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Forage Yields from 2010-2011 Ryegrass Variety Trial

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Introduction

Livestock and forage production are the largest contributors to agricultural income in the primary service region of the Noble Foundation. The ryegrass (*Lolium multiflorum* L) variety testing program is designed to provide up-to-date performance information to cooperators and producers in Oklahoma and Texas on ryegrass varieties that are commercially and commonly available. In addition, the program provides a tool to evaluate and compare experimental breeding lines emerging from the Noble Foundation breeding program as well as other public and private breeding programs.

This program is intended to furnish cooperators and producers with supplemental information and to aid decision-making and idea formation. The information coming from the variety testing program should be a valuable tool when used with similar information from other sources. The objective of this report is to summarize forage yield from the 2010-2011 ryegrass variety trial.

Materials and Methods

The annual ryegrass variety trial was conducted on a Wilson silt loam soil at the Noble Foundation Headquarters Farm, Ardmore, Okla. The experimental design is a randomized complete block with three replications. The experimental unit is a 5- by 10-foot plot of a single variety. The trial consisted of 36 entries that were evaluated during the 2010-2011 crop growing season. Ten sources contributed entries to the trial (Table 1).

The entries were seeded in a clean-tilled seedbed on Sept. 17, 2010. Each entry was drilled in 5- by 10-foot plots, in 7-inch rows, at 25 lbs/ac (pure live seed basis) at a ½-inch planting depth with a HEGE 500 drill. The experimental area was sprayed for aphids with Cobalt @13 oz/ac on Sept. 30, 2010. Fertilization consisted of pre-plant incorporation of 50 lbs K2O/ac on Sept. 16, 2010. Nitrogen fertilizer was applied at 60 lbs N/ac on Oct. 21, 2010, and a topdress application of 75 lbs N/acre on Feb. 23, 2011. Plots were harvested with a HEGE sickle bar forage plot harvester at a 3-inch height on Nov. 20,

2010; Feb. 22, March 10, April 14 and May 17, 2011. Data was analyzed with the general linear models procedure in SAS (Statistical Analysis Software, Cary, N.C.), and means were separated by the least significant difference (LSD) method ($P \leq 0.05$).

Table 1. Contributors to the 2010-2011 ryegrass variety test at the Noble Foundation Headquarters Farm, Ardmore, Okla.

Variety/strain	Source
BAR LMF 9740	Barenburg
BAR LMF 9876	Barenburg
BAR LMF 9881	Barenburg
Jumbo	Barenburg
LWD9086-11	Barenburg
IS-LWD- 8 (2)	DLF International Seeds
IS-LWD 9 (2)	DLF International Seeds
IS-LWT 14 (4)	DLF International Seeds
IS-LWT 15 (4)	DLF International Seeds
GO-ENH	Grassland Oregon
Lonestar	Grassland Oregon
Terastar (4)	Grassland Oregon
Flying A	Oregro
DH3	Oregro
Fria	Allied Seed
Winterhawk	Oregro
Passerel Plus	Pennington Seed
Big Boss	Smith Seed
Ed	Smith Seed
07-EW	Texas Agrilife Research
07-WW	Texas Agrilife Research
TAM 90	Texas Agrilife Research
TAMTBO	Texas Agrilife Research
TXR2008-T3	Texas Agrilife Research
B-10.141 AR (2)	
FI 2010 (4x early)	University of Florida
FI 2010 PE (2x late)	University of Florida
FI 2010 Red (4x late)	University of Florida
FIxSH 2010 (2x early)	University of Florida
FIxSh 2010 (2x ME)	University of Florida
SHxFI 2009 (2xME)	University of Florida
Jackson	Wax Company
Marshall	Wax Company
ME4 Experimental	Wax Company
ME-94 Experimental	Wax Company
Nelson (4)	Wax Company

Results and Discussion

Average growing conditions are reported in Table 2. The seasonal rainfall total is less than the 30-year average. The monthly rainfall total is very low in the months of March and April compared to the 30-year average and contributed to lower yields in those months. Due to better moisture conditions in May, forage yields were higher. Overall, forage yields depended on the ryegrass variety and harvest date. Forage yields are reported in Table 3. Dry matter forage yields for ryegrass cultivars and strains ranged from 17 lbs/ac to 2,031; 935 lbs/ac to 4,145lbs/ac; 470 lbs/ac to 1,391 lbs/ac; 403 lbs/ac to 2,051 lbs/ac; and 932 lbs/ac to 4,208 lbs/ac during November, February, March, April and May harvest periods, respectively, and the total forage yield was between 3,018 lbs/ac and 11,805 lbs/ac (Table 3). There was no significant difference in forage yields among Passerel Plus, TAMTO, DH3, ME-94 Experimental, Terastar(4), Jackson, B-10.141 AR(2), Winterhawk, Tam 90, Big Boss, Jumbo, Lonestar and Fria which have yielded more than 9,000 lbs/ac. There were no significant forage yield differences among the rest of the varieties in the trial. The total forage yields are better in the 2010-2011 crop growing season compared to the year before due to better rainfall conditions than the previous year during early fall and in late April to early May.

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Table 2. Average 2010 to 2011 monthly high and low temperatures (°F) and precipitation (inches) for the Noble Foundation Headquarters Farm, Ardmore, Okla.

