

## Including Legumes in Bermudagrass Pastures

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### Summary

Use of legumes in bermudagrass pastures has often increased summer cow gains. Forage production was greater where ladino clover was used in the Legume system than where Nitrogen (N) alone was used in the first sampling, but the reverse was true in mid-summer. Estimated forage crude protein during 2015 was greater for the Legume than the Nitrogen system in the first and last samplings, but similar in mid-summer pasture. Cow performance over the season was increased 68% where legumes were used.

### 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 summer 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 clover (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 additional ladino clover (3.5 lb/a) by broadcast on April 29-30, 2015. All pastures were fertilized with 55 lb/a N as urea on June 4, 2015.

Thirty-two pregnant fall-calving cows of predominantly Angus breeding were weighed on consecutive days and assigned randomly by weight to pastures on June 10. Cows were weighed again on consecutive days and removed from the pastures on September 2.

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

## Results and Discussion

Available forage is plotted by date (Figure 1). Available forage was greater ( $P < 0.05$ ) for the Legume than the Nitrogen system in the first sampling, but the reverse was true in mid-summer. However, there was no difference at the end of the grazing season. The estimated crude protein concentration was greater for the Legume than the Nitrogen system in the first and last samplings, but similar in mid-summer (Figure 1), likely because of the presence of legumes that contain more protein.

Data for cow performance are in Table 1. Gains during the 2013 season were greater for the Legume than the Nitrogen system (Table 1,  $P < 0.05$ ), increasing gain by an average of 68%.

**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, 2013**

| Item                   | Management system  |         |
|------------------------|--------------------|---------|
|                        | Nitrogen           | Legumes |
| No. of cows            | 16                 | 16      |
| No. of days            | 84                 | 84      |
| Stocking rate, cows/a  | 0.8                | 0.8     |
| Cow initial weight, lb | 1386               | 1386    |
| Cow final weight, lb   | 1501b <sup>1</sup> | 1580a   |
| Cow gain, lb           | 115b               | 194a    |
| Cow daily gain, lb     | 1.39b              | 2.33a   |
| Cow gain, lb/a         | 144b               | 242a    |

<sup>1</sup>Means within a row followed by a different letter were significantly different at  $P = 0.05$ .

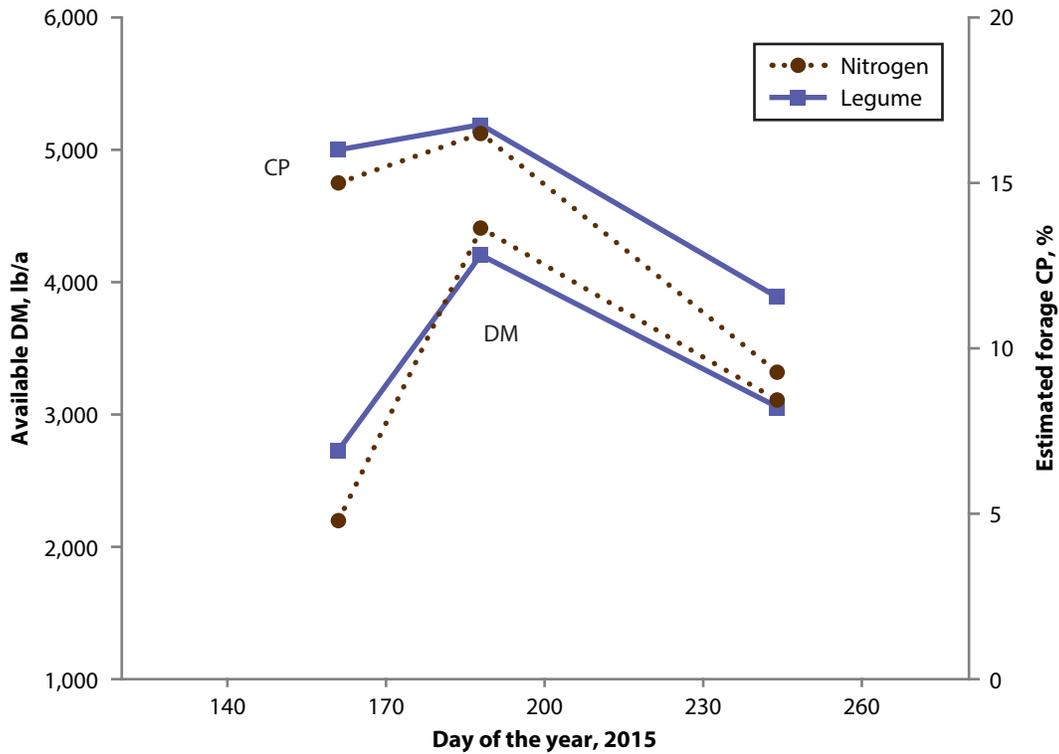


Figure 1. Available forage dry matter (DM) and estimated crude protein (CP) concentration during the grazing season in bermudagrass pastures with or without interseeded legumes, Mound Valley Unit, Southeast Agricultural Research Center, 2015