Forages in Beef Production Systems

Gary Bates
Professor
Plant Sciences
Considerations

- Time of year
- Ability
- Goals for production

- Forage species
- Grazing management
Factors affecting cattle gains

- Forage species
Forage species

- Cool-season vs warm-season
- Grass vs legume
- Annual vs perennial
Yield of tall fescue

Ball and co-workers. 1996. Southern Forages
Tall Fescue

- found on Kentucky farm in 1931
- released as KY 31 cultivar in early 1940’s
- adapted and persistent
A major difficulty … is its apparent lack of palatability…. Its agronomic characteristics are excellent, but it is often rejected by livestock.

G.H. Ahlgren
Forage Crops, 1956
Tall Fescue

*Neotyphodium coenophialum*

- endophyte
- fungus
- fescue fungus
Endophyte effect on steer gain

### Clover effect on fescue toxicosis

<table>
<thead>
<tr>
<th></th>
<th>E+</th>
<th>E+ with white clover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily gain (lb)</td>
<td>1.06</td>
<td>1.53</td>
</tr>
<tr>
<td>Gain per acre (lb)</td>
<td>374</td>
<td>582</td>
</tr>
</tbody>
</table>

Endophyte effect on steer gain

Steer ADG on cool-season grasses in Georgia

Steer gain on bermudagrass
‘94-’98 Georgia

Steer ADG on warm-season grasses

Georgia

Steer gains on Switchgrass

Spring Hill, TN

<table>
<thead>
<tr>
<th>Forage Treatment</th>
<th>ADG lb</th>
<th>Steer days/acre</th>
<th>Total Gain lb/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG</td>
<td>2.09a</td>
<td>131</td>
<td>274</td>
</tr>
<tr>
<td>BB/IG</td>
<td>2.33a</td>
<td>84</td>
<td>195</td>
</tr>
</tbody>
</table>

May 29 to August 3, 2009 grazing season
Steer gain on alfalfa

Georgia

Lb/day

Yr 1
Yr 2
Yr 3

Conclusion about species

- Most species can support 2 lb/day gain
- Late summer gains difficult to achieve
- Species adaptation/production becomes primary issue
  - Use perennials as base forage
  - Interseed legumes
  - Use annuals to supplement
Factors affecting ADG

- Forage species
- Grazing management
Steer gain on bermudagrass
‘94–’98 Georgia

Target: low – 3300 lb/acre; high – 6600 lb/acre

Steer gain on alfalfa with forage allowance - Georgia

Organic matter digestibility from steers grazing alfalfa under 3 forage allowances - Georgia

Diet of steers grazing alfalfa

<table>
<thead>
<tr>
<th>Forage Allowance</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing times (hrs/day)</td>
<td>6.5</td>
<td>8.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Intake (lb dm/day)</td>
<td>54</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td>Intake (% of BW)</td>
<td>4.1</td>
<td>3.2</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Conclusions about grazing management

- Forage availability controls weight gain
- Allow for animal selectivity
- Higher daily gains = less forage utilized
Designing a forage program

- Focus on forage availability
  - Use cool and warm-season species
    - Tall fescue – Sept to Nov, March to June
    - Summer forages – May to Sept
    - Interseed with legumes as much as possible
Double-cropping forage