Comparison of Florigraze and Arbrook Rhizoma Peanut Under Continuous Grazing

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Performance of cattle grazing rhizoma peanut cultivars 'Florigraze' and Arbrook was compared under continuous grazing. Florigraze showed greater persistence and nutritive value, and in the long term provided better animal daily gains.

SUMMARY

Florigraze and Arbrook are the two most widely used cultivars of perennial peanut in Florida, but their persistence and cattle weight gains have not been compared under continuous grazing. The objectives of this experiment were to evaluate the nutritive value and persistence of both cultivars, as well as to compare the performance (ADG) of 400-lb heifers continuously grazing the two cultivars. In the first 2 yr of grazing, ADGs were similar on Florigraze and Arbrook. However, by the third year, continuous grazing reduced stands of Arbrook and ADGs were greater on Florigraze. Percentage of Arbrook in the pasture decreased 23% from yr 1 (89%) to yr 3 (66%), while percentage of Florigraze remained relatively constant between 87 and 90%. Nutritive value (CP and IVOMD) was greater in Florigraze than Arbrook. Under continuous grazing, Florigraze is preferred over Arbrook rhizoma peanut because of its greater persistence, nutritive value, and, over time, greater animal performance.

INTRODUCTION

Rhizoma perennial peanut (Arachis glabrata) is an alternative to alfalfa in Florida because of its high yield (approximately 5 t/ac/yr), forage quality, and persistence under Florida conditions. Most perennial forages grown in Florida are not capable of supporting weight gains by growing animals of 1.8 lb/d, but rhizoma peanut is an exception.

Florigraze and Arbrook are the two most widely used cultivars of perennial peanut in Florida, but their persistence and cattle weight gains have not been compared under continuous grazing. Florigraze grows closer to the ground, achieves ground cover faster following establishment, and is more cold tolerant than Arbrook. Previous studies have shown that Arbrook was more productive early in the season and in fall of dry years. They have also shown the nutritive value of the two cultivars to be high; however, Florigraze has had greater CP and digestibility. Experiments conducted in north-central Florida demonstrated excellent forage quality of Florigraze under rotational grazing, with yearling steer daily gains of 2 lb.

Grazing management of Arbrook rhizoma peanut has not been studied, and this information is needed by producers as they consider which cultivar to establish for future grazing programs. The objectives of this research were to compare persistence and nutritive value of Florigraze and Arbrook pastures under continuous grazing and to evaluate animal performance of heifers grazing the two cultivars in North Florida.

PROCEDURE

The experiment was conducted for a 150-d period in each of the summer seasons of 1994, 1995, and 1996 at the BRU, Gainesville. Pastures of Florigraze and Arbrook rhizoma peanut were well established at the start of the study. Based on soil analyses, pastures were fertilized with 40 lb P₂O₅/ac, and 80 lb K₂O/ac, and because these were legume pastures no nitrogen was applied.

Pasture size for both cultivars was 1 ac. Free-access to water and a commercial salt and mineral mix was provided, and pastures were continuously grazed to maintain a height between 6 and 8 in. Two Holstein heifers with an initial weight of 400 lb were assigned to pastures as tester animals. Additional animals, similar in weight and breed to the testers, were added or removed throughout the growing season to achieve the targeted grazing height.

Animals were weighed at the beginning and end of the trial and every 28 d during the experiment. Pastures were sampled every 14 d to estimate CP and IVOMD. In July of each year, additional samples were collected to determine the percentage of rhizoma peanut, grass (common bermudagrass and bahiagrass), and broadleaf weeds.

RESULTS

There were no differences in ADG between cultivars during the first 2 yr (Table 1). Heifers grazing both forages gained 1.3 lb/d, but by yr 3 heifers grazing Florigraze significantly increased ADG to 1.5 lb/d while those grazing Arbrook gained 1.1 lb/d. These differences in ADG may be due to greater proportion of rhizoma peanut in Florigraze than in Arbrook pastures in yr 3 (Table 2). Stocking rate was greater on Florigraze pastures compared with Arbrook (2.6 vs 3.0 hd/ac) in yr 1, but there were no differences in yr 2 and 3 (Table 2).

Florigraze percentage remained relatively constant across the 3 yr ranging only from 90 in yr 1 to 87 in yr 3. In contrast, Arbrook decreased 7% from yr 1 to 2 and 16% from yr 2 to 3 leaving a final stand with only 66% Arbrook. Grass percentage (bermudagrass and bahiagrass) in Arbrook pastures increased steadily from 10% in yr 1 to 31% in yr 3. The encroachment of Arbrook pastures by common bermudagrass may be due to the more upright growth habit of Arbrook which makes it vulnerable to continuous grazing compared to Florigraze. Previous studies have documented the persistence of Florigraze under continuous grazing when plants were maintained at 6 in or taller.

Herbage CP and digestibility were lower for Arbrook than Florigraze (Figure 1). Crude protein averaged across years was 2% higher in Florigraze
than Arbrook (18 vs 16%). The lower CP in Arbrook reflects the greater proportion of grass in Arbrook pastures. There was a general decline in Arbrook CP during the growing season while Florigraze maintained a relatively constant CP throughout the season (Figure 1). Herbage IVOMD was consistently greater for Florigraze than for Arbrook (71 vs 66%).

In conclusion, in the first 2 yr of grazing, animal performance was similar on Florigraze and Arbrook despite slightly greater nutritive value for Florigraze. By the third year, continuous grazing had reduced the stand of the more upright growing Arbrook, and animal gains were greater on Florigraze. Under continuous grazing, Florigraze is preferred over Arbrook rhizoma peanut because of its greater persistence, nutritive value, and, over time greater animal performance.

Table 1. ADG and average SR of replacement dairy heifers grazing pastures of Florigraze (FL) and Arbrook (AR) rhizoma peanut.

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<tr>
<td></td>
<td>AR</td>
<td>FL</td>
<td>AR</td>
</tr>
<tr>
<td>ADG (lb)</td>
<td>1.4</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>SRb (hd/ac)</td>
<td>2.6b</td>
<td>3a</td>
<td>3a</td>
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*Means within a row and year followed by different letters are different (P<0.05).

bStocking rate is expressed based on a heifer of 500 lb live weight.

Table 2. Rhizoma peanut and grass percentage in the pastures during July in each of 3 yr for pastures of Florigraze (FL) and Arbrook (AR) rhizoma peanut.

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<tbody>
<tr>
<td>Rhizoma peanut</td>
<td>AR</td>
<td>FL</td>
<td>AR</td>
</tr>
<tr>
<td></td>
<td>89</td>
<td>90</td>
<td>82b</td>
</tr>
<tr>
<td>Grass</td>
<td>10</td>
<td>8</td>
<td>16a</td>
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aMeans within a row and year followed by different letters are different (P<0.05).
Figure 1. A. Average herbage CP from pastures of Florigraze and Arbrook rhizoma peanut across 3 yr of grazing. There was no cultivar effect in May, but Florigraze crude protein was greater than Arbrook in June, August, September, and October. B. Average herbage IVOMD from pastures of Florigraze and Arbrook rhizoma peanut across 3 yr of grazing. There was no cultivar effect in May, but Florigraze in vitro organic matter digestibility was greater than Arbrook in June through October.