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Range 101: Fall Monitoring By Sandy Smart

Fall is a great time to monitor your pasture resources and get a picture of how the grazing season went. It might be discouraging to do this in a drought year, but it is actually a very important management step toward preparing for next year. I am going to present three methods.

The first method, which is particularly useful, is pasture utilization. This can be done by using a grazing exclusion cage (see photo to the right). Grazing cages exclude livestock from a small area where you can clip the forage biomass at the end of the season to get an estimate of annual forage production.

Knowing how much forage your pastures are capable of producing is extremely helpful in determining the stocking rate. If you do this over a long period of time, you can develop a prediction model of how much forage your pastures produce in a dry, normal, and above normal rainfall year. I have done this for the rotational grazing demonstration site at Jim Faulstich's place and determined total April precipitation was the best predictor of forage production for the growing season. Second, if you clip outside the grazing cage, you can estimate what is remaining after grazing. Subtracting the remaining forage outside the cage from inside the cage gives you a level of utilization. Having several grazing exclusion cages located throughout a large pasture can provide a map of utilization. This map can be used to help develop management strategies to place future fences, locate salt and mineral, or perhaps add new watering sites to reduce overgrazed areas and reach under used areas of the pasture.

A second method is to measure the heights of grazed and ungrazed key forage species you are managing. This technique requires plant ID skills where the clipping method does not. The NRCS recommends measuring at least 30 individual plants, both grazed and ungrazed, of whatever species you are interested in and do this in several locations within your pasture to get a good average. Then you use a chart that has the percent weight removed as a relationship to percent height removed to determine your level of utilization on the key species you are measuring. This table is available online at: (<https://efotg.sc.egov.usda.gov/references/public/SD/No.9-PrescribedGrazing.pdf>).



Lyle Perman demonstrating the use of a grazing exclusion cage (Photo courtesy of NCRS).

Fall Monitoring Continued by Sandy Smart

The nice thing about this technique is that you don't need to put out grazing exclusion cages. However, it does take a little more time to measure 30 grazed and ungrazed plants than clipping plots. You don't learn how much forage is produced, but you do learn how your livestock select different plants if you choose to measure several species.

The last monitoring tool is called the Grazing Response Index. The evaluator (rancher or manager) determines a score for three categories: 1) frequency of use, 2) intensity of use, and 3) opportunity for rest. The scores range from +2 to -3 depending on how often you graze the same pasture, how intense you graze, and how much opportunity it has for rest. The National Drought Mitigation Center (<https://drought.unl.edu/ranchplan//BeforeDrought/GrazingStrategy/DecisionSupportToolsforGrazing/GrazingResponseIndex.aspx>) has an explanation of how to use it. You can also find a similar decision support tool for warm-season dominated rangeland (Sandhills Defoliation Response Index) on this webpage. We (Dr. Eric Mousel and I) developed a similar defoliation response index for smooth brome grass dominated pastures for eastern South Dakota and western wheatgrass/green needlegrass dominated rangeland for western South Dakota. You can download the 'South Dakota Rangeland and Pasture Grazing Records' article through South Dakota State University's Open Prairie repository at (https://openprairie.sdstate.edu/extension_circ/487/). The nice thing about this technique is that it is fast and integrates information about how the pasture was used. The purpose is to add up the scores from the three categories. If you have a negative score, it means that the culmination of management for that pasture was hard on the forage resource. Thus, you should devise a future grazing plan to intentionally give that pasture a positive score after the next grazing season is completed. As such, you are trying to offset a negative score with a positive score. This is more of a qualitative assessment (even though we are using numbers) but it includes ecological drivers which are well founded on research and producer experience.

The bottom line in all things related to management can be summed up by the famous late Peter Drucker "if you don't measure it, how can you manage it?". These tools were developed by scientists and practitioners to give managers the ability to take inventory of their management actions. Hopefully, you will find one of these tools useful to your operation.



A group of range students from South Dakota State University monitoring a transect on Dan Rasmussen's ranch (Photo by Sandy Smart, 2005).

Sandy Smart is the Ag and Natural Resources Program Leader for SDSU Extension

The Green Side Up: A Win Against Smooth Brome by Linda Simmons

Here's an offering of my humble opinion on rotational grazing on native parcels. Land that was plowed and planted to two or three species is a different story for a different time. This is a scene set in Northeastern South Dakota.

