Drought Plan Development and Tools for Producers

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National Drought Mitigation Center
University of Nebraska-Lincoln
Why Plan?

- We can’t control whether or not it rains
- We can control what we do before drought, during drought, and in drought recovery

Lynn Myers: Drought Planning

Farms wither
Wells dry, herds cut
By Robert C. Barchard

There are possible drought warning/zone A/B
Lead water levels are non-operational/BN
Area drought levels are non-operational/BN
These small people heat the heart of the community

Baylor University, Texas Collection

National Drought Mitigation Center

1952-56
1930s
1974-77
1999-2007

1999-2007

1930s

1974-77

1999-2007
How do Ranchers Plan for Drought?

- Daybreak Ranch
- Reed-Hamilton Ranch
- Tippets-Myers Ranch
- Shamrock Ranch
- Adams Ranch
- Alexander Ranch
- Welch Ranch
- Johnson Ranch
Pre-Drought Actions Shape Choices

- Maximize health of resources
- Build flexibility into operation
  - “We build enough in the good years that we can stand a two-year drought….In the good years we build lots of reserve. In the drought years we take off…”
- Ongoing monitoring
Developing a Drought Plan

Plan Components:
- Decisions that need to be made
- Information or benchmarks that will be used to make decision
- Critical date when decision needs to be made
- Options or strategies for carrying out each decision
Developing a Drought Plan

- Trigger Information
- Critical Dates
- Decisions
- Options & Strategies

Drought Plan
Plan is built on understanding of ranch’s…

Vision & objectives

Drought impacts

Resources (forage, water, $$)

Resource Demands (feed & water)

Strengths & opportunities

Weaknesses and threats
“I think it’s really important to have that discipline, and writing it out is probably as good a way as any to get that discipline.”

**Write it down!**

**CRITICAL DATES**

**AVERAGE ANNUAL RAINFALLL - 21 inches/year**

**CRITICAL DATES** - April 1, June 15, August 15, & Nov 1

**April 1**
- End of the winter dormant season and the beginning of the growing season for warm season grasses
- < 4” of moisture during the winter dormant season (killing frost or Nov 1 till April 1) No prescribed burns should be conducted.
- Plan to increase the length of rest periods earlier than usual.

**June 15**
- About half of the forage is produced by June 15
- 75% (15.75”) of the annual average rainfall is received between Nov 1 & June 15
- If the rainfall is < 80% (12.60”) of the 75% (15.75”) then the stocking rate should be decreased 30% by weight. (Finish culling herd C)
- If the rainfall is < 60% (6.30”) of the 75% (15.75”) then the stocking rate should be decreased 40-50% by weight (Cull herd B deep)
- The 3 weeks following June 15th is very critical. By July 15 the destocking should be completed.
- Rest periods should be as long as possible by June 1 if any indicator of a drought is present.
- Graze periods should be as long as possible to allow the other paddocks to rest for as long as possible.

**August 15**
- About 90% of the annual forage has been produced. Warm season grasses are preparing for next year growing season. Rest between now & frost will benefit next year's grass production.
- Length of grazing season-Based on the rainfall in July & August
- If rainfall is < 70% (1.50”) of the average 5” during July & August end herd C grazing by Sept 1 (Cull Deep)

**November 1**
- End of the growing season and the beginning of the winter drought (drought season)
- < 80% (16.80”) of the 21” average annual precipitation would indicate the beginning of a drought for the next growing season unless the winter is exceptionally wet
“…your first loss is your least loss. You’ve got to make the decision.”

“I’ve never known I’m going into a drought…so what you’ve got to do is you’ve got to say, for my present, current conditions, how do I need to adjust my stocking rate. …And I think that’s a mindset that’s important, because like I say, every time you get a little shower during a drought, that gives you false hope if you’re not careful.”
Managing Drought Risk on the Ranch

Drought is a normal part of climate...it will happen again. Fortunately, there are things you can do before, during, and after drought to reduce your risk. Ranchers are increasingly implementing new ways to better prepare for and respond to drought.

