Grazing Herd Management during Drought: Forages

Forage Utilization and Grazing Management during a Drought

Dennis Hancock, PhD.
Extension Forage Agronomist
Crop and Soil Sciences

A few assumptions...

- Delayed decisions have led to overgrazing
- Ground cover is low
  - Soil erosion potential is high
- Body condition scores are slipping (< 5)
  - Likely poor conception rate!
  - Problem is worse where Tall Fescue is the base
- A lot of poor-quality and/or expensive hay being fed
  - Hay availability is problematic
- Difficulty in establishment – fall 2006 & spring 2007

Overgrazing During Drought

- Plants slow way down and go dormant
- Drought rarely kills most pasture species.
  - But can if combined with poor fertility, overgrazing, or pests...
  - Competition w/ warm-season species
- Overgrazing reduces reserves (carbohydrates) and root growth

Drought Tolerance

<table>
<thead>
<tr>
<th>Species</th>
<th>Water Use Efficiency</th>
<th>Max. Root Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Bermudagrass</td>
<td>1646</td>
<td>78</td>
</tr>
<tr>
<td>Pensacola Bahiagrass</td>
<td>1194</td>
<td>79</td>
</tr>
<tr>
<td>Tall Fescue</td>
<td>1064</td>
<td>48</td>
</tr>
<tr>
<td>Ladino Clover</td>
<td>480</td>
<td>38</td>
</tr>
<tr>
<td>Red Clover</td>
<td>436</td>
<td>45</td>
</tr>
</tbody>
</table>

From: Southern Forages, as adapted from Doss et al. (1960; 1962; 1963)
Grazing Herd Management during Drought:

Forages

Summer Annuals

- Best if grazed
- Hay making problems
- Tolerates low soil fertility
- Do better if high fertility
- Prussic acid problems
- Nitrate toxicity problems
- Too mature = low quality

Pearl millet
- Medium to high yielding, slightly slower growing
- Thinner stems, not as difficult to dry
- No prussic acid problems
- Tolerates lower soil pH
- Seed supply is low

Summer Annuals

Sorghum species
- All have prussic acid and nitrate toxic potential
- NOT for horses!
- Less drought tolerant than pearl millet

- Forage sorghum
  - High yielding, fast growing
  - Thick stems, difficult to dry for hay

- Sudangrass
  - Medium yielding, fast growing
  - Thinner stems, difficult to dry for hay

- Sorghum x sudan hybrids
  - High yielding, fast growing
  - Still have thick stems and difficult to hay

Summer Annual Establishment

- Plant anytime after April 15th
  - Plan on 3 harvests per year
  - Later plantings = few harvests

- Seeding
  - Seed can be broadcast or
  - Planted in rows - narrow (< 15 in.) or wide (< 36 in.)
  - Planting depth of ½ to 1 inch.

Summer Annual Fertilization

- 60 - 80 lbs of actual N/ac at planting
- 60 - 80 lbs N/ac after each harvest
- Requires significant P and K
  - Follow soil test recommendations
  - K is really important under drought conditions
- Pearl millet is less sensitive to low soil pH

Dr. Dennis Hancock
Extension Forage Agronomist

THE UNIVERSITY OF GEORGIA
College of Agricultural & Environmental Sciences
Grazing Herd Management during Drought: 

Forages

Summer Annual Harvesting

- Hay Production (good), baled silage (better), or grazing (best)
- Sometimes difficult to tell if it is dry enough to bale
  - Must be below 15% Moisture if round baled
- Grazing = boot stage
  - Usually 18-22 inches in height
- Hay/baleage = early head
  - Usually 30-40 inches
- Cutting height at or above 8 inches (CRITICAL)
  - Cutting too low will clip below the growing point.

Emergency Forage Base

PEARL MILLET
- SS 211A: 26813 a
- Summergrazer III: 22053 b
- SS 220 BMR: 19246 c

Emergency Forage Base

PEARL MILLET
- SS 635: 17273 a
- Pennleaf: 16602 a

Summer Annual Harvesting

Selection Criteria:
1. Yield Production
   - Sorghum x Sudans
     - Recommended varieties: SS-211A, Summergrazer III, SU2LM
   - Pearl Millet
     - Tifleaf 3, SS-635, SS-501, Pennleaf

www.georgiaforages.com for more data.

