



Grassroots

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South Dakota Mesonet: Tools for Drought Planning by Sandy Smart

Drought planning is an important component of ranch management. A good drought plan should have a series of critical “trigger dates” in which the manager evaluates climate information and makes predetermined decisions to manage the land and live-stock resources before it is too late.

April 1, is a great trigger date to look backwards and reflect on the following questions:

- How much precipitation was received during last year’s growing season?
- How much precipitation was received during the fall and winter?
- How moist is the soil now?
- What are the rapid drought indices showing now?
- What are Climate Prediction Center tools indicating in the 1-, 2-, and 3-month outlooks?

South Dakota Mesonet Ag Weather Tool

To view the growing season precipitation trend compared to the 30-year normal, click on the link ‘Ag Weather Tool’ under the Tools dropdown menu <https://climate.sdstate.edu/tools/et/> and choose as station nearest you. Through the dropdown menu you can chose the current year or previous year’s dating back to when the particular station was installed. The graph gives you a cumulative curve of precipitation with the 30-year normal as a solid line. If you hover over any particular date, it will display the total and normal rainfall up until that date so you can see the exact difference.

South Dakota Mesonet Archives Local Data

To view a specific period of time such as the previous fall (October-December) and winter (January-March) or an individual month’s precipitation, click on the ‘Archives’ tab and select ‘Local Data’ (<https://climate.sdstate.edu/archive/>). Select the weather station, the period, and the year. It is easiest to select one month at a time because it summarizes the information at the top of the page and includes the deviation from normal.

South Dakota Mesonet Soil Moisture

To view the soil moisture at different depths, click on the ‘Archives’ tab and select ‘soil moisture’ from the ‘Select Layer’ dropdown menu on the map. The map will show a series of different colored ‘poker’ chips that correspond from top to bottom the

South Dakota Mesonet Continued by Sandy Smart

soil depths of 2, 4, 8, 20, and 40 inches. The different colors refer to the percent volumetric soil content of 0, 10, 20, 30, 40, or 50+% water in decimal form. Soil water content of 20-40% are at field capacity on soil texture. You can also view the soil thaw depth from this same page by selecting the 'thaw depth' layer. As of March 1, 2024, the southern half of the state's soil has already thawed. Many locations across the state have soil water content ranging from 10 to 30 percent at the 20 and 40 inch depths.

You can also view a map of soil moisture of South Dakota from 0-200 cm (0-78 inches) from the 'Climatologist' tab and select the 'Drought Dashboard'. On the next page select 'Soil Moisture'. The first map shows North Dakota and South Dakota soil moisture percentile. Normal range is 30-70% and drier is <30% while wetter is >70%. Keep in mind that this is more of an experimental estimate.

South Dakota Mesonet Rapid Drought Development Indicator

To view the latest drought monitor and more specifically the 4-week Evaporative Demand Drought Index (EDDI), click on the 'Climatologist' tab and choose the 'Drought Dashboard'. From there select the 'General Drought Information' to see the current drought monitor and EDDI. The 4-week EDDI ending March 8th (Figure 1) is particularly interesting this year because it shows the influence of the thawed soils and warmer February temperatures are drying out the soil (Figure 1).

Climate Prediction Center

From the South Dakota Mesonet page if you click on the 'Climatologist' tab and choose 'Drought Dashboard' and then select 'Forecasts/Outlooks' on the next page and you can look at short-term and long-term outlooks on temperature and precipitation. It is recommend viewing the 1-month and 1-3 month outlooks on both temperature and precipitation. Specifically, the April, May, and June 3-month outlook is very important because this is the time period we receive most of our precipitation and most of the annual forage production is produced by July 1. Keep looking at the 3 month forecast every week as the April-June period progresses because the prediction is updated weekly.

You can also go directly to the Climate Prediction Center by visiting the website <https://www.cpc.ncep.noaa.gov/>.