The information, strategies and resources on this site are designed to provide livestock producers in the Great Plains region with information on how to incorporate management strategies to reduce the threat drought poses to livestock and forage operations.

Managing Drought Risk on the Ranch: Great Plains Examples

<table>
<thead>
<tr>
<th>South Dakota</th>
<th>Nebraska</th>
<th>Kansas</th>
<th>Colorado</th>
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</thead>
<tbody>
<tr>
<td><strong>Daybreak Ranch</strong></td>
<td><strong>Tippets-Myers Ranch</strong></td>
<td><strong>Alexander Ranch</strong></td>
<td><strong>Welch Ranch</strong></td>
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<tr>
<td>(Central)</td>
<td>(Western Sandhills)</td>
<td>(South Central)</td>
<td>(Southern)</td>
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<td></td>
<td><strong>Reed Hamilton Ranch</strong></td>
<td><strong>Adams Ranch</strong></td>
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<td>(Sandhills)</td>
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<td><strong>Shamrock Ranch</strong></td>
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<td><strong>Texas</strong></td>
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<td><strong>Johnson Ranch</strong></td>
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<td>(West Central)</td>
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Sample Drought Plans

These sample drought plans have been contributed by ranchers, consultants, and advisors throughout the Great Plains. They range from very simple to quite detailed. While they do not all follow the planning methods suggested here, they may help you decide what sort of plan is needed for your ranch operation.

A key point to remember with any planning process is the old saying, "garbage in – garbage out." The better job you do collecting information about your operation and evaluating your options before, during, and after drought, the better the results of your plan will be.

Sample Plans

South Dakota
Central South Dakota - Daybreak Ranch

Nebraska
Southwest Nebraska - Shamrock Ranch
Western Nebraska Sandhills - Tippets-Myers Ranch
Nebraska Sandhills - Reed Hamilton Ranch

Kansas
South-Central Kansas - Alexander Ranch
North-Central Kansas - Adams Ranch

Colorado
Southern Colorado Case Study - Welch Ranch

Texas

Related Pages
Steps to Writing a Drought Plan:

1. Form Planning Team
2. Set Goals/Strategic Objectives
3. Inventory
4. Identify Critical Dates and Targets
5. Develop Monitoring Plan
6. Develop Strategies
7. Implement and Monitor Plan
Nebraska Sandhills Drought Plan - Tippets-Myers Ranch

Operation
Cow-calf and bred heifer operation

Inventory
Mean Annual Precipitation - 14 - 17 inches
Plant Community - Prairie Sandreed/Sand Bluestem
  - warm season dominant, cool season sub-dominant, mid and tall grasses

Critical Date
July 1
  - June and July produce most growth of warm-season forages

Monitoring Plan
Forage Production and Condition
  - Uses SANDRIS

Contents: Sample Plans
- Central South Dakota - Daybreak Ranch
- Nebraska Sandhills - Reed Hamilton Ranch
- Nebraska Sandhills - Tippets-Myers Ranch
- Southwest Nebraska - Shamrock Ranch
- North Central Kansas - Adams Ranch
- South Central Kansas - Alexander Ranch
- Southern Colorado - Welch Ranch
- West Texas - Johnson Ranch

More About Tippets-Myers Ranch
- Lynn Myers receives Panhandle Outstanding Service to Ag Award
**Worksheet 4: Critical Dates and Target Conditions**

Date __________________ Form Completed by __________________

Critical dates are timely monitoring points in annual management cycles. Current and predicted forage resources are the primary focus of critical dates.

Each critical date should have an action plan that clearly states target points for initiating the plan.

Target points may be based on carrying capacity of current forage or a percentage of average precipitation, i.e., 75%.

See "Identify Critical Dates and Targets" at http://www.drought.unl.edu/ranchplan for suggested critical dates by region.

