

# The Role of Drought Preparedness in Improving the Sustainability of Great Plains Ranches

## Final Report for ENC11-126

Project Type: Professional Development Program

Funds awarded in 2011: \$56,366.00

Projected End Date: 12/31/2013

Region: North Central

State: Nebraska

Project Coordinator:

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National Drought Mitigation Center

## Project Information

### Abstract:

In order to improve drought resilience and long-term sustainability of ranches and rangeland in the North Central Region, this project provided education on monitoring and planning for drought. The primary output was a series of five webinars on drought planning, targeted to a wide range of ranch advisors and professionals in North Dakota, South Dakota, Nebraska, and Kansas. Archived webinars are available for public use at <http://www.drought.unl.edu/ranchplan>. More than 225 agricultural educators, professionals, policy makers and producers viewed the webinar series in real time, and over 575 have accessed the information online.

### Project Objectives:

Project Goal: To increase the technical support available to help rangeland managers mitigate and plan for drought in ways that enhance ecological, economic, and social sustainability.

### Project Objectives:

1. To increase agricultural educator/professional awareness of the need for, and challenges of, drought mitigation and planning for sustainable ranch management
2. To increase agricultural educator/professional knowledge of drought mitigation and planning strategies that improve ranch sustainability
3. To increase agricultural educator/professional knowledge of, and ability to comfortably use, drought monitoring and decision-making tools

### Introduction:

Livestock producers throughout the North Central SARE Region experienced severe drought between 2000 and 2007, and again between 2011 and 2013. This recent experience with drought provided a unique and valuable window for drought preparedness education. Most existing drought education efforts focus on short-term response and recovery. Such ad-hoc responses are often expensive, and they are not focused on enhancing long-term rangeland sustainability or reducing ongoing drought vulnerability. In fact, some federal drought responses may increase drought vulnerability by encouraging ranchers to “wait and see,” resulting in overgrazed and degraded rangelands (Thurow and Taylor 1999).

According to a recent survey of members of Nebraska sustainable agriculture and holistic grazing organizations, many sustainable/holistic producers believe they fare better during drought than do their “conventional” counterparts (Knutson et al. 2011). In addition, they believe education tying sustainable production practices to drought preparedness will help other farms and ranches become less vulnerable to drought. Many holistic grazing practitioners also recommend developing a ranch drought plan. Producers with a drought plan actively monitor resources; build ecological, financial, and social resilience into their operations; and are proactive during drought in order to minimize short- and long-term damages. Unfortunately, in 2001, the National Drought Policy Commission found that fewer than 10% of agricultural producers were receiving technical assistance to prepare a drought plan, and even fewer were receiving cost-share assistance for implementing their plans (NDPC 2000).

This project is based on the premise that education on planning for drought and implementing sustainable range management practices is needed before, during, and after drought occurs. New tools have been developed to meet these educational needs, including the National Drought Mitigation Center’s (NDMC’s) “Managing Drought Risk on the Ranch” web-based planning guide; VegDRI, a new vegetation drought response index providing valuable information for sustainable rangeland management; the Drought Calculator, software designed by the NRCS-SD to support sustainable stocking rates and grazing management; and financial decision-making tools available through the University of Nebraska’s AgManager’s Toolbox. Fostering awareness and education about these tools and their applications will improve overall sustainability of rangeland management in the north-central region and beyond.

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# Education & Outreach Initiatives

Objective:

Description:

## Methods

Project staff worked with ranchers and ranch educators (Ranch Drought Management Advisor Group) to develop the webinar program over the summer of 2012. The decision was made to offer the webinars as a monthly series of one-hour sessions, each session focused on a key aspect of ranch drought planning. Each session also included a climate and drought update by NDMC staff climatologists. The webinars were hosted from the NDMC offices and speakers were able to participate from their own offices (or for producers, a local NRCS or UNL office), minimizing travel expenses.

