Grazing and Livestock Considerations During and After Drought

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Cow numbers

- Drought
- Ag land values
- Hay / feed prices
- Pasture rent
- Grain prices
- Cattle prices
- Grassland conversion to cropland

But

Drought Ahead

The value of forage has never been higher!
## Drought Management Plan Components

- Communication and planning partners
- Ranch vision and objectives
- Understanding strengths, weaknesses, opportunities, and threats during drought
- Inventory of ranch resources (and records)
- Critical dates for making decisions
- Monitoring schedule
- Management strategies before, during, and after drought
- Ongoing review of drought plan
Forage Supply

- Native range
- Meadow
- Seeded pasture
- Hay
- Crop residues

Forage Demand

- Animal numbers
  - Cows
  - Yearlings
  - Breeding heifers
  - Bulls
Supply: Production Potential
(Coarse uplands ecological site)

<table>
<thead>
<tr>
<th></th>
<th>Apr-May</th>
<th>Jun-Aug</th>
<th>Sep-Oct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>65%</td>
<td>25%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Demand:

- Yearlings
- Pairs

* Demand increases as cattle gain weight
UNL-Barta Brothers Ranch: Appropriate stocking rate based on herbage production (1999 - 2011)

Appropriate stocking rate (AUM/acre)

1999: 0.87
2000: 0.60
2001: 0.52
2002: 0.37
2003: 0.80
2004: 0.72
2005: 0.89
2006: 0.49
2007: 0.72
2008: 0.89
2009: 1.11
2010: 0.98
2011: 0.85

Average (0.76 AUM/acre)
Nebraska Sandhills: About 50% of the year’s production has occurred by June 15
### GSL Upland Range Herbage Yield – mid-June and peak yield in August (lb/acre).

<table>
<thead>
<tr>
<th>Year</th>
<th>CS Grass</th>
<th>WS Grass</th>
<th>Forbs</th>
<th>Shrubs</th>
<th>Sedge</th>
<th>Total June</th>
<th>Peak yield (August)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>376</td>
<td>782</td>
<td>121</td>
<td>3</td>
<td>108</td>
<td>1390</td>
<td>1910</td>
</tr>
<tr>
<td>2008</td>
<td>313</td>
<td>631</td>
<td>125</td>
<td>17</td>
<td>93</td>
<td>1180</td>
<td>1897</td>
</tr>
<tr>
<td>2009</td>
<td>358</td>
<td>406</td>
<td>111</td>
<td>6</td>
<td>138</td>
<td>1019</td>
<td>2000</td>
</tr>
<tr>
<td>2010</td>
<td>518</td>
<td>482</td>
<td>73</td>
<td>19</td>
<td>118</td>
<td>1210</td>
<td>2383</td>
</tr>
<tr>
<td>2011</td>
<td>598</td>
<td>364</td>
<td>77</td>
<td>20</td>
<td>205</td>
<td>1265</td>
<td>2434</td>
</tr>
</tbody>
</table>
**Example: Nebraska Sandhills**

**Trigger Date and Indicator**

<table>
<thead>
<tr>
<th>(1) Before Spring Turnout:</th>
<th>Reduce Pre-drought Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Severe drought last year during May, June, &amp; July May &amp; June, or June &amp; July</td>
<td>40% (^1) 30%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(2) April 1:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>October-March precipitation &lt; 65% of long term (LT)</td>
<td>15%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(3) April 30:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>May, June, &amp; July air temperatures are forecast @ above average and precipitation @ even chance</td>
<td>20%</td>
</tr>
</tbody>
</table>

\(^1\)Consecutive years of severe, extreme, or exceptional drought may require complete rest to avoid long-term damage to rangeland vegetation.

*(From: Pat Reece, PME)*
**Example: Nebraska Sandhills Trigger Date and Indicator**

<table>
<thead>
<tr>
<th>Trigger Date and Indicator</th>
<th>Reduce Pre-drought Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial</td>
</tr>
<tr>
<td>(4) <strong>May 1:</strong> No meaningful precipitation (≤ 0.10 in per event) during March &amp; April</td>
<td>15%</td>
</tr>
<tr>
<td>(5) <strong>June 1:</strong> March-May precipitation</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>&lt; 75% LT</td>
</tr>
<tr>
<td></td>
<td>&lt; 50% LT</td>
</tr>
<tr>
<td>(6) <strong>July 1:</strong> May-June precipitation</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td>&lt; 75% LT</td>
</tr>
<tr>
<td></td>
<td>&lt; 50% LT</td>
</tr>
</tbody>
</table>

¹Added to the preceding trigger date and indicator reductions

*(From: Pat Reece, PME)*
Combining drought and grazing stress will reduce herbage production potential in the subsequent year(s).
Overgrazing

The level and date of grazing beyond which preferred (key) plant species cannot recover before pastures are grazed in a subsequent year.
How to Best Overgraze?

