SOUTH DAKOTA GRASSLAND COALITION

Grassroots

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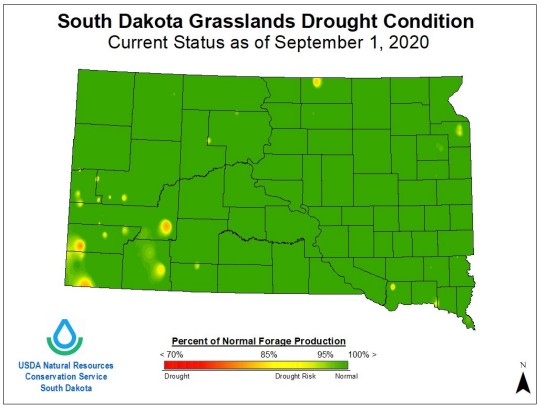
Range 101: A Strange Year for Invaders or is it? By Sandy Smart

According to successional theory, explained by either the traditional range condition model or the state-and-transitional model, invader plants show up under disturbances like heavy grazing and drought. This year has been strange (not only because of COVID-19), but the precipitation has been quite low, although you might not have noticed it to the same degree as in past dry years because we are living off of excess rainfall from 2019. For example, the Cottonwood Research station near Wall, SD received only 3 inches of precipitation from April-June. This is well below the 7.5 inch average. In Brookings, we are 3 inches below normal for April-August precipitation, yet one of my research sites has produced 6,000 lbs/acre of forage.

According to the South Dakota Grasslands Drought Condition map, we are looking pretty good across the state (see figure to the right) as my own observations would support. So why are so many ranchers and resource personnel noticing a flush of invader species such as curlycup gumweed, western ragweed, and other early seral stage plants?



It could be that the upper soil profile was relatively dry this summer, while the subsurface soil moisture profile remained wetter than normal because of the excessive moisture we received last year. Many seasoned grazers, who know how to take care of their pastures, have seen more invaders than usual. At the last board of directors zoom meeting, we discussed that this is not something to panic over. Most of the invader or early pioneering plants (like curlycup gumweed; pictured right) are annuals, biennials, or short-lived perennials. These plants invest in grazing avoidance mechanisms at the expense of growth and competitive ability. They are the 'hare' versus long-lived perennial grasses "tortoise" in the "successional race". Other native plants like western ragweed, woolly verbena, goldenrods, and heath aster can seem "scary" to producers and they may want to spray them. However, there is no need to spray because these plants will fade away in a year or two under good grazing management. In addition, cattle like to graze on some of these plants at different times of the year and pollinators use them as well.

Curlycup gumweed is a biennial forb (Photo by Kris Miner, 2020).

The Green Side Up by Pete Bauman

Energy development on private lands can result in locally heavy land manipulation. Of particular concern is the manipulation of native grasslands and other sensitive areas and how it will affect those areas in the short- and long-term. SDSU Extension and partner organizations have developed a fact sheet entitled Best Management Practices Guide for Restoration of Native Grasslands and Sensitive Sites Resulting from Energy or Industrial Development. This fact sheet is designed as a resource to landowners and energy representatives as a guide for negotiating and mitigating impacts to grasslands and sensitive sites and is available on the SDSU Extension website https://extension.sdstate.edu/best-management-practices-guide-restoration-native-grasslands-and-sensitive-sites-resulting-energy

Once native grassland is converted, it is impossible to completely restore all ecological functions of the soil and vegetation. Therefore, landowners contemplating allowing energy development should understand that a return to pre-disturbance conditions isn't feasible, if native grassland health is a goal, avoiding construction disturbance on these sites is the preferred option.

If energy development or other disturbances are allowed it is important that the landowner thoroughly understand the contract language and ensure that the contract reflects short- and long-term expectations. Energy development easements or contracts that allow for construction of temporary roads or corridors may not adequately explain the level of manipulation planned for the site, and thus it is up to landowners to self-educate and be mindful of what is allowed under the contract.

The SDSU Extension fact sheet encourages landowners to carefully consider whether energy development is appropriate for their land. If the decision is made to participate in an energy development project, the fact sheet is designed to guide landowners and energy developers through a checklist of topics to consider for the native grassland or sensitive site prior to finalizing a contract. The list of topics includes:

1. Legal review of contract parameters and retention of copies of contracts and associated forms, permits, etc.
2. Seeking advice or input from a rangeland, pasture, grassland, habitat, or ecology professional
3. Understanding and clearly defining contract language
4. Ensuring existing contracts, easements, or agreements with agencies or lessees are considered and addressed accordingly
5. Ensuring permits are acquired if necessary for disturbance of ecological, historic, or sensitive sites
6. Ensuring soils are properly removed, stored, and returned to original contours and soil horizons in a timely manner
7. Defining vegetation restoration parameters, including seed bed preparation, planting technique and timing, and a list of native species to consider as well as avoidance of all non-native and invasive species
8. Defining post-planting management responsibilities and future costs of labor, equipment, and materials to manage restored corridors for long-term success, including but not limited to concerns with weed control, chemical applications, grazing management, etc.