Project staff worked with NCR SARE Professional Development Coordinators in North Dakota, South Dakota, Nebraska, and Kansas to select appropriate dates for the webinars. The webinar series was scheduled for January through May of 2013, and included:

- January 30: Managing Drought Risk on the Ranch: The Planning Process, by Jerry Volesky, Range and Forage Specialist at the UNL West Central Research and Extension Center in North Platte, Nebraska, and Lynn Myers, owner of Tippetts-Myers Ranch in western Nebraska.
- February 27: Avoiding Analysis Paralysis: Monitoring and Setting Critical Dates for Decision Making During Drought, by Dwayne Rice, Rangeland Management Specialist, NRCS, Kansas; Ted Alexander, owner of Alexander Ranch in south-central Kansas; and Cal Adams, owner of Adams Ranch in north-central Kansas.
- March 27: The New Cumulative Forage Reduction (CFR) Index: Assessing Drought Impacts and Planning a Grazing Strategy, by Pat Reece, owner and senior consultant of Prairie Montane Enterprises and Professor Emeritus of the University of Nebraska - Lincoln.
- April 24: Using a Drought Calculator to Assist Stocking Decisions, Stan Boltz, State Range Management Specialist, NRCS, South Dakota.
- May 29: Economic Factors to Weigh in Making Decisions during Drought, by Matt Stockton, Agricultural Economist at the UNL West Central Research and Extension Center in North Platte, Nebraska.

Project staff advertised the webinar series with a press release and a flyer. The press release and flyer were sent by email to over fifty contacts including Cooperative Extension Educators; NRCS Technical Committee members, technical service providers, and staff; Conservation District and Natural Resource District staff and supervisors; Forest Service specialists, technicians and education coordinators; Nature Conservancy staff; Pheasants Forever regional field reps; and U.S. Fish and Wildlife Field Office staff in North Dakota, South Dakota, Nebraska, and Kansas, asking them to help spread the word. We also worked with NCR SARE Professional Development Coordinators in the target states to advertise the series. The

University of Nebraska – Lincoln sent out the press release to statewide media, and in South Dakota the story was distributed through iGrow and NRCS Public Affairs, resulting in print and broadcast coverage in these two states. The webinar series was advertised via eXtension and the Extension Disaster Education Network (EDEN). Further, the Society for Range Management approved the webinar series for Continuing Education Credits (1 per webinar) and advertised the series with its CEU guide:

[http://www.rangelands.org/cprm\\_public/1-14%20CPRM%20Calendar%20for%20RN-v.t.pdf](http://www.rangelands.org/cprm_public/1-14%20CPRM%20Calendar%20for%20RN-v.t.pdf).

An on-line registration page was launched in December 2012. A pre-survey was administered with the registration process, asking registrants about their organizational affiliation, level of confidence with the topics to be discussed, and current frequency of work with ranchers on drought plans.

Registrants received a copy of the NDMC’s “Managing Drought Risk on the Ranch” handbook via email, as well as a document by Pat Reece on his Cumulate Forage Index, ahead of the webinar series.

The South Dakota State University Extension’s livestock specialists contacted the National Drought Mitigation Center in January 2013 with the idea of broadcasting each of the webinars at the state’s Regional Extension Centers. With the support of the NDMC, they advertised the events to range professionals, farm/ranch business professionals, and producers, and added on a live Q&A discussion time with local range management experts, following each webinar. SDSU Extension advertised and offered live viewings of the webinars at eight regional extension centers throughout the state. In addition, the NDMC was contacted by a Rangeland Ecology Professor at Fort Hayes State University about using the webinar broadcasts with his students.

Each webinar was recorded and sent via email to all registered participants. In addition, links to the archived webinars were added to <http://drought.unl.edu/ranchplan>, along with the slides that speakers presented and any supporting materials.

NDMC staff conducted progress evaluations after the first three webinars to ensure people were able to access the webinar successfully, find out whether adjustments needed to be made the time allotted to any of the webinar segments, and to collect comments and questions. The feedback was used to shape the rest of the webinar series.