• Heavily graze preferred (key) grass species during rapid growth windows in consecutive years.
• Combine grazing stress with drought stress.
Growth of important Sandhills forage grasses

(modified from Reece et al. 2007)
Coarse Uplands Ecological Site

Bluebunch wheatgrass/rhizomatus wheatgrasses/needle-and-thread (350 to 500 lb/ac)

Northern Intermountain Desertic Basin (5-9” precipitation)

Mixed shrub/Bare ground (>25% sagebrush) (50 to 150 lb/ac)

Perennial grass/mixed shrub (200 to 400 lb/ac)

Threadleaf sedge/bluegrama sod/Bare ground (50 to 150 lb/ac)

Drought SLG

PG Fire

Mechanical treatment PG Seeding

Brush control PG Seeding

Severe grazing, fire

Severe grazing, No use

Brush control, severe grazing
• Reduced above-ground and root growth.
• Fewer reproductive tillers (seed heads); plants remain mostly vegetative.
• Earlier maturity of plants.
Grass and Rangeland Response to Drought

- Reduced formation of new buds that will produce next and future year’s tillers.
- Good / excellent condition range will recover quicker after drought than poor / fair condition range.
- Increases in weedy species.
Rangelands can appear quite resilient after drought, but look closely as there can be unseen impacts.
After-drought Grazing Management

• Delay initial turnout by 1-2 weeks

• Restock based on recovery of preferred (key) grass species (cover & height)

• Do not graze weed-infested pastures during grass rapid growth period
* Use rest- or deferred-rotation grazing, 5 to 8 pastures, graze pastures only once from turnout to killing frost.
Drought + Wildfire
Livestock Considerations

- Forage Availability
- Forage Quality
Animal Performance Risks

- Pregnancy
- Cow body condition
- Average daily gain
- Poisonous plants
Crude protein in cattle diets on upland Sandhill range.
<table>
<thead>
<tr>
<th>Date</th>
<th>Average</th>
<th>2002</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 1</td>
<td>12.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>May 20</td>
<td>12.7</td>
<td>-</td>
<td>12.6</td>
</tr>
<tr>
<td>June 7</td>
<td>12.3</td>
<td>12.7</td>
<td>10.1</td>
</tr>
<tr>
<td>June 28</td>
<td>11.6</td>
<td>-</td>
<td>7.5</td>
</tr>
<tr>
<td>July 16</td>
<td>11.0</td>
<td>8.2</td>
<td>7.0</td>
</tr>
<tr>
<td>July 30</td>
<td>10.3</td>
<td>5.9</td>
<td>7.0</td>
</tr>
<tr>
<td>August 20</td>
<td>9.3</td>
<td>5.6</td>
<td>6.4</td>
</tr>
<tr>
<td>October 14</td>
<td>6.7</td>
<td>5.9</td>
<td>?</td>
</tr>
</tbody>
</table>
Livestock Management Strategies to Save Pasture AUMs

Animal Unit
• 1 AU = 1000 lb of animal
• 1 AUD (animal unit day) = 26 lb of forage (daily intake)
• 1 AUM (animal unit month) = 780 lb of forage
Planning

• Expected days of grazing

• Adjustments - Strategies
  – Weaning
  – Culling animals
  – Marketing
  – Supplements
  – Purchased Feed and/or alternative grazing resources
Little things can add up!
Planning

• Expected days of grazing

• Adjustments
  – Weaning
  – Culling animals
  – Marketing
  – Supplements
  – Purchased Feed and/or alternative grazing resources
About 10 lb. of forage is conserved for each day a calf is weaned

- 10 lb. forage = 0.4 day grazing for a dry cow
- Positive effect on cow body condition score
Supplementing on pasture to reduce grazed forage intake

