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Evaluation of Tall Fescue Cultivars

J.L. Moyer

Summary

Spring 2016 yield of tall fescue was higher for 'NFTF 1051' than for 12 of the 19 other cultivar entries. Summer production of 'PBU-B2' was greater than summer production of the three lower-yielding entries. Fall production of 'BarOptima PLUS E34' was higher than that of 12 other cultivar entries, but total 2016 production was greater for PBU-B2, 'PBU-B7', and NFTF 1051 than for eight other cultivars.

Introduction

Tall fescue (*Lolium arundinaceum* Schreb.) is the most widely grown forage grass in southeastern Kansas. Its tolerance to extremes in climate and soils of the region is partly attributable to its association with a fungal endophyte, *Neotyphodium coenophialum*; however, most ubiquitous endophytes are also responsible for production of substances toxic to some herbivores, including cattle, sheep, and horses. Endophytes that purportedly lack toxins but augment plant vigor have been identified and inserted into tall fescue cultivars adapted to the United States. These cultivars and others that are fungus-free or contain a ubiquitous endophyte (i.e. Ky 31 EF and HE, respectively) are included in this test.

Experimental Procedures

The trial was seeded at the Mound Valley Unit of the Southeast Agricultural Research Center in 10-in. rows on Parsons silt loam soil. Plots were 35 × 5 ft and were arranged in four randomized complete blocks. They were fertilized preplant with 20-50-60 lb/a of N-P₂O₅-K₂O and seeded with 20 lb/a of pure, live seed on September 30, 2014. Spring fertilizer (120-50-75 lb/a of N-P₂O₅-K₂O) was applied on February 1, and fall growth was supplemented with 60 lb/a N on August 23, 2015.

Harvest was performed on a 3-ft strip, 16 to 20 ft long from each plot. A flail-type harvester was used to cut to a 3-in. height on May 9, 2016. After harvest, forage was removed from the rest of the plot at the same height. A forage subsample was collected from each plot and dried at 140°F for moisture determination. Summer regrowth was similarly harvested on August 18, and fall growth was harvested on December 6, 2016.

Results and Discussion

Spring 2016 yields ranged from 2.82 tons/a (12% moisture basis) for BarOptima PLUS E34, to 4.77 for NFTF 1051 (Table 1). The latter yielded more ($P < 0.05$) than 12 of the 19 other entries, and six entries yielded more than the four lowest-yielding entries.

Summer forage production averaged 2.35 tons/a (Table 1). This was more than usual because precipitation at Mound Valley during July 2016 was 60% above the 30-year average. PBU-B2 yield was greater than that of 'PBU-B1,' 'Bar FAF 131,' and 'Martin 2 ProTek,' the latter yielding less than eight entries.

Fall production amounted to 1.87 tons/a, with BarOptima PLUS E34 yielding more than 12 other entries. Four entries yielded more in fall than 'AGRFA 148,' Martin 2 ProTek, and 'NFTF 1044.' Total forage production for 2016 was greater for PBU-B2, 'PBU-B7,' and NFTF 1051 than for eight other cultivars.

Spring forage dry matter content (Table 1) may be somewhat related to maturity. In that case PBU-B2, 'PBU-B5,' and PBU-B7 may have been most mature at the first cutting. Forage dry matter content on December 6 was lower in 'LE 14-84,' 'LE 14-86,' 'Tower Pro Tek,' and BarOptima PLUS E34 than in the other 16 entries. Low dry matter content in late fall may indicate frost tolerance of forage, since temperatures below freezing began to occur 23 days before harvest.

Table 1. 2016 Forage yield of three cuttings, and dry matter of first and third cuttings of tall fescue cultivars seeded in 2014, Southeast Agricultural Research Center, Mound Valley Unit

Cultivar	Forage yield				Dry matter	
	5/9	8/18	12/06	2016 total	5/9	12/06
	----- tons/a, 12% moisture -----				----- % -----	
BarOptima PLUS E34	2.82	2.37	2.28	7.47	26	32
Bar FAF 131	3.48	2.16	1.84	7.47	25	34
Tower ProTek	3.63	2.17	2.00	7.80	23	31
Martin 2 ProTek	4.36	1.94	1.68	7.97	26	37
AGRFA 148	4.09	2.27	1.52	7.89	24	36
NFTF 1051	4.77	2.46	1.88	9.12	27	38
NFTF 1044	4.14	2.55	1.68	8.37	26	37
NFTF 1411	4.30	2.30	1.80	8.40	26	34
GT 213	3.86	2.28	1.97	8.10	22	33
LE 14-84	3.92	2.41	1.81	8.14	28	31
LE 14-86	3.95	2.44	2.03	8.41	26	32
Teton II	4.02	2.38	2.05	8.44	27	35
Estancia	3.90	2.57	1.89	8.35	25	37
PBU-B1	4.22	2.29	1.77	8.12	26	37
PBU-B2	4.41	2.62	2.08	9.11	29	36
PBU-B5	3.97	2.38	1.97	8.31	28	35
PBU-B7	4.56	2.58	1.96	9.11	29	37
MV 14	3.99	2.24	1.80	8.02	26	37
Ky 31 HE	3.37	2.50	1.77	7.63	25	36
Ky 31 LE	3.60	2.38	1.80	7.78	25	37
Average	3.98	2.35	1.87	8.21	26	35
LSD (0.05)	0.69	0.46	0.33	1.08	1.3	2