NDMC staff conducted an evaluation survey in June, 2013, after the conclusion of the webinar series. The survey focused on the likelihood of participants to use the information from the webinars, confidence levels related to the project outcomes, knowledge of drought planning, and suggestions and comments.

NDMC staff also conducted a follow up evaluation survey in December, 2013, six months after the conclusion of the webinar series. In this survey, we focused on whether or not participants had increased their efforts in areas related to drought planning to measure the project outcomes.

- [Webinar Series Promotional Material](#)

## Outreach and Publications

In addition to the outreach that was done before the webinar series began to advertise and recruit participants, the NDMC put effort into outreach/publicizing the

archived webinar series as it was completed and uploaded to the NDMC website. For example, the NDMC's Droughtscape newsletter featured information about the webinar series in the Winter 2013, Spring 2013, and Fall 2013 editions (attached). The newsletter is sent to a mailing list of approximately 400 subscribers nationally.

A number of publications reported on the content of the webinar series. Kathy Voth from On Pasture, a national online publication for graziers, wrote an article based on the webinars (see <http://onpasture.com/2013/04/01/making-destocking-decisions-during-drought/>). Roger Gates wrote a follow-up article on drought triggers on the iGrow website at (<http://igrow.org/agronomy/drought/developing-trigger-dates-for-drought-contingencies/>). Saige Albert, managing editor of Wyoming Livestock Roundup, participated in the webinars and reported on them at <http://www.wylr.net/component/content/article/186-water/3985-ndmc-looks-at-continuing-drought-establishing-ranch-plans-to-alleviate-effects>. And PrairieFire Newspaper editor W. Don Nelson participated in the webinar series, and afterwards contacted the NDMC requesting a story for the publication. The resulting piece ran in the November 2013 issue of the regional monthly journal of public policy and the arts ([www.prairiefirenewspaper.com](http://www.prairiefirenewspaper.com)).

NDMC staff also created a one page flier advertising the archived webinar series (attached), and distributed it at events such as the Nebraska Grazing Conference (Kearney, NE - August 13/14 2013) and drought planning workshops the NDMC facilitated in both New Mexico (May 2013) and Kansas (January 2014).

In January, 2014, the NCR-SARE PDP generously agreed to co-sponsor (with a small amount of funds that were left over in the grant) an additional drought planning workshop in southwest Kansas, an area in the north-central SARE region that has continued to struggle with drought. Other workshop sponsors included the NDMC, the National Integrated Drought Information System, and Kansas State University Extension. As a result, the "Planning for Extended/Extreme Drought on the Farm & Ranch" workshop (Garden City, KS - January 9 2014) provided drought planning and management advice modeled after the webinar series to over 110 producers, advisors, policy makers, and other agricultural professionals. Workshop information can be found online at [www.drought.unl.edu/ranchplan](http://www.drought.unl.edu/ranchplan).

Further, NDMC staff was asked by SDSU to participate in two ranch planning workshops in Winner, SD and Miller, SD on February 4 and 5, 2014, organized around the format of the webinar series. In addition, the workshops will utilize the surveys developed as part of the webinar series.

The webinar series will be hosted permanently on the NDMC Managing Drought Risk on the Ranch website ([www.drought.unl.edu/ranchplan](http://www.drought.unl.edu/ranchplan)), and the NDMC will continue to publicize the resource at future conferences, workshops, and other outreach opportunities.

- [Fall 2013 Droughtscape](#)
- [Spring 2013 Droughtscape](#)
- [Winter 2013 Droughtscape](#)
- [Webinar Archive Promotionl Material](#)

Outcomes and impacts:

To measure outcomes and impacts, we did the following:

To measure the total number of participants, we said we would count unique participants who register to view the webinar series, with a goal of 100 participants. In fact, over 260 individuals registered for the webinar series through the NDMC's online registration process. Registrants represented target states (SD, NE, KS, MN, MO) as well as MT, WY, CO, OK, TX, and AZ. Of online registrants, about 1/3 considered themselves advisor/educators, 1/3 considered themselves ranchers, a small percentage considered themselves policy makers, and 1/3 checked "other." Registrants included over 40 extension educators and over 55 NRCS employees, as well as representatives of State Grazing Lands Coalitions, Forest Service (State or Federal), The Nature Conservancy, Pheasants Forever, U.S. Fish and Wildlife, Tribal College, other State/Tribal/County/ Local Government, University (Non-Extension), State Conservation or Natural Resource District, and other non-profits.