The Green Side Up Continued Page 3

The Green Side Up Continued by Pete Bauman

The fact sheet provides landowners and developers a platform for mutual understanding of expectations on the front end, giving landowners a clear picture of short and long term responsibilities of both parties. This guidance will help landowners prevent poorly written or negotiated contracts that can leave them responsible for potentially long-term maintenance expenses of energy corridors.

To view or print the SDSU fact sheet Best Management Practices Guide for Restoration of Native Grasslands and Sensitive Sites Resulting from Energy or Industrial Development visit SDSU Extension's Agriculture/ Natural Resources tab or at https://extension.sdstate.edu/best-management-practices-guide-restoration-native-grasslands-and-sensitive-sites-resulting-energy

Extensive manipulation of native grassland soils for temporary roads can occur with energy contracts. Photos below show examples of topsoil stockpiled for future restoration while sub-surface soils are used to level other areas. Erosion of temporarily stored soils can be a concern if not adequately managed. (Photos by Pete Bauman).

More Mental Management by Brett Nix

Have you ever wanted to make a change on your ranch but you just couldn't find the time to make it happen or you didn't know how to start?

If you are like me I seem to be able to fill each day full to overflowing. Most of us are busy fixing fence, repairing the leaky water tank valve, welding the loader, moving cattle, and returning phone calls. Making time to slow down, sit and think things through, and strategize is nearly impossible. I have to convince myself that I am not too busy and that I am not being lazy.

I call this time "mental management". And I believe it is the most important and profitable time that I invest in our business. Part of this time is spent deciding how to implement regenerative and profitable grazing and soil principles. We have set out on a journey to help our soil and plant community be as resilient as possible. Some of the goals involved are: 1) keep the soil covered, 2) create and promote diversity above and below the ground, 3) have living roots and green leaves as many days of the year as possible, 4) practice short graze periods and adequate recovery periods, 5) have as few herds as possible, and 6) keep adjustable stocking rates and as high of stocking density as we are comfortable managing.

These goals do not implement themselves but require thought and research. That is where our willingness to spend time managing comes in. To increase stocking rate we must increase forage production and often water capacity. At some point, adding permanent or temporary fence is necessary. Deciding when and where to calve. Maybe how to provide dormant/winter feed while better utilizing our resources, all the while keeping an eye on our goals.

To manage all of the pieces of this puzzle that we call our ranch, we have had to get out of the coral and seek educational opportunities. The SDGC provides grazing schools, workshops with tremendous speakers, and pasture walks at ranches that are already doing what we are trying to accomplish and access to ranchers who are willing to answer our questions.

The SDGC now offers a consulting program to grazing school graduates who would like help in implementing positive changes on their ranches. You can contact Dan Rasmussen listed on our website if interested.

I have had to learn to carve out time in the office in front of our ranch maps or tie up the horse (or four wheeler) under the shade tree, and allow my mind to slow down and think through what it is that we want to accomplish. Being willing to reach out to others who were so graciously willing to share with us has allowed us to accomplish so much more than had we gone it alone.

Brett Nix ranches near Murdo and is the Chair of the South Dakota Grassland Coalition Board of Directors.

Shelter Belt Renovation by Garnet Perman

Driving through the state we've noticed a fair number of shelter belts with dead trees. If your trees are dying or your shelterbelt is old and in need of renovation, early fall is a good time to think about what to plant next spring. Soil Conservation District offices place orders with their suppliers starting in mid-October. The large number of dying pines and spruce in the state is a response to the wet weather in 2019.

Some things to consider before ordering trees include the cause of death. Did they have a disease or pest that killed them? Will this be an ongoing problem? Are they in a low lying area that has been too wet for the past couple of years? Is the soil type compatible with the species planted? What is the purpose? Is it for windbreak, livestock, wildlife, or soil erosion control?

Appropriate soil type for the trees planted is the most overlooked yet most critical component in successful tree plantings. Even old feed lots can be too high in nitrates and most SD soils are more acidic than many trees prefer. Doing a soil test or looking up soil types for your area at https://websoilsurvey.nrcs.usda.gov/app/ will help determine the best trees for a specific location. NRCS has a list that shows suitable soils and expected height for most shelterbelt species.

