Forage Production Data from Pasture-Based Dairies in Georgia

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DESCRIPTION OF THE PASTURE-BASED SYSTEM
Greenstone Grazes, Wrens, GA

Long-term objective:

Develop a robust data set by which we can predict forage production/quality and develop a model by which forage systems can be developed to optimize use of natural resources (soil types, water, fertilizer inputs) that match with utilization patterns of the MiG dairy enterprise.

Funding for forage research to support pasture-based dairies is limited because:

1. Few recognize the potential for driving economy.
2. Research venues are limited.
3. It is viewed as mundane and routine.
4. There is a lot of BAD data out there that is assumed to be relevant (but is not).
5. It is labor intensive.
6. Funding agencies view pasture-based dairying as a solution to an environmental issue, not an economic development opportunity.
7. I’m from the ‘60s, so I blame everything on the industrial complex.

Forage experiments to support pasture-based dairy

Winter annuals – Rye, rye grass, oats, blends – harvested as utilized in production
Perennial legumes/forbes – Alfalfa, white clover, red clover, chickory – harvested as utilized in production
Perennial cool season grasses – tall fescue, perennial ryegrass, orchardgrass – harvested as utilized in production
Perennial warm season grasses – bermuda, bahia, different harvest frequencies (10-30 days)

All samples analyzed for forage quality – NIR with wet chemistry validation.
Forage trials to support pasture-based dairy

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**Forage Trials – Yield Distribution, Quality**

- Winter annuals, harvested based upon simulated grazing interval
- Bermuda, bahia grass: harvested at different frequencies

**Effect of harvest frequency on yield of 3 warm season grasses grown under irrigation**

**Season-long Yield Distribution and Energy Density of Forages Used in a Pasture-based Dairy System**

<table>
<thead>
<tr>
<th>Pasture Dry Matter Intake by Cows at Different Pasture Energy Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Holmes et al., 2007. Massey Univ. Press)</td>
</tr>
</tbody>
</table>

- Rye/Ryegrass mix
- Tifton-85

<table>
<thead>
<tr>
<th>Month</th>
<th>DM (lbs)</th>
<th>ME (kcal/lb)</th>
<th>DM (lbs)</th>
<th>ME (kcal/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>463</td>
<td>1.19</td>
<td>1400</td>
<td>0.94</td>
</tr>
<tr>
<td>Feb</td>
<td>956</td>
<td>1.20</td>
<td>3079</td>
<td>0.92</td>
</tr>
<tr>
<td>Mar</td>
<td>2484</td>
<td>1.15</td>
<td>2263</td>
<td>0.92</td>
</tr>
<tr>
<td>Apr</td>
<td>3606</td>
<td>1.14</td>
<td>1310</td>
<td>0.93</td>
</tr>
<tr>
<td>May</td>
<td>1484</td>
<td>1.06</td>
<td>2621</td>
<td>0.92</td>
</tr>
<tr>
<td>June</td>
<td>2740</td>
<td>0.92</td>
<td>1203</td>
<td>1.24</td>
</tr>
<tr>
<td>July</td>
<td>3079</td>
<td>0.92</td>
<td>1000</td>
<td>1.20</td>
</tr>
<tr>
<td>Aug</td>
<td>1400</td>
<td>0.94</td>
<td>1400</td>
<td>0.94</td>
</tr>
<tr>
<td>Sept</td>
<td>2263</td>
<td>0.92</td>
<td>1400</td>
<td>0.94</td>
</tr>
<tr>
<td>Oct</td>
<td>1310</td>
<td>0.93</td>
<td>1400</td>
<td>0.94</td>
</tr>
</tbody>
</table>

- Dry Mature cows
- Pregnant cows
- Lactating cows

- Animal Live wt (lbs)
- Energy in diet (kcal/lb DM)
- 1.15 – 0.98 1.15 – 0.82 0.98
- 771 22.0 17.8 12.1
- 881 24.0 19.4 13.4
- 991 26.2 20.9 14.5
- 1101 28.9 24.4 21.1
- 1101 33.5 26.7 22.9
- 771 34.1 27.8 –
- 881 35.2 33.0 –
- 991 39.4 33.5 –
- 1101 42.1 36.3 –
Forage Production and Demand Curves for a 650-Cow Dairy on 300 Acres

Challenges Aplenty!!!
Year to Year Variation of December Harvests of Winter Annual Grass Production