Effects of Nitrogen Rate on Yield and Quality of Tifton 85 Bermudagrass

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Abstract

Nitrogen treatments consistently reflected differences in canopy color (Plate 2). Crotalaria forage yields in 2003 showed a significant increase for additional increments of N applied above 56 kg N ha⁻¹ (Fig. 4c).

Objectives

To evaluate the effects of nitrogen rate on yields and quality of Tifton 85 bermudagrass.

Materials and Methods

Tifton 85 was planted into a Bouteloua cara at the Stiles Farm Foundation near Thrall, Texas. The experimental design was a randomized complete block with four treatments and four replications. Treatments in 2001 and 2002 included nitrogen rates of 56, 84, 112, and 140 kg N ha⁻¹. Nitrogen rates of 224 kg N ha⁻¹ were applied in 2003 and 2005, respectively. Forage from the center of each plot was used to determine crude protein content, and forage quality. Cuttings were scheduled at 1200 to 1800 kg ha⁻¹, and forage from the center of each plot was used to determine crude protein content, and forage quality.

Results & Discussion

Nitrogen rates greater than the standard 112 kg N ha⁻¹/cutting did not consistently increase forage yields of Tifton 85 bermudagrass in central Texas over multiple seasons. Forage protein content of Tifton 85 bermudagrass was consistently increased by N rates greater than 112 kg N ha⁻¹/cutting; however, current market value may not support the additional cost of N.

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References


Forage Yield (kg ha⁻¹)

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Table 1. Summary of effects of nitrogen rate on yield and quality of Tifton 85 bermudagrass in central Texas.

In 2002, cumulative yield only differed numerically between the 140 and 112 kg N ha⁻¹ treatments, but was greater for either of these treatments compared to applying 84 kg N ha⁻¹ (Fig. 4c). There was a trend for cumulative forage yield to increase in response to additional increments of N applied above 112 kg N ha⁻¹ in 2003; however, differences between treatments weren’t significant (Fig. 4c). Forage yields showed that the 224 kg N ha⁻¹ treatment was statistically superior to all other treatments in 2004 and 2005 (Fig. 4c).

Summary

In 2002, cumulative yields only differed numerically between the 140 and 112 kg N ha⁻¹ treatments, but was greater for either of these treatments compared to applying 84 kg N ha⁻¹ (Fig. 4c). There was a trend for cumulative forage yield to increase in response to additional increments of N applied above 112 kg N ha⁻¹ in 2003; however, differences between treatments weren’t significant (Fig. 4c). Forage yields showed that the 224 kg N ha⁻¹ treatment was statistically superior to all other treatments in 2004 and 2005 (Fig. 4c).


d 1 Corresponding rate of N fertilizer was applied. Treatment not active.

d 2 Nitrogen source was sawdust and lime. Nitrogen fertilizer was broadcast at spring bloom up and following each harvest by hand. plant growth 8 to 10. Grass was removed by cutting off a 0.75 m strip of forage from the center of each plot. Forage from the center of each plot was used to determine crude protein content, and forage quality. Cuttings were scheduled at 1200 to 1800 kg ha⁻¹, and forage from the center of each plot was used to determine crude protein content, and forage quality.


d 3 Tifton 85 was planted into a Bouteloua cara at the Stiles Farm Foundation near Thrall, Texas. The experimental design was a randomized complete block with four treatments and four replications. 84 kg N ha⁻¹/cutting recommended for warm-season bermudagrasses appears to be optimum for production of Tifton 85 on Blackland soils in central Texas.