Nathan Kafer with the SD Department of Ag says that most conifers can only handle about a week of saturated soils or standing water before damage occurs. Weakened trees are more susceptible to already existing blights and fungus. The extent of the damage doesn't show up until the next year.

Owen McElroy, Resource Biologist with SD Game Fish and Parks observed, "If you're looking to benefit wildlife, stick to trees that are native to North America …those that attract the most caterpillar and sawfly larvae. It probably seems silly to plant something to attract bugs that feed on the tree, but they are what you need to start the food chain. Native trees have co-evolved with most of these species and tend to have no problems dealing with them." Native trees such as burr oak and hackberry require special care with tubing for several years.

Many shelterbelts are 50 plus years old and need renovation. Kafer gave suggestions working on an older planting. Consider diversity, soil types and shade from existing trees when adding rows to the outside of a belt. Diversity is an important consideration as past experience with overplanting some species has shown. Consider varying species with compatible growth habits within a row.

Instead of planting new trees, allowing cattle to graze an area for 7-10 days can control competing brome grass while hoof action helps regenerate existing seeds. Siberian Elm and cedars will grow on their own if the grass is kept under control.

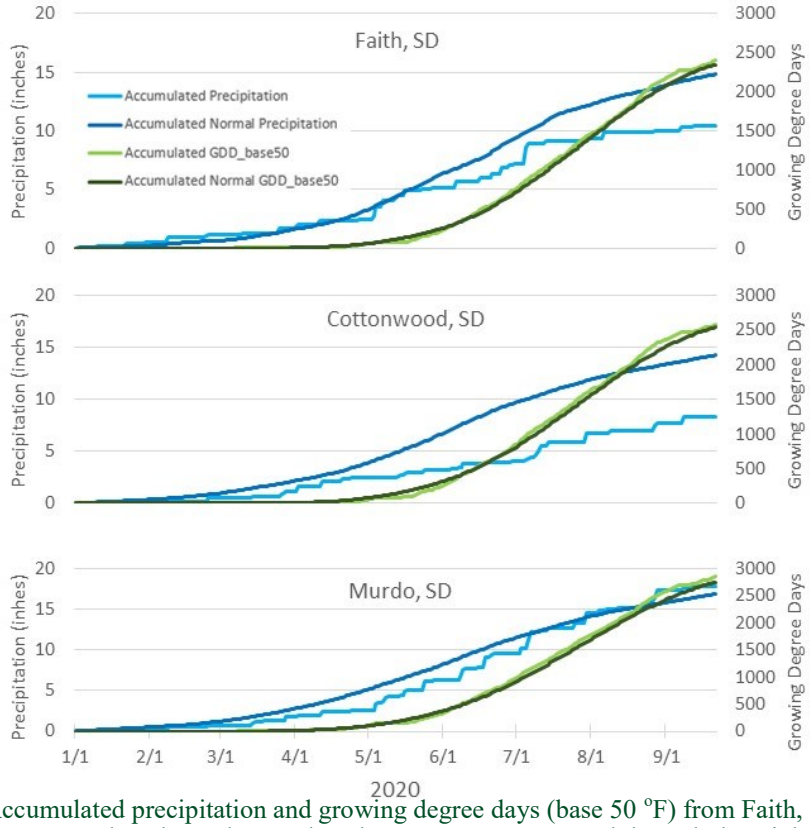
Shade tolerant junipers can replace dead trees within an existing planting. Scraggly shrub rows can be rejuvenated by cutting them back to ground level after blooming. They will rebound very well in a year or two. Black Walnut and Black Cherry are both gaining in popularity but are toxic to livestock. Black Walnut can even kill other plants so companion trees need to be compatible. Other newer species that may work include Mongolian Oak, Siberian Larch, Northern Catalpa and White Pine. American Linden and Little Leaf Linden do well in urban setting in South Dakota. Meyer Spruce is an alternative to Colorado Blue Spruce. Another good resource for ideas of what to plant is the nursery your local Conservation District order from.

One other consideration when planting near a road is to check your county regulations regarding setback. Planting trees is a big investment in terms of money and effort with long lasting consequences. Wise planning makes both the short- and long-term experience more satisfying.