To measure the number of participants viewing each webinar, we said we would count unique logins per webinar, with a goal of at least 80% of registered participants logging in to view each webinar. Assessing this outcome measure was less straightforward, because the number of webinar lines in use likely did not represent the full number of people viewing the webinar. In some cases, participants (e.g. NRCS offices) viewed the webinar in groups. SDSU Extension advertised and offered live viewings of the webinars at eight regional extension centers throughout the state, who attendees may or may not have registered for the webinar series online. Further, an unknown number of registrants may have viewed the archived webinar after it was recorded and emailed to them.

Based on a combined count of webinar log-ins and attendance at SDSU viewing sites, more than 225 individuals viewed at least one of the webinar sessions live. We were able to track attendance of those who registered online and logged directly into the webinar, and know that 164 registrants viewed at least one webinar session, and 78 registrants viewed more than one webinar session. The SDSU sites tracked the number of attendees, but did not track unique attendees versus those who attended more than one session (repeat attendees), so we only know that at least 72 unique individuals were in attendance for at least one webinar (the number may be much higher). By month, known webinar attendance (webinar log-ins + SDSU attendees) was 156 in January, 140 in February, 120 in March, 83 in April, and 55 in May. In addition, the webinar page with the webinar archives received over 575 unique pageviews in 2013. A few evaluation comments pointed out the value of the archived webinar link, e.g. "Archives and recordings were very useful as it is difficult to schedule around specific webinar dates."

To measure changes in drought planning awareness, knowledge of drought planning methods and tools, and ability to use monitoring, planning, and decision-making tools, we used pre- and post-series evaluation surveys. We found that before the webinar series began, many of those who registered for the webinar series were only somewhat or not confident (or not sure) in their ability to use monitoring, planning, and decision-making resources. Registrants viewed themselves as least confident in their ability to use partial budgeting to make decisions during drought (49% were less than moderately confident), ability to write a plan for drought (44% were less than moderately confident), and ability to set appropriate critical decision-making dates for an operation (43% were less than moderately confident). They were only slightly more confident in their ability to evaluate when and how intensively to graze pastures (36% were less than confident), ability to assess drought impacts on forage production (35% were less than moderately confident), and ability to monitor current and forecasts drought conditions (34% were less than moderately confident).

An evaluation survey was emailed in June to the full list of registrants (267 email addresses). The list of registrants (who had provided their email addresses) did not completely match up with the list of actual webinar attendees, but this process provided us with as complete an evaluation of impacts as was possible. The survey was taken by 88 individuals. Of those, over 60% said that after viewing the webinars, they had more confidence in their ability to make drought-related decisions (76%), monitor drought (68%), set critical decision-making dates (68%), assess drought impacts on forage production (65%), evaluate pastures during drought (63%), write a drought plan (62%), and identify relevant drought indicators (60%).

Examples of increased awareness and knowledge from survey comments include the following:

- *The series was excellent. It provided many valuable concepts which need to be discussed and are needed to boost producer's confidence in drought planning. It would be difficult for someone to walk away from this series and not see things differently on their land, in their business and in their environment, causing them to consider factors previously overlooked. Thank you for your hard work.*
- *This series was great. We watched it as an NRCS staff and had some producers join us. It was good discussion after each webinar. We all learned something in each session. We all wish that it would continue on a monthly basis for the whole year.*
- *I think one of the valuable things for me was the fact that this was a series. I appreciated monthly updates on the status of drought in the local region. Different drought related topics periodically throughout the winter helped me to keep this in the forefront of my mind as I moved into the growing season. With longer or more intense one-day workshops you learn a lot and are presented with so much new information at once that it can be hard to wrap your head around what it all means - often left feeling a little overwhelmed and end up forgetting it. With a series like this with many topics presented over a period of months it was really helpful and a very good format for distributing the information.*

To measure changes in participant self-reported percentage of time spent talking with others about drought planning (goal - increased percentage of time); changes in participant self-reported use of drought-related monitoring, planning, and decision-support tools (goal - increased use); and changes in participants self-reported progress or completion in developing a drought plan (goal - increased progress), we used a follow-up survey administered six months after the end of the series.