		Temperature		Precipitation	
Month	Year	Avg. High	Avg. Low	Total	30-yr Avg.
Sept	2010	86	67	6.13	4.17
Oct	2010	78	50	2.33	4.43
Nov	2010	66	43	1.81	2.70
Dec	2010	55	33	2.03	2.32
Jan	2011	51	27	0.27	1.85
Feb	2011	56	33	1.95	2.19
Mar	2011	69	45	0.06	3.20
Apr	2011	80	54	1.86	3.19
May	2011	80	59	5.77	5.08
Sept-May	2010-2011			22.21	29.13

Table 3. Dry matter forage yields of annual ryegrass cultivars harvested on Nov. 20, 2010; Feb. 22, March 10, April 14 and May 17, 2011

	Nov.		Feb.		March		April		May		Total
Variety	Yield	CP	Yield	CP	Yield	CP	Yield	CP	Yield	CP	Yield
Passerel Plus	2,031	27.9	3,971	15.8	931	24.5	664	16.5	4,208	11.0	11,805
TAMTBO	1,799	30.1	3,045	20.0	1,108	25.6	1,545	16.4	3,832	13.3	11,329
DH3	1,602	29.7	3,532	22.4	1,140	27.3	1,578	16.0	3,210	13.2	11,062
ME-94 Experimental	1,896	29.0	3,211	18.9	994	25.9	1,383	16.7	3,578	13.9	11,061
Terastar (4)	1,907	32.0	3,891	25.2	798	26.1	1,473	17.3	2,731	14.4	10,800
JACKSON	1,833	31.0	3,299	19.3	1,293	24.1	946	16.4	3,256	14.5	10,628
B-10.141 AR (2)	1,304	30.0	2,990	20.4	858	27.3	1,249	17.0	3,851	11.6	10,252
Winterhawk	1,656	29.4	2,795	19.0	1,140	23.9	1,178	17.9	3,301	14.5	10,070
TAM 90	1,448	31.0	4,145	26.0	750	29.8	1,052	18.3	2,674	17.0	10,069
Big Boss	1,146	28.3	2,833	19.8	1,083	25.4	1,482	16.2	3,532	10.9	9,568
Jumbo	1,255	32.1	1,764	22.2	1,311	26.5	1,911	17.5	3,210	15.8	9,451
Lonestar	1,791	28.7	2,627	19.0	834	24.6	958	15.6	3,237	13.0	9,447
Fria	25	33.5	2,792	27.5	1,391	29.5	1,593	19.2	3,463	14.0	9,265
Fl 2010 Red (4x late)	706	34.5	1,922	23.7	1,066	26.7	1,333	18.2	3,687	16.4	8,715
07-EW	189	33.4	3,082	24.0	1,139	28.2	1,093	19.7	3,176	14.2	8,679
Ed	1,204	31.9	2,324	19.7	898	26.0	766	17.1	3,463	12.5	8,655
07-WW	411	31.7	3,345	20.1	1,123	26.3	922	16.0	2,685	14.0	8,486
BAR LMF 9740	1,418	31.4	3,546	19.1	795	27.1	1,023	18.3	1,539	16.0	8,321
TXR2008-T3	1,014	31.6	1,777	20.5	849	25.5	1,604	15.8	2,973	15.2	8,217
Marshall	1,742	24.0	935	16.1	723	23.9	971	15.8	3,673	14.4	8,044
SHxFl 2009 (2xME)	840	31.3	3,282	21.2	717	28.0	1,169	16.6	1,993	15.7	8,000
IS-LWT 15 (4)	17	33.6	1,618	22.8	826	29.2	2,051	16.2	3,331	13.1	7,842
FL 2010 PE (2x late)	446	33.5	1,617	23.0	1,368	27.0	1,203	18.8	3,142	15.7	7,776
Nelson (4)	68	32.6	2,452	22.8	628	27.3	1,148	18.4	3,393	14.2	7,690
ME4 Experimental	211	32.7	1,841	21.4	923	26.8	1,383	16.2	3,280	14.2	7,638
BAR LMF 9881	612	33.5	2,190	24.8	1,194	28.4	887	21.9	2,473	18.3	7,356
IS-LWD 9 (2)	-		1,681	24.0	1,139	28.0	946	18.4	3,529	14.1	7,296
Fl 2010 (4x early)	505	33.1	1,795	21.2	1,092	24.9	1,539	14.8	2,355	14.9	7,286
IS-LWT 14 (4)	78	32.3	1,740	23.6	1,069	26.8	1,312	16.8	2,911	16.1	7,083
BAR LMF 9876	812	31.0	1,533	18.6	802	26.1	907	17.3	2,945	14.6	7,000
IS-LWD- 8 (2)	-		1,562	26.1	1,020	29.3	1,548	16.9	2,444	13.7	6,573
FlxSH 2010 (2x early)	732	29.3	2,139	17.6	510	21.9	837	12.7	2,199	14.1	6,417
GO-ENH	750	29.8	1,381	21.6	895	26.9	669	18.7	2,459	13.7	6,155
FlxSh 2010 (2x ME)	671	33.2	2,031	20.6	768	26.1	699	15.0	1,951	15.6	6,120
LWD9086-11	1,084	28.0	1,598	16.9	470	25.6	403	18.3	2,381	13.8	5,937
Flying A	228	30.0	998	16.7	658	23.4	1,310	14.9	2,629	13.4	5,823
LSD (0.05)	653	4.5	2,030	6.10	608	3.4	689	2.8	932	4.2	3,018

*Shaded numbers are not statistically different from the highest yielding entry within a column.

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