



Grassroots

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Range 101: SDSU Range Judging Teams through the Years by Sandy Smart

Over the summer I moved my office from the Animal Science building, across the street, to McFadden Biostress. This was kind of a bittersweet transition for me. I moved offices to become the assistant department head for the Department of Natural Resource Management and in doing so it meant that I would be leaving behind daily interactions with friends built over the last 18 years. In the process of moving, I also cleaned out the Range Club plant mount making material from the Little I closet and moved it over to a nicer spot in Biostress. In addition, I removed the famous pictures of the Range Judging teams that lined the northwest hallway of Animal Science.

I often strolled down the hallway with parents and high school students visiting SDSU to talk about the range major and the potential career path choices that lay ahead if they were willing to make a four year investment in their kid's future. The pictures of my former students, now working for the NRCS in small towns throughout South Dakota, the Forest Service in Colorado, or the Bureau of Land Management in Oregon, have always been a source of great pride for me. I have often said my research papers will probably live in print (or electronic format) forever, but it is the relationships with undergraduate and graduate students that I savor. It's even fun to see the older pictures of friends my age whom I've gotten to know because of my ties to SRM.

Not wanting the tradition to disappear, I had the secretaries in NRM scan the old photos of the Judging teams and I made a slide show. The pictures can be viewed online at the SD Section of SRM's website (www.sdrangelands.com) when you click on the SRM University Judging Contest's dropdown menu. The site includes teams from 1981 to the present. I also posted the team photos on Facebook and received a lot of entertaining responses.

When I was a soil science major at the University of Wisconsin many years ago, I never participated on the soils judging team. I always regret that decision, but fortunately I get to live it over and over as the SDSU Range Club Advisor and previous coach. I hope you get a chance to view the pictures stored online at the SD SRM website and reminisce with those you know that participated on the range judging teams!



2016 SDSU Range Judging team at the 69th Annual SRM meeting in Corpus Christi, TX.

Do You See What I See? by Rick Smith

I took some day road trips lately on roads I've never traveled before in SD and MN. Although they were new to me, they weren't very different from others and were kind of like filling in the blank areas on a map. In all directions, the combined unplanted acres I've seen driving along would be in the thousands. FSA has confirmed 3.9 million acres in SD went unplanted. Some are in cover crops (both good and poor stands), some are dark brown roundup plus killed weed fields, some are just massive green weed covered fields and others are tilled, raw dirt.

It's September now and much of the SD land I saw that was too wet to plant this year, probably won't get planted next spring either, as wet as it still is. In MN it's a toss-up, as it looks like equipment can get on most fields now, but just barely. Travelling, I realized that most of these unplanted and unproductive areas could be producing grass, meat, and milk this year. Instead, they are probably dependent on federal crop insurance just to pay the landlord or taxes. Is planting grass as a way to generate agricultural production income not a considered option anymore? Does grass only get planted when a taxpayer or wildlife funded program is provided?

Recently, I drove 95 miles east of home into western MN and looped a few miles north to return on different roads. All told, maybe I saw 50 beef cows, a couple dozen ewes, and not one operating dairy or dairy cow. Little towns with empty houses and every business boarded up looking for a windstorm to blow it down or burn are located about every 7 miles from one another. The countryside is full of abandoned, and I do mean abandoned, dairy farms and beef feedlots. The only hay put up is the mowing of road ditches. There are no pastures except the tiny over grazed 2 acre tree lots that have a menagerie of ponies and goats surrounding an old farmhouse. There are acres and acres of, I assume, CRP or some kind of State conservation acres that are growing up to volunteer trees and brome grass. And then every 5 to 10 miles will be a grain yard of five or six 30,000 to 50,000 bushel grain bins with dumping pits, driers, and huge machinery sheds. Interestingly, I saw the most unplanted acres close to those facilities. Equipment too big to navigate the wet conditions or even try? Maybe the crop insurance guarantee was just too great to make an effort to plant. Only two crops being grown, soybeans (no buyers) and corn (too much supply). I even saw some empty hog confinement barns with weeds as high as roof tops. I imagine their 10-year contracts with corporate pork fell apart just like their barns did.