- Wet or dry distillers grains
- Wet DG mixed with low-quality forage
Supplementing WDG mixed with wheat straw to cow-calf pairs grazing summer range (Nuttelman et al. 2010)

<table>
<thead>
<tr>
<th></th>
<th>Control(^1)</th>
<th>2X SR 70:30 Mix(^2)</th>
<th>2X SR 50:50 Mix(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial wt. (lb):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cow</td>
<td>880</td>
<td>882</td>
<td>893</td>
</tr>
<tr>
<td>Calf</td>
<td>276</td>
<td>280</td>
<td>267</td>
</tr>
<tr>
<td><strong>ADG (lb/d):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cow</td>
<td>-0.07</td>
<td>0.29</td>
<td>0.93</td>
</tr>
<tr>
<td>Calf</td>
<td>1.96</td>
<td>1.98</td>
<td>2.18</td>
</tr>
<tr>
<td><strong>Pasture utilization (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>39</td>
<td>46</td>
</tr>
<tr>
<td><strong>Grazed forage intake (lb/d)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25.4</td>
<td>13.5</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Supplement intake (lb/d)</strong></td>
<td>- -</td>
<td>12.8</td>
<td>12.4</td>
</tr>
</tbody>
</table>

\(^1\) Recommended stocking rate: 0.60 AUM/acre

\(^2\) 2X stocking rate (1.2 AUM/ac) and 70% straw:30% WDGS supplement

\(^3\) 2X stocking rate (1.2 AUM/ac) and 50% straw:50% WDGS supplement
Emergency and Alternative Forages

Use proven species and varieties
Annual Forages

Cool Season Annuals

Spring seeded:
Oats
Spring triticale
Spring barley
Italian or annual ryegrass
Field peas
Several other legumes
Annual Forages

Warm Season Annuals

*Late-spring or summer seeded:*

- Millet (grazing & hay types)
- S X S hybrids
- Sorghum
- Sudangrass
- Crabgrass
- Teff
- Corn
- Several legumes
Annual Forages

**Summer or late-summer seeded (for fall / winter forage):**

Oats and/or turnips, other brassicas
  • **Planting date:** late July through August

**Winter wheat, rye, triticale**
  • **Planting date:** late August – September
  • Some fall/winter forage, mostly the following spring
Irrigated Pasture
Forage Testing
Forage Testing

- Moisture content
- Crude protein
- Energy (% TDN)
- Calcium
- Phosphorus
- Vitamin A
- Nitrates

- Accurately formulate balanced rations
- Prevent under or over-feeding of certain nutrients
- Comparative hay dollar value based on nutrients
Thank You
Oats
48 days (28-Aug.) after 11-July seeding
48 days (13-Sep.) after 27-July seeding
September yield of irrigated, warm-season annual forages planted July 11 or July 27, 2007, North Platte, NE.

<table>
<thead>
<tr>
<th>Forage (planted July 11)</th>
<th>September yield (Tons/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Grazex 725 BMR’ sorghum-sudangrass</td>
<td>4.18</td>
</tr>
<tr>
<td>‘White Wonder’ foxtail millet</td>
<td>2.43</td>
</tr>
<tr>
<td>‘Tiffany’ teff</td>
<td>2.36</td>
</tr>
<tr>
<td>Forage (planted July 27)</td>
<td></td>
</tr>
<tr>
<td>‘Grazex 725 BMR’ sorghum-sudangrass</td>
<td>3.96</td>
</tr>
<tr>
<td>‘White Wonder’ foxtail millet</td>
<td>2.83</td>
</tr>
<tr>
<td>‘Tiffany’ teff</td>
<td>2.34</td>
</tr>
</tbody>
</table>
### Irrigated pasture mixture: Example 1

<table>
<thead>
<tr>
<th>Species</th>
<th>lb / acre</th>
<th>Seeds / ft²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orchardgrass</td>
<td>3.5</td>
<td>45</td>
</tr>
<tr>
<td>Festulolium</td>
<td>3.5</td>
<td>17</td>
</tr>
<tr>
<td>Tall fescue</td>
<td>3.5</td>
<td>18</td>
</tr>
<tr>
<td>Meadow brome</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Smooth bromegrass</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Creeping foxtail</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>1.5</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>122</strong></td>
</tr>
</tbody>
</table>