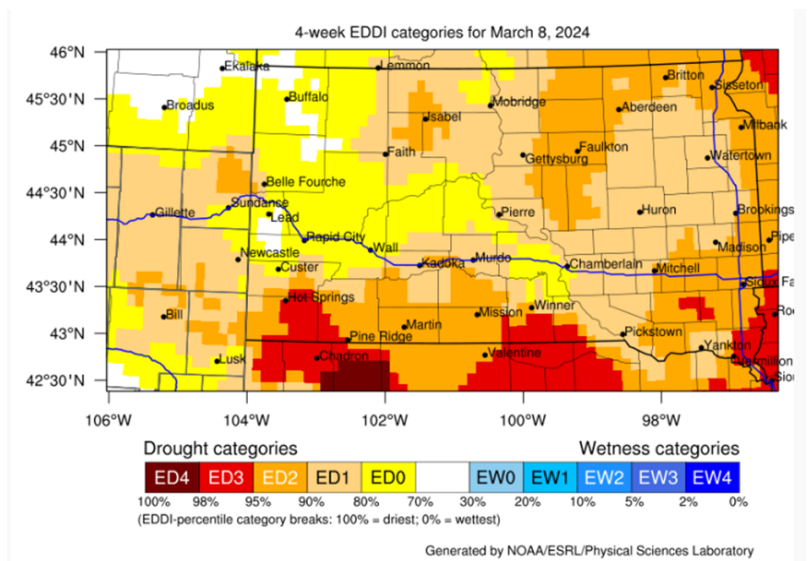


Figure 1. 4-week Evaporative Demand Drought Index (EDDI) for South Dakota ending on March 8, 2024. The index takes into account the previous 4 weeks starting on February 8, 2024 into consideration.

Do You Want To Hang On To The Ranch? by Garnet Perman

The SD Grasslands Summit in Oacoma on March 18 and 19 featured several speakers and a panel focusing on the financial aspect of keeping grass right side up. Only 16% or about 98 million acres of the original North American grassland biome is still intact. A large percentage of those grasslands are privately owned, working lands. Helping grassland managers score a profit is an important part of sustaining that biome into the future. “Lack of economic information is a major obstacle to conservation success,” said Dirac Twidwell, Professor and Rangeland Ecologist at the University of Nebraska.

Victor Tuschen is the new SD USDA-NRCS ag economist. This is a new position intended to help producers make good financial decisions. His presentation on how to be economically profitable included what he called the GPS Method:

1. Know your current location—track all expenses and inventory, cash flow, winter feed costs, etc.
2. ID your destination—set goals such as improving water quality, planting cover crops and livestock protection. Identify the obstacles to getting there, consider alternatives to address concerns.
3. Ask for directions—free services and information are everywhere. Part of his job is to help identify those sources for producers. For the technically inclined, there are many new apps that help with record keeping and tracking expenses. A knowledgeable insurance agent and banker should be able to help as well.

Dave Koupal, Ag Manager/ Loan Officer with the Black Hills Credit Union and rancher gave a list of information that will help a producer’s lender be the best possible partner for them.

1. Good communication, the more often the better. Talk about the goals of your operation, the good and bad of what’s currently happening, opportunities that may come up, enterprise analysis and transition and estate plans.
2. A current balance sheet that includes inventory, other loans and fair pricing for your assets. An updated inventory should also be provided to your insurance agent.
3. Tax returns from the last three years. If your tax preparer sends them make sure a password is included.
4. Cash flow figures
5. Ideas that could generate income in the future such as easements, energy development, carbon credits, genetics that fit the ranch and operational flexibility are examples. A mortgage may be a factor in being able to sign some agreements. Your banker should be knowledgeable about that aspect of the law.

Don Mogen, CEO of Starion Bank in North Dakota, addressed transition and succession. Only 30% of ranches survive past the second generation and only 12% past the third generation. Some of the reasons why include lack of planning, mindsets that are locked into traditional ways of operation, the tendency to react to challenges rather than work toward goals, unhealthy family relations, and unsustainable debt loads are some of them. Shopping around for a banker that understands your operation may be in order, or you may have to educate them as many ag lenders today have little farm or ranch experience. This is especially true in regenerative agriculture where soil health practices are often more profitable long term instead of traditional short term enterprises.

A good financial plan is as important as a drought plan if you want to hang on to the ranch!

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

South Dakota Grasslands Summit by Laura Kahler



The South Dakota Grasslands Initiative, with committee member support representing an array of agencies & organizations, were able to share about the significance of South Dakota grasslands by hosting about 250 people at the SD Grasslands Summit, held in Oacoma in March 18-19.

Throughout the first day of the Summit, an array of speakers shared about the grasslands with presentations and panels addressing ideas related to the ecological benefits and economic opportunities grasslands face. Speakers included educators, producers, ag lenders, and conservation professionals. All of Monday's presentations will be available for public viewing on the USDA-NRCS South Dakota YouTube Channel by the end of April.

On Tuesday morning, the focus shifted into what each partner in attendance could do for the grasslands. After the January partner meetings, I pulled together all of the ideas shared from attendees at those events and other conversations to develop 5 goals that partners have identified as being areas they would like to see have increased collaboration in South Dakota. These include:

- 1) Grassland funding: connecting producers & programs available for conservation;
- 2) Partner to partner communication, coordination and collaboration;
- 3) Marketing & education of grasslands and grassland conservation;
- 4) Use research to support the grasslands and;
- 5) Education decision-makers, and support programs that sustain grasslands.

