**Grazing Herd Management during Drought:**

**Forages**

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**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)

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**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

---

**Summer Annuals**

- All have nitrate toxicity potential
- Sorghums have prussic acid potential
  - Sorghums should NOT be fed to horses
- Seed supply is low (if any)
- Late plantings result in low yields

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Pearl millet

- Medium to high yielding, slightly slower growing
- Thinner stems, not as difficult to dry
- No prussic acid problems
- Tolerates lower soil pH
Grazing Herd Management during Drought: Forages

Summer Annuals

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

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.

Other Summer Annuals

- Browntop Millet
  - 4000-7000 lbs/acre
- Foxtail Millet
  - 3000-5000 lbs/acre
- Proso Millet
  - 2000-4000 lbs/acre
- Red River Crabgrass
  - 4000-7000 lbs/acre
- Forage Soybean
  - 4000-7000 lbs/acre

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

Emergency Forage Base

<table>
<thead>
<tr>
<th>Forage Type</th>
<th>2005 Total (3 cuts)</th>
<th>2006 Total (4 cuts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SORGHUM/SUDAN</td>
<td>Dry lbs/ac</td>
<td></td>
</tr>
<tr>
<td>SS 211A</td>
<td>26813 a</td>
<td>12944 a</td>
</tr>
<tr>
<td>Summergrazer III</td>
<td>22053 b</td>
<td>11405 b</td>
</tr>
<tr>
<td>SS 220 BMR</td>
<td>19246 c</td>
<td>10731 b</td>
</tr>
<tr>
<td>PEARL MILLET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tifleaf 3</td>
<td>17441 a</td>
<td>10728 a</td>
</tr>
<tr>
<td>SS 635</td>
<td>17273 a</td>
<td>9309 b</td>
</tr>
<tr>
<td>Pennleaf</td>
<td>16602 a</td>
<td>8826 b</td>
</tr>
</tbody>
</table>

Source: http://www.ppws.vt.edu/scott/weed_id/panra.htm
Grazing Herd Management during Drought:

Forages

**Summer Annual Varieties**

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

For more data, visit [www.georgiaforages.com](http://www.georgiaforages.com).

**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.

**Summer Annual Forage Quality**

<table>
<thead>
<tr>
<th>Forage</th>
<th>CP</th>
<th>ADF</th>
<th>NDF</th>
<th>WSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>sorghum</td>
<td>12.9</td>
<td>36</td>
<td>61</td>
<td>2.7</td>
</tr>
<tr>
<td>Pearl millet</td>
<td>14.3</td>
<td>35</td>
<td>59</td>
<td>2.0</td>
</tr>
<tr>
<td>Tropical corn</td>
<td>8.3</td>
<td>33</td>
<td>55</td>
<td>6.5</td>
</tr>
</tbody>
</table>


**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 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>

**Drought Recovery**

- Allow the pasture to recover
  - Leave sufficient grazed stubble
    - Tall Fescue: 2 - 3 in.
    - Bermudagrass: ~2 in.
    - Bahiagrass: ~ 1 ½ in.
  - Not too soon!
    - Target height to start grazing
      - Tall Fescue: 4 - 8 in.
      - Bermudagrass: 4 - 8 in.
      - Bahiagrass: 4 - 6 in.
  - Reintroduce pastures slowly

- Inc. CP (+ 6 – 7% points)
- Inc. TDN (+ 7 – 20% pts)
  - Urea addition inc. CP but not TDN
- Cost: $25-35/ton DM
**Grazing Herd Management during Drought:**

**Forages**

**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.

**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>

**Item** | **% Waste**
--- | ---
Ring   | 6
Trailer | 11
Cradle | 15

**Winter Annual Forage Systems**

- Rye Yields: Tifton
- Annual Ryegrass Yields: Tifton

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Dr. Dennis Hancock

Extension Forage Agronomist
Grazing Herd Management during Drought:

Forages

Efficiencies of Grazing and Mechanized Harvest

<table>
<thead>
<tr>
<th>Method</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing</td>
<td></td>
</tr>
<tr>
<td>Continuous Stocking</td>
<td>30-40%</td>
</tr>
<tr>
<td>Slow Rotation (3-4 paddocks)</td>
<td>50-60%</td>
</tr>
<tr>
<td>Moderate Rotation (6-8 paddocks)</td>
<td>60-70%</td>
</tr>
<tr>
<td>Strip Grazing</td>
<td>70-85%</td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Hay</td>
<td>30-70%</td>
</tr>
<tr>
<td>Silage</td>
<td>60-85%</td>
</tr>
<tr>
<td>Green Chop</td>
<td>70-95%</td>
</tr>
</tbody>
</table>

Winter Annual Forage: Ryegrass Cost per ton of INTAKE

<table>
<thead>
<tr>
<th>Method</th>
<th>Cost of Intake for Hay ($/1000 lb roll and 70% Efficiency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Stocking</td>
<td>$110</td>
</tr>
<tr>
<td>Rotational Stocking</td>
<td>$106</td>
</tr>
<tr>
<td>Strip Grazing</td>
<td>$114</td>
</tr>
</tbody>
</table>

Effect of Winter Annual Mixture on Beef Production

<table>
<thead>
<tr>
<th>ORG</th>
<th>RG</th>
<th>RRG</th>
<th>TRG</th>
<th>WRG</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG (lbs/hd/d)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>1.19</td>
<td>0.73</td>
<td>1.39</td>
<td>1.11</td>
</tr>
<tr>
<td>Spring</td>
<td>2.45</td>
<td>2.60</td>
<td>2.39</td>
<td>2.07</td>
</tr>
<tr>
<td>Gain (lb/acre)</td>
<td>253</td>
<td>239</td>
<td>281</td>
<td>219</td>
</tr>
<tr>
<td>Cost of Gain ($/lb)</td>
<td>$0.29</td>
<td>$0.28</td>
<td>$0.25</td>
<td>$0.39</td>
</tr>
<tr>
<td>Net Return ($/acre)</td>
<td>$110</td>
<td>$106</td>
<td>$114</td>
<td>$56</td>
</tr>
</tbody>
</table>


http://www.caes.uga.edu/commodities/swvt/index.html

www.georgiaforages.com

Drought Information

State Wide Variety Testing

Small Grains Performance Tests

2007 Performance Test Data
2007 Performance Test Data
2006 Performance Test Data
2006 Performance Test Data
2005 Performance Test Data
2005 Performance Test Data
2004 Performance Test Data
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