We found that before the webinar series began, over 60% of the advisor/educator/policy-maker/professionals had never or rarely worked with ranchers to develop drought plans, and 56% of ranchers did not have a drought plan. Six months after the series, a survey was emailed to 266 email addresses and taken by 75 individuals. Of those, over 60% said the webinars had helped them increase their efforts in using drought-related decision-support tools or resources (61%), setting critical decision-making dates (63%), talking with clients, family, or others about drought planning (70%), monitoring drought indicators (73%), and working on a plan for drought (65%).

Examples of how the information was used include the following:

- *I worked with several ranchers to consider the effects of the drought on their rangeland and options to consider in managing it appropriately to avoid production decreases or setbacks in future years. I also worked with ranchers to identify alternative sources of grazing or feed sources as a management plan. I presented to a large group of ranchers about the current drought, stocking rate changes which should be made, alternatives to consider, and insuring themselves against a continuation of the drought.*
- *The major way I have used the information is to point people towards the recordings as a resource in situations where we have been discussing drought. I too have used them as a great source of information for reference.*
- *I reduced the size of my herd to match my available pasture so that I have enough grazing even in the event of another drought. I also brought my breeding stock off the pasture earlier this year to reduce pressure on the grasses so they can recover better.*
- *I have provided these resources to ranchers that have a lot of dryland and were negatively impacted by drought last year. The tools and resources have been useful to open up a dialogue with ranchers on drought planning and minimizing risk.*
- *I have used it to help others decide on trigger dates and actions to take when precipitation reduction levels are met. Have used tools presented to estimate forage loss when advising ranchers in the area.*
- *Wrote a newspaper article on trigger dates. Sent out timely emails on rainfall info and links to weather and climate information. Sent this information to ranchers, bankers and other decision makers.*

## Project Outcomes

Project outcomes:

Through this project, agricultural educators, professionals and producers increased awareness of the need for (and effectiveness of) drought planning in improving sustainability of ranch operations, and increased their knowledge of drought planning methods, monitoring, decision-making and drought planning tools.

More than 225 individuals viewed at least one of the webinars live, including extension educators, NRCS specialists, non-profit and for-profit advisors, state and federal agency employees, ranchers, and other agricultural professionals. In addition, the webinar page received over 575 unique page views in 2013.

As a result, participants reported increased amount time spent talking with producers about drought mitigation and planning activities, increased use of the featured monitoring, decision-making, and drought planning tools, and progress in developing a drought plan, as a consultant, advisor, or end user. Further, participants reported using the archived webinar resources as teaching tools in their work with rangeland managers and other decision makers.

Recommendations:

## Future Recommendations

We asked participants (via evaluation survey) what topics they'd like to see covered in future drought-related webinars or workshops. Some of the suggestions included:

- *What affect drought will have on soil bug activity, especially the rhizosphere.*
- *Evaluation (comparisons) of grazing systems from areas affected by drought.*
- *Maybe coaching for landowners in regard to coming out of drought.....how do we guide producers to avoid previous mistakes when it starts raining and memories are short?*
- *Post drought recovery. How to treat, or not treat weeds on range and hayfields post drought.*
- *Utilizing grazing during drought to achieve objectives - for example, to reduce exotic plant species.*
- *How water travels underground and how much is needed to return the groundwater levels to levels that are the same as they were in 2000.*

These suggestions highlight the important connection between long-term range/ranch sustainability and how the range and ranch are managed before, during, and after drought. Response to this SARE PDP funded webinar series points to great potential for planning future professional development in this area.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture or SARE.



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