If you have feedback on these goals, or the committees that will support their work, please fill out the form at this link (<https://forms.gle/Bp2Kn5YjwHdP58aF6>), or reach out to me. Once feedback allows for the goals and committees to be solidified, partners will have the opportunity to apply to serve on these committees, as well as provide support to the work of the committees.

Tuesday morning of the Summit also allowed time for attendees to gather at a table of peers and delve into the question of what they can do to support the grasslands as partners. Tables reflected and conversed on what they are currently doing, resources they have available, how they can connect their current customers to the grasslands, and goals of the Initiative they would like to focus on supporting. This inspiring session showed an array of ways that attendees are looking to continue to use, or expand their role to support the grasslands. This included ideas for sharing the message of grasslands with youth, customers & neighbors, supporting policy for the

Grasslands Summit Continued *by Laura Kahler*

grasslands, taking action on the land, and many more ideas which I hope we see move forward. Another piece that was brought up by partners was a commitment to become more aware of what other partners have available and are doing.

The event concluded with a policy forum, during which we heard updates from four different NGO policy staff members on regional and national policy focus topics, including the Farm Bill, CRP and the North American Grasslands Conservation Act. We also heard from Rebecca Herman from Senator Rounds office and Ben Ready from Senator Thune’s office, and attendees had the opportunity to share their thoughts or concerns related to grassland policy with the audience and those representatives.



Thank you to all who were able to attend the event, and to those who took the time to provide insightful feedback. If you haven’t yet filled out the attendee feedback form, it is available at: <https://forms.gle/st7hj9AANdRstrXm9>

If you are interested in supporting the Grasslands Initiative, or simply would like to be more informed on its efforts, please complete the [SDGI Interest form](#). Anyone, an organization or individual, who supports the mission of the SD Grasslands Initiative is welcome to join us to increase our impact on grasslands through collaboration. I hope you’ll join us for our quarterly partner meeting, to be held virtually this time, on Monday, April 22nd at 1 pm central/ noon mountain via zoom: <https://us02web.zoom.us/j/84774382074>.



South Dakota
GRASSLANDS INITIATIVE

Build Your Plan, Learn From Experience by Tanse Herrmann

Let me navigate through some key considerations for grazing rotations that offer strategies that enhance rangeland soil health to improve, regardless of your starting point. If you're doing all these things already, great! Keep it up but don't be too predictable. Plans that never change for years, even decades on end, usually fail. Switch something up. After making a change, your first judgement may be "I failed," but give it until next year to judge that harshly. Sometimes a very short duration 'shock event' with a disturbance like grazing or planned fire leads to a completely awesome response from native plants! Lots of variables are in play. Reach out to someone with experience in making a similar change for some advice before committing the same mistakes others before you have made! Often, NRCS planners and many of our partner biologists have walked through such changes with multiple operations – they might be able to offer helpful insight too.

In order to ensure diversity of plants has an opportunity to prosper, be sure to switch turn-in date (sometimes called season of use) in each pasture by several weeks from one-year to the next. Healthy rangelands have some mixture of cool-season grasses, warm-season grasses, cool-season broadleaves, and warm-season broadleaves. The existing mix varies depending on ecological site, local climate, and likely has been influenced by human management of livestock for the last 100+ years. In many cases, management changes can foster improved diversity, drought resilience, lengthened seasonality of forages grown, and added flexibility in grazing management.

In order to improve soil health and the capacity of your soils to infiltrate water rapidly, be sure to leave behind plenty of material after grazing (horizontal is best, but vertical stems have value too). What's the magic number of how much to leave? 800 pounds per acre is often cited as the minimum to 'maintain'. Many of our rangelands in SD are degraded in some manner – exotic cool-season grasses, historic over-utilization, localized compaction, livestock trailing, gully erosion, slow water infiltration rates, etc... the list of issues that cause lack of function on range is lengthy. I may have mentioned a few here that you've observed at home or elsewhere. If we're going to turn things around, it needs to happen with soil health. Maintaining may not be adequate. I suggest understanding what resource concerns you have present – pasture by pasture, then begin developing a strategy. Where do we start? How much forage do we want to leave behind? Then, how much forage do I have? Then, how many animals can graze, and for how long? Should we be increasing stock density and lowering the number of days livestock impact any given acre? Many times, these strategies begin compounding one another in a very positive way.

