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Nitrogen Management for Teff Hay Production

Abstract

Fertilization of teff with the ESN source of nitrogen (N) at the higher rates, 100 and 125 lb N/a resulted in increased seasonal forage production. The primary increase occurred in the second of three cuttings.

Keywords

pastures, hay

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Nitrogen Management for Teff Hay Production

D.H. Min and J.L. Moyer

Summary

Fertilization of teff with the ESN source of nitrogen (N) at the higher rates, 100 and 125 lb N/a resulted in increased seasonal forage production. The primary increase occurred in the second of three cuttings.

Introduction

Teff [*Eragrostis tef* (Zucc.) Trotter] is a warm-season annual grass that can fill a short-term summer void with high-quality forage. However, little is known about the needs or responses of teff to different N levels, or how it would respond during its season of growth to different sources of N, such as ESN (Environmentally Smart Nitrogen®).

Experimental Procedures

The plot area at the Mound Valley Unit, Southeast Agricultural Research Center was seeded with 6.5 lb of pure, live seed/a of 'Tiffany' teff by hand broadcasting. Individual plot size was 30 by 5 ft.

Nitrogen (N) treatments were rates and sources, arranged in a 5 by 2 factorial, plus a check, with four replications in randomized complete blocks. Rates were 25, 50, 75, 100, and 125 lb of N; sources were urea (46% N) and ESN (44% N). Plots were fertilized on June 10, just after seeding, then harrowed lightly.

Plots were harvested on July 14, August 17, and October 6, 2015. Harvest was conducted with a Carter 3-ft flail cutter at a height of 3 in. The remainder of the area was clipped at each harvest to the same height. A forage subsample was taken from each plot for moisture determination and analysis of forage N and fiber content.

Results and Discussion

Forage yields responded to N fertilizer treatments in cut 2, and for total seasonal yield (Table 1).

In both cases, only ESN at the higher rates increased yield above the check (0 N) plots. There was an overall tendency ($P < 0.10$) for ESN treatments to yield more than urea in cut 3. No significant N rate by N source interaction was found in any of the harvests.

Table 1. Forage Yields of Teff in Response to Nitrogen (N) Source and Rate, Mound Valley Unit, Southeast Agricultural Research Center, 2014

N Rate	N Source	Cut 1	Cut 2	Cut 3	Total
----- ton/a @ 12% moisture -----					
0	---	0.95	0.84 ¹	0.65	2.44 ¹
25	Urea	0.97	0.74	0.53	2.24
	ESN	0.97	0.77	0.68	2.42
50	Urea	0.88	0.79	0.61	2.28
	ESN	1.06	0.86	0.59	2.50
75	Urea	1.16	0.86	0.65	2.67
	ESN	1.13	0.95	0.59	2.66
100	Urea	1.18	0.93	0.61	2.71
	ESN	1.13	0.98	0.69	2.79
125	Urea	1.18	0.88	0.59	2.65
	ESN	1.21	1.11	0.83	3.14
LSD (0.05)		NS	0.13	NS	0.31
Means, N Rate					
25		0.91	0.66	0.60	2.14
50		1.05	0.73	0.59	2.21
75		1.08	0.81	0.62	2.49
100		1.09	0.86	0.64	2.57
125		1.12	0.90	0.72	2.72
LSD (0.05)		NS	NS	NS	0.38
Means, N Source					
	Urea	1.07	0.74	0.59	2.33
	ESN	1.04	0.84	0.67	2.52
LSD (0.05)		NS	NS	NS ²	NS ³

¹Single degree of-freedom contrast shows zero N yielded less than ($P < 0.05$) treatments that received 125 N.

²Pr > F = 0.075.

³Pr > F = 0.107.