

Including Legumes in Bermudagrass Pastures

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Summary

Use of legumes in bermudagrass pastures did not affect summer cow gains in 2016. Forage availability was also similar where ladino clover was used in the Legume system compared with where Nitrogen (N) alone was used. Estimated forage crude protein (CP) was greater for the Legume than the Nitrogen system in early summer, but was similar by mid-summer.

Introduction

Bermudagrass is a productive forage species when intensively managed. However, it has periods of dormancy and requires proper management to maintain forage quality. Legumes in the bermudagrass sward could improve forage quality and reduce fertilizer usage; however, legumes are difficult to establish and maintain with the competitive grass. Clovers can maintain survival once established in bermudagrass sod, and may be productive enough to substitute for some N fertilization. This study was designed to compare dry cow performance on a bermudagrass pasture system that included ladino and crimson clovers (Legume vs. bermudagrass alone (Nitrogen)).

Experimental Procedures

Eight 5-acre 'Hardie' bermudagrass pastures at the Mound Valley Unit of the Southeast Agricultural Research Center (Parsons silt loam soil) were assigned to Legume or Nitrogen treatments in a completely randomized design with four replications. Legume pastures received crimson clover by interseeding with a no-till drill at 25 lb/a on September 28, 2015, and additional ladino clover (variety 'Will', at 5 lb/a) by broadcast on February 22, 2016. Nitrogen pastures were fertilized with 50 lb/a N as urea on February 10 and May 12, 2016, and all pastures received 50-30-30 of N-P₂O₅-K₂O on July 11.

Thirty-two pregnant fall-calving cows of predominantly Angus breeding were weighed on consecutive days and assigned randomly by weight to pastures on March 22. Final cow weights were taken on consecutive days before removal from the pastures on August 10.

Forage CP, as estimated by the normalized difference vegetation index (NDVI), and available forage were monitored monthly during grazing with an automated instrument incorporating a Greenseeker (Trimble, Sunnyvale, CA), and rising plate meter.

Results and Discussion

Average available forage is plotted by date (Figure 1), since there was no difference ($P > 0.05$) between Nitrogen and Legume treatments. The estimated crude protein concentration was greater ($P < 0.05$) for the Nitrogen than the Legume system in the first sampling, but was higher for the Legume treatment in early summer (Figure 1), likely because of the presence of legumes that contain more protein. By midsummer, estimated CP was similar for the treatments. This was partially due to effects of N fertilizer treatments, and perhaps reduced legume content later on.

Data for cow performance are in Table 1. Gains during the 2016 season were similar ($P > 0.05$) for the Legume and the Nitrogen systems (Table 1).

Table 1. Performance of cows grazing wheat-bermudagrass pastures interseeded with wheat and fertilized with nitrogen or interseeded with legumes, Mound Valley Unit, Southeast Agricultural Research Center, 2016

Item	Management system ¹	
	Nitrogen	Legumes
Number of cows	15	16
Number of days	141	141
Stocking rate, cows/a	0.8	0.8
Cow initial weight, lb	1284	1284
Cow final weight, lb	1633	1660
Cow gain, lb	349	376
Cow daily gain, lb	2.47	2.67
Cow gain, lb/a	279	301

¹Means within a row were not significantly different at $P = 0.05$.

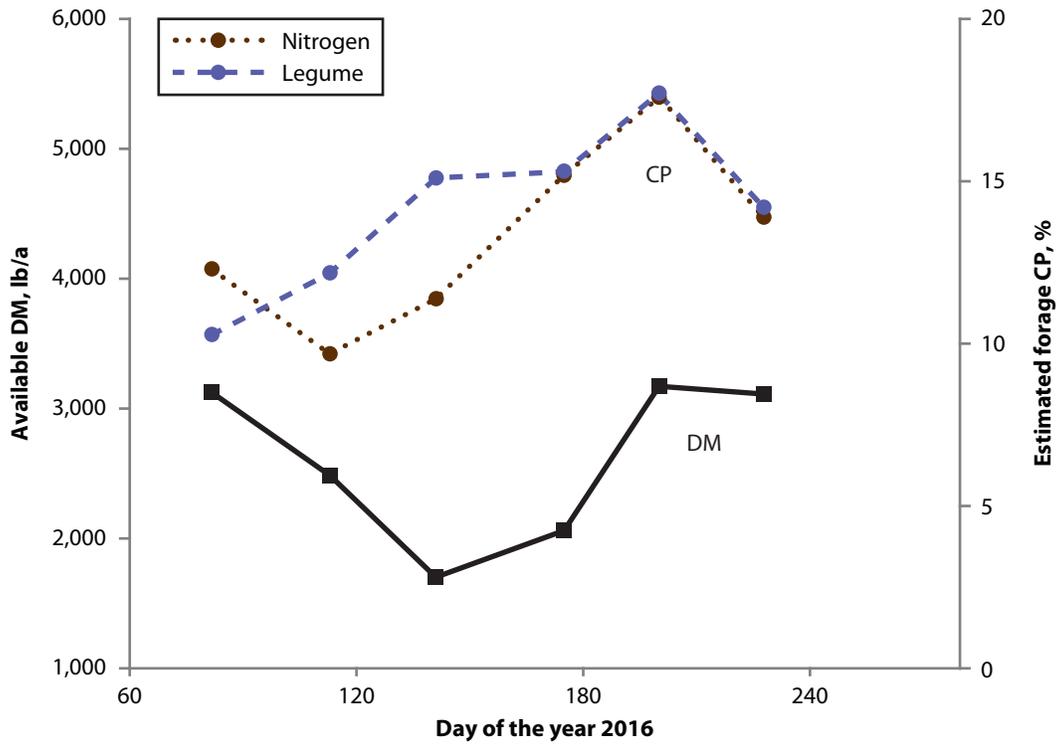


Figure 1. Available forage dry matter (DM) and estimated crude protein (CP) concentration during the grazing season in bermudagrass pastures with or without interseeded legumes, Mound Valley Unit, Southeast Agricultural Research Center, 2016.