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

Fall Grazing: Will It Cost You Next Spring? by Sandy Smart

This year has been drier than normal for some parts of South Dakota although you might not have noticed it in terms of forage growth because of the really wet conditions we had last year. I pulled the daily precipitation and growing degree day data for Faith, Cottonwood, and Murdo since January 1, 2020. In the graph below, the light blue line indicates the accumulated precipitation and the dark blue line is the accumulated normal precipitation. The two green lines represent the growing degree days base 50 °F, which is used for cool-season crops. Since much of our forage comes from cool-season grasses this seemed most appropriate. This was not an overly hot year as you can tell by all three green lines overlapping each other at Faith, Cottonwood, and Murdo. There was a striking difference in precipitation received, Cottonwood is showing a 6 inch deficit, Faith a 4 inch deficit, and Murdo is at about normal.



Accumulated precipitation and growing degree days (base 50 °F) from Faith, Cottonwood, and Murdo, South Dakota. Data was accessed through the High Plains Regional Climate Center https://hprcc.unl.edu/onlinedataservices.php.

What does this mean for next year's forage production? Perennial plants form buds in the later part of the summer and store carbohydrates in stem bases, rhizomes, and roots for surviving the winter and initiating growth next spring. The lack of precipitation in places is likely to reduce these two processes. Compound that with grazing too hard in the fall (not leaving enough standing material), and you increase the chances of interrupting the carbohydrate storage process and could interfere with bud formation. Thus, it would not surprise me that we will likely see a decrease in forage production next year from areas experiencing a rainfall deficit like Cottonwood and Faith, SD. Historically, we see lag effects from droughts. This year we just don't notice it because it was masked by high rainfall in 2019. This is one reason why range specialist have advocated for a two-year rolling average of precipitation to help make decisions rather than just relying on the current year. This is one of those weird situations we find ourselves in. Be observant of how this plays out next spring/summer. Follow your drought plan. An important trigger date in our region is May 1st. To learn more about drought planning visit the National Drought Mitigation website (https://drought.unl.edu/) or visit with one of our Coalition mentors (https://www.sdgrass.org/mentoring-network/).

SRM CORNER - *News from the SD Section of the Society for Range Management*

By: Emily Helms

SD Section of the Society for Range Management would like to continue recognizing the Excellence in Range Management award winners from 2019. The Excellence in Range Management Award is given to agricultural operations across the state of SD. Award winners are typically announced at the Annual Section Meeting, which is normally held in the fall of each year. The 2020 meeting has been postponed, so award winners for 2020 will be announced at later date.

The 777 Bison Ranch was awarded the Area IV Excellence in Range Management Award at the SD Section SRM meeting in September 2019 (pictured right). The 777 is owned by Mimi Hillenbrand and managed by Moritz Espy. The ranch was nominated for this award by SD SRM member Matt Odden (current Resource Unit Conservationist located in Hot Springs, SD). The ranch boasts over 26,000 acres of native range and is located in Custer County.

Moritz Espy, 777 Bison Ranch manager, and Matt Odden, NRCS, receiving the Excellence in Range Management Award at the SD SRM annual meeting in Deadwood, SD (Photo by S. Smart).

The ranch has been in Mimi Hillenbrand's family since the 1970s, initially as a cattle ranch. In the 1980's the family decided to switch to bison as their animal of choice. Along with their switch to bison, they decided to focus on holistic management to help take care of the land and the people involved with the ranching enterprise. Since the switch from cattle to bison, and the switch from economic driven production to holistic management, the 777 has seen an increase in diversity of native plants and animals, as well as better soil health.

The 777 tries to mimic bison herds that pre-existed European settlement, by moving large herds across the landscape, quickly moving from pasture to pasture. The ranch has a growing season grazing plan as well as a dormant season grazing plan – which allows the entire ranch to be resilient and adaptive to changing weather conditions.

The biggest change the ranch has seen over the years is going from 3,000 acre pastures to 250 to 300 acre paddocks. This change puts about 10 animals per acre, which allows for better utilization of the resources and greater rest periods for the landscape. Bison are only in each pasture for a very short amount of time, usually only 1 to 3 days. The ranch also utilizes temporary electric fences to improve management from year to year.

Mimi Hillenbrand and Moritz Espy, 777 Bison Ranch, pose in the South Dakota Amazing Grassland video shoot. Watch their story online at: https://www.youtube.com/watch?v=4pfctlH77MM

The 777 was featured in the 2019 SD Grassland Coalition Planner and video series. Mimi is also a Voices for Soil Health and part of the SD Mentoring Network.

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Calendar of Events

Event	Date	Location	Contact Person	Phone
Leopold Conservation Award Tour	Sep 29	Belle Fourche	Judge Jessop	605-280-0127
SD Grazing School	Sep 15-17	Chamberlain	Judge Jessop	605-280-0127
Freeland Pasture Walk	Oct. 5	Caputa	Judge Jessop	605-280-0127
Faulstich Pasture Walk	Oct. 6	Highmore	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