On your critical date → Monitor and compare to "target points" → Take appropriate action (action plan)

<table>
<thead>
<tr>
<th>CRITICAL DATE</th>
<th>TARGET CONDITION</th>
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**Worksheet 7: Evaluate Management Strategies During Drought**

Date __________________ Form Completed by __________________

<table>
<thead>
<tr>
<th>Drought Strategies</th>
<th>Is it Feasible?</th>
<th>Will it Have an Impact?</th>
<th>Will Benefits Outweigh Costs?</th>
<th>To Consider?</th>
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<tbody>
<tr>
<td>Forage Saving Strategies</td>
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<td>Finding Alternative Feeds &amp; Forages</td>
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<td>Financial Strategies</td>
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<td>Family &amp; People Strategies</td>
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<td>Other</td>
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http://drought.unl.edu/ranchplan
Managing Drought Risk on the Ranch
Professional Development Webinar Series

10 am Central Time
January - May, 2013
Last Wednesday of each month

Each session will include a briefing on current drought status, followed by a session on a specific topic or tool related to drought planning.

The sessions are free and open to the public. Registration is required to receive the Adobe Connect webinar link. Register: http://go.unl.edu/uwk.

January 30: Managing Drought Risk on the Ranch: The Planning Process
Jerry Volesky, Range and Forage Specialist at the West Central Research and Extension Center, and Lynn Myers, Tippets-Myers Ranch

February 27: Avoiding Analysis Paralysis: Monitoring and Setting Critical Dates for Decision Making During Drought
Dwayne Rice, Rangeland Management Specialist, NRCS, Kansas; Ted Alexander, Alexander; and Cal Adams, Adams Ranch

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-SD and Jeff Printz, Range Management Specialist, NRCS-ND

May 29: Economic Factors to Weigh in Making Decisions during Drought
Matt Stockton, Agricultural Economist at the West Central Research and Extension Center in North Platte, Nebraska

More information can be found at http://drought.unl.edu/ranchplan.
Contact Tonya Haigh, 402-472-6781, thaigh2@unl.edu, with questions.

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Monitoring Tools
Vegetation Drought Response Index (VegDRI):

Vegetation Drought Response Index
Complete

Vegetation Condition
- Extreme Drought
- Severe Drought
- Moderate Drought
- Prew-Drought
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist
- Out of Season
- Water

vegdri.unl.edu
Drought Risk Atlas (DRA)

http://drought.unl.edu

Welcome to the Drought Risk Atlas

Introduction

The idea of updating and expanding a national drought atlas was developed from the original Drought Atlas that was done in conjunction with United States Army Corps of Engineers by Hosking, Walls and Gutman in the early 1990s. The original Drought Atlas consisted of those stations in the Historical Climate Network (HCN), numbering approximately 1,000 stations. The period of record at the time was limited, as many stations only had records from the 1940s to present, and those data points were put into their respective climate divisions. A monthly time step was used to calculate the Palmer Drought Severity Index (PDSI). With the new Drought Atlas, bringing precise data down to spatial scales that would allow decision makers to use this tool to better understand drought in their respective region and to make a better decision.

For the new National Drought Atlas, the idea was to expand the data both in the number of stations analyzed and the period of record to include the most complete long-term stations, some of which are not part of the HCN. Using a weekly time-step to calculate multiple drought indices at each station location, not on a climate division scale, allows for a more precise representation of drought histories. The Standardized Precipitation Index (SPI), Palmer Drought Severity Index (PDSI), Deciles, the United States Drought Monitor and other Climatological data are included in the new drought atlas. Along with the Climatological data, gridded maps created on a weekly time-step are available for the entire United States.
New Mexico Drought Calculator
http://arsagsoftware.ars.usda.gov/

“How To” webinar found on ranch planning website (drought.unl.edu/ranchplan)

Contact:
Megan Christensen
(970) 492-7363
Megan.Christensen@ars.usda.gov
New Mexico Monitoring Resources

http://jornada.nmsu.edu/monit-assess/manuals/monitoring
Next Session

Facilitated Brainstorming on Drought Planning

Questions:

- What decisions need to be made during and after drought?
- What do you need to know to make decision?
- Where to find information?
- When should decisions be made?
- What resources and opportunities are available to support potential strategies?
- What are some mitigation and recovery strategies to consider?
Thank you!

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http://www.drought.unl.edu/ranchplan