If not for the Amish made pony cart I was so eager to buy for Karen and grandkids so they could ride together, it would have been a totally depressing day looking at the rural state of affairs. I couldn't help but ponder what the European immigrants, who homesteaded so much of that land, built roads, churches, schools, and grain elevators along with their own farms, with the profits from their work, would say or feel today. You've heard the quote by "farm leaders" talking about "We can't go back to 40 acres and a mule!" No, we probably can't, but we can certainly recognize the diversity of crops, pastures, animals and people that were utilizing a 160 acres to allow those communities to prosper. Following that recognition with similar response would be an improvement over what's happening to the countryside today. After all, the Amish don't have a problem with 40 acres and a mule!



Rick Smith ranches near Hayti, SD.

Using Grazing and Fire to Improve Ecosystem Services by Jake Comer and Lora Perkins

In the northern Great Plains, land surface disturbances, such as grazing and fire, are responsible for creating one of the largest grasslands on earth. Historically, bison would graze large expanses in response to wildfires that occurred ever 5 to 7 years. This natural rotation, of grazing and fire, resulted in highly diverse ecosystems. However, wildfire was largely eliminated and bison were hunted to near extinction during the time of European settlement. This dramatically decreased diversity as plant communities most beneficial and palatable to livestock were favored. This decline in diversity reduced ecosystem services, which is defined as the benefits people obtain from the ecosystem.

As plant and livestock people, we might not think about soil microbes and soil hydrology so much. However, both are key players for ecosystem services; but we do not know how land surface disturbances (such as fire and grazing) impact soil microbes and soil hydrology. Soil microbes help promote plant growth and species diversity. The soil microbial community also drives nutrient and carbon cycling. Soil hydrological processes (such as runoff and soil loss) are also obviously important for maintaining ecosystem services. Therefore, we conducted research at Cottonwood Research Station to investigate how high-intensity winter grazing and a wildfire impacted the soil microbial community and soil hydrology.



Jake Comer, former SDSU graduate student, works for Pheasants Forever & Quail Forever in his home state of North Carolina.

Our intense winter grazing (IWG) included 120 heifers that were grazed on approximately 150 acres until the vegetation reached a height of about 3 inches, which occurred in roughly one month. This was compared to two adjacent treatment areas, a wildfire (WF) and conventional grazing (CG) that involved grazing 20 yearling steers on approximately 150 acres during the summer growing season (May-Aug). In each of these areas, soil tests were performed to determine total soil microbial biomass and diversity. Computer modeling paired with field data was used to determine the severity of runoff and soil loss that occurred in each treatment area.

The results from this study suggest that the soil microbial community diversity and microbial biomass is resistant to grazing and wildfire. However, aboveground vegetation greatly influenced the soil microbial community. Areas that had higher amounts of tall-grass species had much higher total soil microbial biomass than areas with a higher percentage of shortgrass species following the wildfire. Therefore, specific site characteristics may influence the soil microbial community more than grazing or wildfire.

Conversely, grazing and fire greatly influenced the amount of runoff and soil loss that occurred. Intense winter grazing did not increase the amount of soil loss that occurred when compared to the conventional grazing strategy. However, following wildfire the amount of soil loss increased 444% - 3,094% when compared to conventional grazing. This supports that winter-grazing at high intensities can be used without causing adverse effects to the amount of runoff that occurs.

The overall purpose of this research was to compare the impacts of high-intensity winter grazing, wildfire, and summer-long conventional grazing on soil microbial communities and hydrological processes. We found that winter grazing does not cause adverse effects on the soil microbial community or soil loss. Wildfire also did not result in adverse effects to the soil microbial community but did increase soil loss. With a better understanding of the impacts of high-intensity winter grazing, decisions can be made about the suitability of this alternative grazing strategy used in the Northern Great Plains.

The Green Side Up by Pete Bauman

Revisiting Grassland and Wetland Cover for Drought and Flood Resiliency on the Farm and Ranch.

As the summer winds down and leads into the fall, it seems that our growing season never really became normal. Wetness has persisted, and even the small creek in my pasture, normally dry in August, has remained at a muddy high flow all summer due to upstream surface runoff and field tiling creating seemingly huge fluctuations in flows whenever it rains.

Here in Watertown, the National Weather Service data indicates that we are about 10 inches above average on precipitation for this time of year. What should be most concerning is that we have an agricultural system that is built on the 'average' of our weather, which in most years is never average, and most agree that our weather events are generally more extreme. Unfortunately, we've narrowed our land management toward expectations of average as we artificially move water off of and on to the landscape. Sometimes it works, but lately any fluctuation from the middle in terms of dry or wet cycles seems to wreak havoc. These are hard and painful lessons, but there are steps we can take toward a long-term solution.