These are just a few of the key considerations you might ponder as we continue into the critical 3-month period (April, May, June) on the calendar where 2024 productivity is truly sealed on our range and pasture lands in the state. Did you know the past 1 ½ years also play a role in this year's production? Not only do precipitation amounts and timing play important roles, but also the timing of grazing events and the condition of forages post-grazing. Did you also know that plant roots may completely stop growth, and actually die-back, if we over-utilize the above-ground plant material during the active growth period? Timing and degree of utilization from grazing can and does leave a lasting impact on the landscape if we don't plan and implement management adequately! This is an area where the 'science & art' of grazing management intersect.



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- News from the SD Section of the Society for Range Management
University Success at Annual Meeting by Sandy Smart

This year's SRM Annual Meeting was held in Sparks, NV January 28-Feb 1. The SDSU Undergraduate Range Management Exam (URME) Team placed 6th out of 20 colleges and universities. The team was coached by Dr. Lora Perkins and Dr. Lan Xu.



2024 SDSU URME Team: Left to right front row (Annie Feden, Kaitlyn Preszler, Tyler Geltmacher, Elise Anderson, Alex Medvec); back row (Nick Busse, John Sump, Allie Fischer).

Others that attended and presented at the annual meeting included:

- James Bolyard (SDSU) - "The impact of long-term stocking rates on soil moisture content and drought resilience" (K. Ehlert, J. Brennan, C. Graham, I. Parsons, H. Menendez)
- Jamie Brennan/Hector Menendez (SDSU) - Symposia: Improving Efficiency of Livestock Behavior Analytical Approaches: Incorporating Machine Learning into Analysis of Sensor-based Behavior Data
- Hadley Dotts (SDSU) - "Rangeland resiliency and plant community dynamics in response to three stocking rates over 34 years" (J. Brennan, H. Menendez, K. Ehlert, P. Johnson)
- Krista Ehlert (SDSU) - "Successes, challenges, and takeaways from developing a rangeland curriculum for middle school students in South Dakota" (J. Bachelor)
- Krista Ehlert (SDSU) - "What's in a name? Virtual fencing terminology for the enhancement of research, extension, and industry applications" (J. Brennan, J. Beard, R. Reuter, H. Menendez, L. Vandermark, M. Stephenson, D. Hoag, P. Meiman, R. O'Connor, S. Noelle)
- Krista Ehlert (SDSU) - Workshop: Agents of change: stories of the past, present, and future from women on the range
- Krista Ehlert (SDSU) - "Women's safety on the range: Considerations for change"
- Bobbi Eide (HSYF delegate) - participated in the High School Youth Forum as the SD Section of SRM representative
- Tate Lantz (NRCS) - "Chuck and Koreen Anderson 2022 Excellence in Range Management Award Winner South Dakota Area IV"
- Ira Parsons (SDSU) - "Cue frequency and animal behavioral response to changing virtual paddock boundaries in extensive grazing systems" (J. Brennan, H. Menendez, L. Vandermark, E. Moreno, K. Ehlert, H. Dotts)
- Kaitlyn Preszler (SDSU) - "Not just a pretty face: the importance of forbs for cattle nutrition in South Dakota" (K. Ehlert, J. Leffler, L. Perkins)
- Matthew Rigge (USGS EROS) - "RCMAP Updates and Future Work" (B. Bunde, K. Postma)
- Logan Vandermark (SDSU) - "The significance of extension programming in promoting the adoption of virtual fencing" (K. Ehlert, J. Brennan, H. Menendez)
- Logan Vandermark/Krista Ehlert (SDSU) - Workshop: Virtual Fence Working Group
- Park Witt (SDSU) - "Effects of soil quality and rangeland forage growth and nutrition without reliance on underground storage mechanisms" (K. Ehlert, J. Brennan, J. Leffler)
- Lan Xu (SDSU) - "Spatial distribution for seed predation by insets in eastern redcedar in South Dakota. Society for Range Management" (J. Korst, C. Sachen, A. Smart, A. Boe, A. Martens)

Finally, Dr. Jammie Brennan was honored with the Outstanding Young Professional Award and Dr. Patricia Johnson was honored with the Sustained Lifetime Achievement Award at the SRM Awards and Honors program.



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Calendar of Events

Event	Date	Location	Contact Person	Phone/email
SD Grassland Initiative Quarterly Partner Call	Apr 22	Zoom	Laura Kahler	laura.grass@sdconservation.net
National Land and Range Judging	Apr 28—May 2	Oklahoma City, OK	Sandy Smart	Alexander.smart@sdstate.edu
SDGC Bird Tour	June 3-4	Rapid City	Judge Jessop	605-280-0127
West River Grazing School	June 11-13	Wall	Judge Jessop	605-280-0127
Pasture Walk-Rock Hills Ranch	June 25	Lowry	Judge Jessop	605-280-0127

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

