

Including Legumes in Bermudagrass Pastures

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Summary

Use of legumes in wheat-bermudagrass pastures did not affect summer cow gains in 2017. Forage availability was greater ($P < 0.05$) where nitrogen (N) alone was used than where crimson clover and ladino clover were used in the Legume system. Estimated forage crude protein (CP) was similar ($P > 0.05$) for the Legume and Nitrogen systems.

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. All pastures were interseeded with 90 lb/a of 'Everest' wheat on September 28, 2016. Legume pastures that had been previously interseeded with 'Will' ladino clover were interseeded with 26 lb/a of crimson clover using a no-till drill at on September 29, 2016. Nitrogen pastures were fertilized with 50 lb/a N on February 13 and May 10, 2016, and all pastures received 50-30-30 of N-P₂O₅-K₂O on July 7.

Thirty-two pregnant fall-calving cows of predominantly Angus breeding were weighed on consecutive days and assigned randomly by weight to pastures on April 4. Final cow weights were taken on consecutive days before removal from the pastures on August 23 (141 days).

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 dry matter is plotted by date for Nitrogen and Legume treatments in Figure 1. The Nitrogen treatment had greater ($P < 0.05$) average available forage dry matter than the Legume treatment. The estimated crude protein concentration was similar ($P > 0.05$) for the Nitrogen and the Legume systems on all sampling dates.

Cow performance data are presented in Table 1. Cow gains and gain/a for the Nitrogen and Legume treatments were similar ($P > 0.05$).

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, 2017

Item	Management system	
	Nitrogen	Legumes
Number of cows	16	16
Number of days	141	141
Stocking rate, cows/a	0.8	0.8
Cow initial weight, lb	1296	1296
Cow final weight, lb	1644	1637
Cow gain, lb	348	341
Cow daily gain, lb	2.47	2.42
Cow gain, lb/a	278	273
Average available forage dry matter, lb/a	5,029a	4,414b

Means within a row followed by the same letter do not differ ($P < 0.05$).

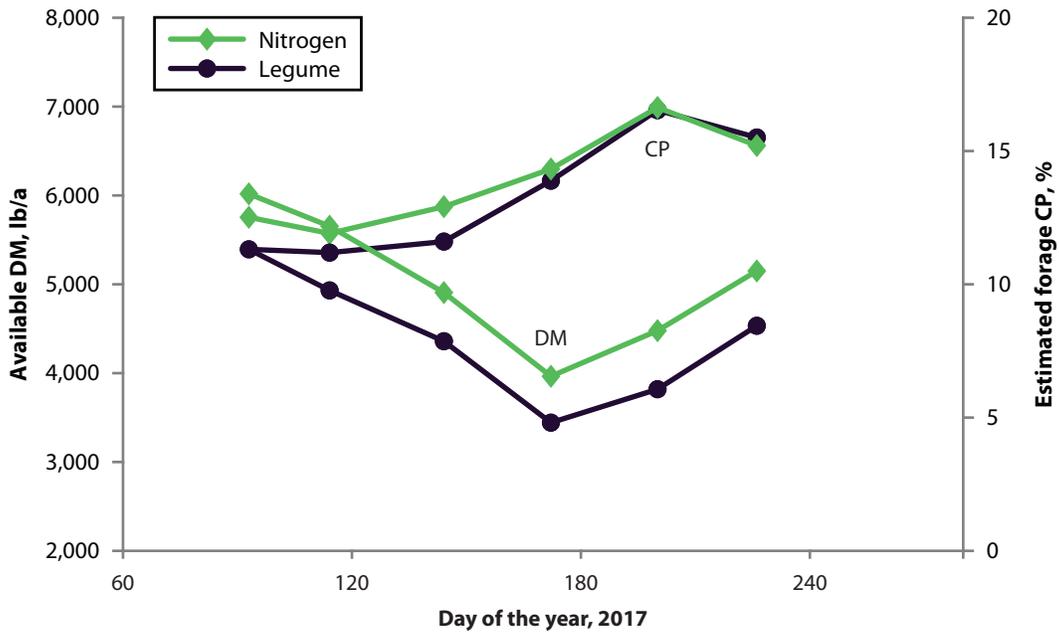


Figure 1. Available forage dry matter (DM) and estimated crude protein (CP) concentration during the grazing season in wheat-bermudagrass pastures with or without interseeded legumes, Mound Valley Unit, Southeast Agricultural Research Center, 2017.