Step 1: Retain what we have. High commodity prices can lead to poor land use decisions. We saw that happen from 2007 through about 2015 or so, when significant CRP and native grassland acres in South Dakota went under the plow and a large number of wetlands were tiled and drained. By some estimates, our land conversion rates might have been the highest in the nation. Compare that to the fact that South Dakota also leads the nation in prevent plant acres at nearly 4 million (20 percent of all acres reported!). How many of those recently converted acres now sit unplanted and would have been better left in permanent grassland and wetland cover? I don't know the answer, but it's a question worth considering.

Conversion of grasslands and wetlands creates a one-two punch. Not only do we sacrifice significant soil infiltration and retention when grasslands are destroyed, we also sacrifice huge amounts of long-term storage capacity without the wetland 'sponges' we so desperately need to control water from rolling downstream through our communities at such alarming rates. The solution to our water, economic, and infrastructure concerns will not be found in more conversion, drainage, or tiling. That has been made very obvious this year.

Step 2: Build back what we can. Dwelling on the problem without seeking solutions isn't helpful. The solution lies in a reversal of our actions. Although we cannot fully rebuild the biology of our native grassland and wetland communities, we can restore most of the functionality in the form of water cycling, livestock forage, and habitat. Such investment can lead to healthy economic returns that include grass-based enterprises such as grazing livestock, hay production, or recreation.

How? First seek help from the appropriate resources. Not all agencies can accommodate all projects, but organizations like FSA, NRCS, the US Fish and Wildlife Service, and SD Game, Fish, and Parks have a variety of options to help landowners start and maintain the process of land restoration with economic benefit. Private conservation groups like Ducks Unlimited and Pheasants Forever have local programs and staff ready to assist with incorporation of programs. In some instances, more focused organizations like The Nature Conservancy, Audubon, or

The Green Side Up Continued Page 6

Getting Ready for Winter by Garnet Perman

Last winter was a tough one. The Farmer's Almanac is predicting a "parade of snowstorms" on the Northern Plains. The verdict will be in next April. In the meantime, being ready for a hard winter is never a bad idea. Some things to think about include:

Where are the bales? Some producers had a difficult time getting to their hay because of where it was stored. How about items like corral panels? Feed bunks? Can they be accessed in spite of heavy snow or heavy mud next spring? Bringing bales home could be a problem in some areas of the state this fall. Would it be possible to take the cattle to the hay instead of bringing it to them?

What is your grazing plan for winter? Grazing crop residue, swath grazing, bale grazing, and just plain old stockpiled grassland are all possibilities. All help decrease labor, machinery and fuel costs.

Swath grazing—Larry Wagner has swath grazed for years. His experience has taught him that cool-season grasses cut at their highest nutritional value works well for swath grazing. Regrowth is not a problem; it helps hold the swath in place and can be figured into the ration. Pearl millet and intermediate wheatgrass work well. He thinks sudan grass or other cover crops that were planted on prevent plant acres could also be swath grazed. He usually uses his swathed fields early in the season, but has also done swath grazing in the spring after snow melt. In wet conditions he places the polywire just inside the swath. The cows reach under the fence to graze it, so the feed doesn't get muddy. Wagner prefers an east-west rectangular field to work with. Contact him at 605-680-1018 for more swath grazing tips.

Bale grazing keeps the cows fed, but the big benefit is the boost to soil health. Old hay fields, CRP, feedlots, overgrazed grassland and crop land can all benefit from bale grazing.

Dennis Hoyle, Roscoe, has old CRP ground heavy on brome that he either grazes or hays. This year he hayed it, leaving the bales where they fell. Because he's had trouble with snow insulating the electric wire, he won't section it off, but will allow the cattle full access. This has worked well in the past. The cattle can access fresh water and wind protection. He noted that this setup enables him to be gone for a few days, only needing someone to check the water. The big payoff in terms of soil health resulted in increased forage production in that field during dry years.

How much snow is too much snow for bale grazing? Dallas Anderson said it is almost unlimited as long as the cattle can get around to wind protection and water. Years ago he had a horse in with the cows and used small round bales. The cows moved in after the horse pawed through to the hay. He leaves the net wrap on his big bales today. "I think the cows clean it up better, because a new bale is harder to get started. Cleaning up the net wrap is a spring chore."