Just lately, one may have noticed big bluestem plants in the road ditches that were mowed just 30 days ago. The big bluestem, mowed once, is now 12 to 20 inches while its rival, the brome grass is still only 6 inches tall. The bluestem grew so fast it made the brome grass look like it was standing still. Think of harnessing that skyrocket native grass growth in your pasture. That fast growth ability depends on root reserves and if those reserves have been relentlessly depleted by continuous summer grazing, the plants become too weak to "take off like a rocket".

Of course, I wanted to favor big bluestem, switchgrass, Indian grass, sideoats grama, green needlegrass, leadplant, palatable sedges and other native forage species from the first day as manager 15 years ago. Smooth brome was in the way. It was taking up too much space, too many nutrients, and covering too much ground with mulch. I planned to use rotational grazing to reach the goal. The difficult question was how to use grazing to reduce smooth brome while allowing native plants to thrive.

Fortunately, smooth brome has a different growth pattern and structure. Brome depends on a bud bank of dormant buds waiting for cool weather and rainfall before they open and grow. Smooth brome goes nearly dormant in the summer and even if animals are forced to eat the tops the dormant buds are rarely damaged. It can only be hurt when it is actively growing, April/May and Sept/October. The near opposite is true of our native plants in northeastern South Dakota. Most of our native plants store carbohydrates in underground root systems. Our important warm-season grasses use their stores to rapidly create and fill out a seed head at which point their reserves are very low. That is the point when they are easily hurt. Unfortunately, the cattle need feed at that time and the plants often get grazed before the root reserves are restored. My old Soil Conservation Service charts recommended 12+ weeks of rest. Grazing native grasses when their root reserves are low is the equal to kicking them when they are down. So, each year I rested at least one paddock for a full 12 weeks of summer so the warm-season grasses could become resilient. As years went by and more acres of warm-season grasses regained their rocket like ability to grow, more paddocks were available with more summer forage. With more warm-season forage available, more rest could be arranged. After four years, the healthy native plants put smooth brome on a defensive retreat. Smooth brome is still on the decline now in the 15th year. It was part luck that we still had native plants under foot when injury to the brome was accomplished. As brome is reduced, it's important that some kind of forage takes its place. I removed some smooth brome so fast in some paddocks that there was bare soil. Some invasive weeds did increase, requiring some spot treatments. The seed bank and the dormant bud bank in most of the paddocks was full enough to fill in as fast as the brome was reduced. That is not always true.

Building enough paddocks so that at least one paddock could have 12 week minimum rest during the summer was very important. As time went by, I realized that more paddocks at the very start would have sped up my progress by allowing at least one small area to have the beaten down brome and the long summer rest that the stressed native plants needed. Once the native plants were strong they could grow faster and provide more forage, which allowed a little more time in that paddock and a little more rest in another. I learned that reducing brome is a completely different activity than improving the production of native grasses.



The Green Side Up Continued on Page 4

The Green Side Up Continued by Linda Simmons

It happened that changing our calving to May was good for our operation and that let us put pressure on the smooth brome and the reed canary grass by May 5th, sometimes April 25th. By going for the highest profit per head instead of the highest number of head we could keep them on the pasture into October, sometimes until Nov 6 and hammer brome in the fall too. The forage production is slow that early and late in the season, but there are not many native species that can be hurt at those times, so grazing to take as much as the cattle can take stresses the brome a lot more than the native grasses. At least that is how it worked in my pasture.

After 15 years of rotational grazing using this style, brome grass is still dominant in one last paddock (about 1/5th of the unit) but just barely. Because this year's spring drought was tough on the brome and late summer rains came to aid the warm-season grasses, next year might just be the year our native grass conquers the brome. In addition to the warm season grasses, it happens that green needle grass, porcupine grass (you may not like the needles but it's hard to beat the forage production), and slender wheatgrass have become the common plants under foot. These natives have replaced brome as cool-season forage. Forbs thrive and have become useful forage. There is enough Maximillian sunflower, leadplant, stiff sunflower, etc. for cattle to expand their diet and pick up nutrients not found in grasses. Longer rests allow pollinator plants to bloom and many benefits come from that.

