Introduction

- Reliance on forage legumes use in temperate grassland systems declined because of readily available inorganic N fertilizer from the 1950’s and lack of persistence of legumes (Laidlaw, 2014).
- Recent research has shown that legume-based systems can be as profitable as grass systems dependent on high rates of fertilizer input (Rochon et al., 2004).
- Benefits of N fixation and greater forage quality of legumes than grasses are well known.
- Further, the energy-saving and emissions-reducing features of legumes confer advantages for their inclusion in sustainable forage-based systems (Laidlaw, 2014).
- With the increasing cost associated with N fertilizer, along with the called for more sustainable approaches to forage-livestock farming, forage legumes incorporation in grassland systems can no longer be overlooked.
- Producers in the southeastern United States, frequently asked the question which clover species should be included in their pastures.
- Apart from agronomic traits used in forage legumes selection, animal preference can provide additional insights into the selection of forage legumes for pasture inclusion.

Objective

- To determine cattle preference of different clover species and its relationship with clover structural and chemical characteristics.

Materials and Methods

- Study site: Iberia Research Station Jeanerette, LA. The soil type is classified as Iberia silty clay loam.
- The four clover species used in this study, were selected based on their popularity (acreage cultivated) by producers in the Gulf Coast Region of Louisiana.
- Treatments and Experimental Design
  Clover species:
  1. White Clover (Trifolium repens L.) cv. ‘Ladino’
  2. Ball Clover (Trifolium nigrescens Vv.) cv. ‘Grazer’s Select’
  3. Red Clover (Trifolium pratense L.) ‘Kenland’
  4. Berseem Clover (Trifolium alexandrium L.) cv. ‘Bigbee’
- The four clover species were arranged in a 4 × 4 Latin Square design experiment.
- Plots were 10 × 10 m in size and separated by 2-m alleyways.
- There were two sets of plots, called ‘grazing units’ adjacent to each other and separated by 12-m alleyway.
- Each grazing unit was randomized separately and enclosed by an electric fence.
- Seeding rate was: White clover 5 kg PLS ha−1, Ball Clover 5 kg PLS ha−1, Red clover 12 kg PLS ha−1, Berseem clover 20 kg PLS ha−1 and all were seeded early October, 2013.
- P and K fertilizers were applied at 60 kg ha−1 each at planting based on soil test results.
- Grass and broadleaf weeds were controlled using Poast (Sethoxydim) and Butyrac (2,4-DB) respectively.

Animal Grazing

- Six Angus crossbred yearling steers (initial BW 230±11 kg) grazed each unit for 48-hours duration.
- There were three grazing periods based on herbage mass (March 14, April 28, and May 30, 2014).

Results

<table>
<thead>
<tr>
<th>Clover Species</th>
<th>Pregraze Herbage Mass (kg DM)</th>
<th>Postgraze Herbage Mass (kg DM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre HM kg DM ha−1</td>
<td>Post HM kg DM ha−1</td>
</tr>
<tr>
<td>White Clover</td>
<td>1900±10</td>
<td>1950±10</td>
</tr>
<tr>
<td>Ball Clover</td>
<td>2360±20</td>
<td>1860±20</td>
</tr>
<tr>
<td>Red Clover</td>
<td>1940±5</td>
<td>2420±5</td>
</tr>
<tr>
<td>Berseem Clover</td>
<td>2140±5</td>
<td>2320±5</td>
</tr>
</tbody>
</table>

Mean separation of pregraze herbage mass (kg DM ha−1)

Leaf proportion (%) of four clover species used for cattle grazing preference determination during the winter-season of 2014.

<table>
<thead>
<tr>
<th>Clover Species</th>
<th>Leaf Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Clover</td>
<td>10</td>
</tr>
<tr>
<td>Ball Clover</td>
<td>20</td>
</tr>
<tr>
<td>Red Clover</td>
<td>30</td>
</tr>
<tr>
<td>Berseem Clover</td>
<td>50</td>
</tr>
</tbody>
</table>

Summary

- Cattle showed no definitive preference among the four clover species.
- Based on the average herbage disappearance across the three grazing periods, cattle showed greater preference for the upright (Red and Berseem clovers) compared to the prostrate growing species (White and Ball clovers).
- The animals spent similar time grazing clover species.
- Postgraze herbage mass during the second and third sampling periods was greater for red clover than white and ball clovers.
- Averaged across the three sampling dates, the proportion of leaf ranked greatest for red clover compared to white, ball, and berseem clovers.

References