Keeping pasture in reserve for after the snow melts next spring can bridge the gap between what will likely be a very muddy spring and new grass while avoiding tearing up the pasture with a tractor. In some areas of the state, a number of corn acres suffered severe hail damage. Grazing it would be one way of salvaging it. See the January 2019 issue of the newsletter in the Coalition website newsletter and news archives for information on grazing standing corn.

When it comes to managing cattle during a South Dakota winter, having many options is the best strategy!

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

The Green Side Up Continued by Pete Bauman

Northern Prairies Land Trust can assist in short or long term conservation goals. Finally, education outlets such as SDSU Extension, the South Dakota Grassland and Soil Health Coalitions can provide resources, tools, techniques, and mentorship in partnership with all the groups previously listed.

So, if you are wondering how to adjust your operation to become more profitable with your existing grassland and wetland acres or if you are considering a return to perennial cover, seek help and support from these resources. Also, don't forget to look across the fence. If you are intrigued by a neighbor, ask questions. Or maybe, attend a field day, tour, or workshop. Over 40 grass-based education options were offered in South Dakota this past summer, take advantage of those affordable options as they arise.



A collection of agency grassland management staff and private landowners spent three days learning about tools and techniques for converting cropland back to grasslands during the SD Grassland Coalition's annual Grassland Management School, held in Watertown in July. The format of this school involves classroom learning and a variety of site visits to SDSU, agency, and private lands in the area and covers topics including: chemical residual concerns, soil preparation, seed selection, stand maintenance, profitability, and partner support options (photo by: Pete Bauman, SDSU Extension).

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: Pete Bauman

The SD Section of the Society for Range Management has had a very active year in 2019, and the level of dedication of individuals who are willing to cooperate on delivering the very best ranch and grassland education opportunities is remarkable. So many good people doing so many good things across the state provides hope that our ranch and grassland heritage will continue.

The South Dakota Section is focused on youth education. Our high school and university students represented us well at the International SRM meeting in Minneapolis, at the national range judging competition in Oklahoma, and at our annual SD Rangeland Days/Soils Days.

In addition to youth, we are committed to advancing education through our annual Excellence in Range Management Awards. We were honored to celebrate four incredible ranch operations including the Soelzer, Springer, Namken, and Connor Ranches. Further, our Section is committed to the annual Leopold Conservation Award program, having sponsored the Hamann's Blue Bell Ranch (2017 winner) and the Dan and Deb Heffner Ranch (2019 finalist).

Along with our annual ranch awards, our section is also committed to being flexible, innovative, and opportunistic. 2019 was no exception as we tailored our annual Range Camp to meet the needs of over 40 SD professional resource managers who were in need of improved range skills. Through a donation from Ag Lenders, we acquired a food trailer in an experimental effort to elevate the recognition of grasslands in SD. Look for our SRM food trailer at upcoming ranch events and tours!



South Dakota Section of the Society for Range Management food trailer donated by Ag Lenders (Photo by Matt Odden).

Finally, we wrapped up our year in September with our annual meeting and a tour of the Connor Ranch. In 2020, look for us to continue offering events like Range Camp and Rangeland Days. We'll also be partnering with the Grassland Coalition and others on another round of Excellence in Range Management tours that will include the Nix Ranch, 777 Bison Ranch, Grubl Alkali Ranch, Slim Buttes Buffalo Ranch, and the Dennis and Jean Fagerland Ranch.

It's been a fun year as your President, and I'm happy to hand the gavel off to Matt Odden with NRCS and the group of dedicated officers, directors, and members of SD SRM!!!!



Matt Odden (NRCS) presenting the Connors with the Excellence in Rangeland Management Award on September 18, 2019 (Photo by Sandy Smart).



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Calendar of Events

Event	Date	Location	Contact Person	Phone
Leopold Conservation Award Presentation at the SD Cattlemen's Convention	Dec 4	Pierre	Judge Jessop	605-280-0127
Winter Road Show with Josh Dukart	Dec 16-20	Highmore	Judge Jessop	605-280-0127
Annual SDGC Meeting	Dec 18	Chamberlain	Judge Jessop	605-280-0127

Please remit any comments, suggestions, or topics deemed necessary for further review to: Sandy Smart, SDSU Box 2140B, Brookings, SD 57007, alexander.smart@sdstate.edu, (605) 688-5503