Summer Annual Forage Quality

<table>
<thead>
<tr>
<th>Forage</th>
<th>Pearl millet</th>
<th>Tropical corn</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP</td>
<td>12.9</td>
<td>14.3</td>
</tr>
<tr>
<td>ADF</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td>NDF</td>
<td>61</td>
<td>59</td>
</tr>
<tr>
<td>WSC</td>
<td>2.7</td>
<td>2.0</td>
</tr>
</tbody>
</table>


BMR (Brown Mid-Rib)

- Brown mid-rib describes a prominent characteristic of low-lignin summer annuals: the mid-rib of their leaves are brown.
- Lower lignin should result in greater digestibility.
- This is true, but it lowers standability and, in many cases, yield.
- BMR varieties are good to use, but not necessarily best for Georgia conditions.

Nitrate in forage fed to beef cattle.

<table>
<thead>
<tr>
<th>Forage Nitrates (ppm dry forage)</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4500</td>
<td>Safe to feed with adequate feed and water</td>
</tr>
<tr>
<td>4,500 to &lt; 6,500</td>
<td>Safe under most conditions, but if feeding pregnant animals limit to half (1/2) ration</td>
</tr>
<tr>
<td>6,500 to &lt; 9,000</td>
<td>Limit to half (1/2) ration</td>
</tr>
<tr>
<td>9,000 to &lt; 15,000</td>
<td>Limit to third (1/3) ration</td>
</tr>
<tr>
<td>15,000 to &lt; 18,000</td>
<td>Limit to quarter (1/4) ration</td>
</tr>
<tr>
<td>&gt; 18,000</td>
<td>Potentially lethal, very risky</td>
</tr>
</tbody>
</table>

Dr. Dennis Hancock
Extension Forage Agronomist
Grazing Herd Management during Drought: Forages

Other Options

Other Summer Annuals
- Browntop Millet
  - 4000-7000 lbs/acre
- Italian Millet
  - 3000-5000 lbs/acre
- Red River Crabgrass
  - 4000-7000 lbs/acre
- Forage Soybean
  - 4000-7000 lbs/acre

Figure 1. The digestibility of wheat with normal or no grain development.

Winter Annual Forage Systems

<table>
<thead>
<tr>
<th>Species</th>
<th>Avg. Annual Yield*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryegrass</td>
<td>10,632</td>
</tr>
<tr>
<td>Oats</td>
<td>7,098</td>
</tr>
<tr>
<td>Wheat</td>
<td>7,111</td>
</tr>
<tr>
<td>Rye</td>
<td>4,853</td>
</tr>
<tr>
<td>Triticale</td>
<td>5,625**</td>
</tr>
</tbody>
</table>

* Average of top performer in each of last 3 yrs. of variety trial data (Griffin, GA).
** 2005-06 was first year triticale was included.

Other Summer Annuals

- Inc. CP (+ 6 - 7% points)
- Inc. TDN (+ 7 - 20% pts)
- Urea addition inc. CP but not TDN
- Cost: $25-35/ton DM

Ammoniation of Hay

Production Distribution of Small Grains

Dr. Dennis Hancock
Extension Forage Agronomist
Grazing Herd Management during Drought:

Forages

**Production Distribution of Annual Ryegrass**

![Graph showing production distribution of annual ryegrass with peaks in April and May.]

**Feeding Losses**

<table>
<thead>
<tr>
<th>Method</th>
<th>1 day</th>
<th>7 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrolled</td>
<td>12.3</td>
<td>43.0</td>
</tr>
<tr>
<td>Ring</td>
<td>4.9</td>
<td>5.4</td>
</tr>
</tbody>
</table>

**Recovering from the Drought**

- Dormancy break can be very rapid.
- Nitrate issues
  - Rains will cause rapid N-release and uptake
  - High nitrate levels for first 3 – 7 days.
- Monitor the amount of weed competition.

**Drought Recovery**

- Allow the pasture to recover
  - Leave sufficient grazed stubble
    - Tall Fescue: 2 - 3 in.
    - Bermudagrass: ~2 in.
  - Not too soon!
  - Target height to start grazing
    - Tall Fescue: 4 - 8 in.
    - Bermudagrass: 4 - 8 in.
- Reintroduce pastures slowly

**QUESTIONS?**

www.georgiaforages.com

Dr. Dennis Hancock

Extension Forage Agronomist