When I started I only knew that I wanted to see the smooth brome grass suffer but since then I have learned that increasing the ability of native plants to compete is what really improves the pasture.

Be Careful Grazing the Green This Fall by Sean Kelly

With fall grazing on the horizon, nearly all of South Dakota is still experiencing drought conditions. Regardless of where your ranch is located, a rancher must be very careful when grazing the fall green-up of cool-season grasses.

Cool-season grasses have two growing seasons (Figure 1). They grow in the spring and early summer and then get another growth spurt in the fall.

Warm-season grasses grow later in the season during the summer and do not get another green-up in the fall of the year.

Extreme diligence must be taken not to overgraze during the fall green-up of cool-season grasses.

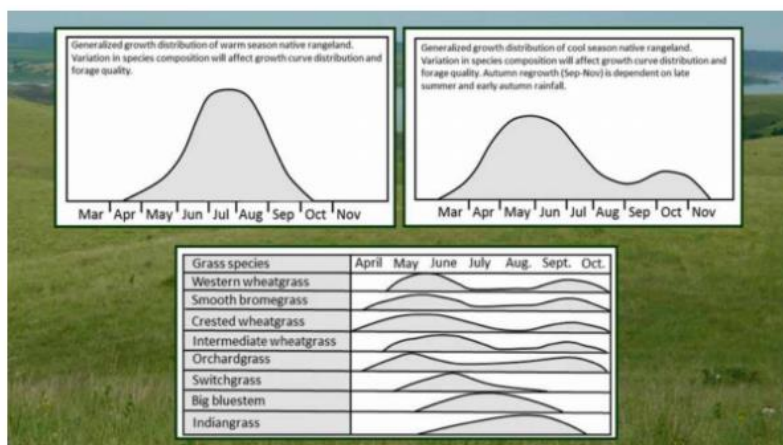


Figure 1. Warm-season and cool-season growth curves. Source: Healthy Grasslands, South Dakota Grassland Coalition.

Fall Green Continued on Page 5

Fall Green Continued by Sean Kelly

During the fall green-up, cool-season grasses are storing their energy reserves to ensure health through the dormant season and vigor next spring when the growing season starts again (Figure 2).

Tremendous damage to cool-season grasses can happen if they are overgrazed during the fall green-up, and they are unable to build those root reserves. The plant will have less vigor next spring and may die out completely during the dormant season.

Native cool-season grasses should not be grazed shorter than four to six inches in plant height. Also, by leaving sufficient plant height into the dormant season, the soil surface will be protected from erosion, and snow capture during the winter is optimized.



Figure 2. Fall green-up of cool-season pasture in Tripp county during drought year of 2017.

Sean Kelly is an SDSU Extension Range Field Specialist located in Winner



When You Don't Want to Buy Hay by Garnet Perman

Late summer rains in much of the state have boosted cool-season grasses extending fall grazing, but many producers harvested a minimal amount of hay to get them through the winter. With high hay prices, producers are looking at less expensive ways to supplement existing hay supplies.

Even in western SD, corn and soybean residues are more available as feed and forage sources than they were a decade or two ago. Corn can be used as a supplement, grazed, baled, or made into silage. The Grassroots article <https://www.sdgrass.org/wp-content/uploads/2019/05/January-2019.pdf> explains how Doug Sieck, from Selby, grazes standing corn. He plans to use shelled corn to supplement this year. He figures his cost at \$7/ bushel 10# of corn is \$1.25 per cow per day. \$100 hay is \$.05/lb. making his 10# of corn and 10# of hay feed costs about \$1.50 per head per day. He also plans to graze a neighbor's corn stalks. He baled his sudan grass cover crop instead of grazing it because with a bare minimum hay supply, he doesn't want to risk losing it to snow.

Soybeans are a little trickier to use as forage. In a YouTube video entitled "Using Soybeans as Forage" by SDSU Extension and the Soil Health Coalition, Univ. of MN Associate Extension Professor Eric Mousel lists management considerations. Beans at the R4 stage of maturity or less are suitable for grazing. Strip grazing is recommended to avoid waste from trampling. Palatability can be an issue due to dirt and cattle might balk at unfamiliar feed. Mature beans at the R5 stage or later should be managed differently than less mature beans because ammonia can build up in the rumen. These stages of soybeans are best ground and mixed with other hay.

