

Kansas Agricultural Experiment Station Research Reports

Volume 1
Issue 4 *Southeast Agricultural Research Center
Reports*

Article 17

January 2015

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Recommended Citation

Min, D. H. and Moyer, J. L. (2015) "Nitrogen Management for Teff Hay Production," *Kansas Agricultural Experiment Station Research Reports*: Vol. 1: Iss. 4. <https://doi.org/10.4148/2378-5977.1067>

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Nitrogen Management for Teff Hay Production

D-H. Min and J.L. Moyer

Summary

Fertilization of teff with nitrogen (N) resulted in increased forage production, but amounts above 25 lb/a did not often increase yields in this study. Urea as the N source produced at least as much yield response as the alternate, an extended source of nitrogen (ESN).

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.

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 × 5 ft.

Nitrogen treatments were rates and sources, arranged in a 5 × 2 factorial, plus a check, with four replications in randomized complete blocks. Rates were 25, 50, 75, 100, and 125 lb/a of N; sources were urea (46% N) and ESN (44% N). Plots were fertilized on May 30, just after seeding, then harrowed lightly.

Plots were harvested on July 9, August 6, and October 20, 2014. Harvest was 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 (Table 1). Nitrogen rate did not significantly ($P > 0.05$) affect first-cut yield. In cut 2, yields from fertilized plots, contrasted as a group, yielded more than the check (0 N). In cut 3, the check yielded significantly less than plots that received 125 lb N/a.

The only effect of source was in cut 2, when urea resulted in more forage than ESN (Table 1). No significant N rate × 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
-----Tons/a, 12% moisture-----					
0	---	2.26	0.41 ¹	2.47 ²	5.14 ³
25	Urea	2.31	0.60	2.38	5.28
	ESN	2.19	0.47	2.62	5.27
50	Urea	2.24	0.53	2.91	5.67
	ESN	2.19	0.47	2.65	5.31
75	Urea	2.29	0.49	2.84	5.66
	ESN	2.19	0.50	2.76	5.44
100	Urea	2.16	0.54	2.82	5.52
	ESN	2.25	0.47	2.83	5.55
125	Urea	2.18	0.53	2.91	5.62
	ESN	2.13	0.49	2.84	5.45
LSD (0.05)		NS	NS	NS	NS
Means, N rate					
25		2.25	0.53	2.50	5.28
50		2.21	0.50	2.78	5.49
75		2.24	0.51	2.80	5.55
100		2.21	0.50	2.82	5.53
125		2.15	0.51	2.87	5.53
LSD (0.05)		NS	NS	NS	NS
Means, N source					
	Urea	2.19	0.54	2.74	5.55
	ESN	2.23	0.48	2.77	5.40
LSD (0.05)		NS	0.06	NS	NS

¹ Single degree-of-freedom (d.f.) contrast shows the 0 N less than ($P < 0.05$) treatments that received N.

² Single d.f. contrast shows the 0 N less than ($P < 0.05$) treatments that received 125 N.

³ Single d.f. contrast shows the 0 N less than ($P < 0.10$) treatments that received N.