winners this year: Lower Brule Farm Corporation and Jonathan and Sheena Rohrbach. Area IV had one winner: David Gutierrez. The overall Excellence Range Management award is to be decided. That winner will have a poster showcased at that Annual SRM Meeting in Albuquerque, New Mexico in February. Look for spotlights of the ERM winners in upcoming issues!

Nominations were also held during the meeting. Outgoing president Matt Odden handed over his position to Carmen Drieling. Jameson Brennan moved up to 1st Vice President, and Tyler Swan was nominated as 2<sup>nd</sup> Vice president. Matt Stoltenburg retired from the Board of Directors and was replaced by Jessica Michalski.

We're looking forward to continued support of youth activities, as well as the upcoming in-person International Meeting February 2022 in Albuquerque, New Mexico!



Patrick Kozak (top), Krista Ehlert (middle), and Jeff Martin (bottom) gave an update on the latest research they are working on in South Dakota.



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## Calendar of Events

| Event               | Date    | Location | Contact Person | Phone        |
|---------------------|---------|----------|----------------|--------------|
| SDGC Annual Meeting | Dec. 14 | Pierre   | Judge Jessop   | 605-280-0127 |
|                     |         |          |                |              |
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Please remit any comments, suggestions, or topics deemed necessary for further review to: Sandy Smart, SDSU Box 2207D, Brookings, SD 57007, [alexander.smart@sdstate.edu](mailto:alexander.smart@sdstate.edu), (605) 688-4940