When You Don't Want to Buy Hay Continued on Page 6

When You Don't Want to Buy Hay Continued by Garnet Perman

Sieck grazed soybeans in 2006. The beans ran about 5 bushels/acres and were about 6 inches tall. "The cows were kind of gassy and smelled different," he recalled. It took the cattle a few days to adjust to the different feed, but they did fine on the beans.

One thing to consider when grazing crop residue is the herbicide/pesticide history of that crop, particularly if selling into a certified program. Many herbicides are not recommended for a forage/feed situation or require a waiting period. Grazing and feeding restrictions should be on the label. Soybean herbicides have many more restrictions than corn herbicides. The restrictions exist because research on how chemical residual affects animals is incomplete.

Dried distillers grain is also an inexpensive feed source that can help balance poor quality feed. At approximately \$210/ton the price is competitive with alfalfa. Adding salt to distillers can help animals self-limit their intake. It's not a new idea as Lyle Perman mixed salt with corn or soybean meal during dry years in the past. Luke is planning to use a variation of that method with DDG with help from nutritionist Case Blom. The basic idea is to mix up to 20% salt with grain stuffs depending on how much you want them to consume per day. For example 20% salt with five pounds of grain equals one pound of salt. That will vary depending on the type of cattle, feed stuffs, sodium in the water and so forth. It's best to talk to someone who has experience with it like Blom. Have plenty of water available! Blom also noted that some people are substituting 10-15 pounds of soybean hulls per head per day to replace hay. Non-GMO beans are available at the soybean plant by St. Lawrence.

Travis Mickelson of Mud Butte purchased baled cattails to supplement his winter feed supply. He's used cattails before during dry years. His plan is to grind it together with some carry over hay and higher quality hay from this year. He'll mix the hay with wet distillers and corn to feed in bunks or tires to late spring calving cows. The cattails make up 25% or less of the ration. He plans to send in nutrition test samples and make adjustments accordingly. Some will probably be used for bedding. According to the University of Manitoba, young cattails are similar in nutritional value to cereal straw.

How to stretch that skimpy feed supply depends on the animal condition, age, and stage of pregnancy or lactation and what the producer is able to do efficiently. The best solution is what works best for the individual operation.



Cattle grazing soybeans in late August. Soybeans were planted following grazed winter wheat. With dry weather this year, soybean emergence was poor and the producer decided to graze it instead. (Photo by Sara Bauder, 2021).

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 Carmen Drieling

SOUTH DAKOTA SOCIETY FOR RANGE MANAGEMENT

Virtual Meeting October 18, 2021 at 9:00 am (MT)



SCHEDULE

Morning Presenters 9:00 am to 12:00 pm (MT)

Patrick Kozak

Krista Ehlert

Jeff Martin

Lunch Break 12:00 pm to 1:00 pm (MT)

Business Meeting 1:00 pm to 3:00 pm (MT)

Presenters Information:

Patrick Kozak, Ph. D. Student - South Dakota School of Mines

Presentation Title: Northwestern South Dakota Salinity Impoundment Research

Krista Ehlert, Ph. D. - South Dakota State University- Department of Natural Resource Management SDSU Extension

Presentation Title: Beaver believers- Western SD Riparian Restoration

Jeff Martin, Ph.D. – Director of Research, Center of Excellence for Bison Studies, South Dakota State University

Presentation Title: Description and updates of the Center of Excellence for Bison Studies at SDSU

Zoom link for the meeting: <https://sdstate.zoom.us/j/94677306413>

There is no registration fee



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Calendar of Events

Event	Date	Location	Contact Person	Phone
HRM School	Oct 5-7	White River	Dan Rasmussen	605-685-3315
Goat Targeted Grazing Field Day	Oct 9	Pickstown	Sandy Smart	605-651-0766
SD SRM Virtual Annual Meeting	Oct 18	Virtual	Sandy Smart	605-651-0766
Livestock Handling Workshops	November	TBD	Dan Rasmussen	605-685-3315

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, (605) 688-4940

