Tall Fescue Simulated Traffic Cultivar Evaluation Trial

RFR-A1918

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Introduction

This is the 2019 data from tall fescue subjected to simulated athletic field traffic conditions during August and early September. This is a National Turfgrass Evaluation Program (NTEP) ancillary trial, and is being conducted at several research stations in the United States. It contains 132 seeded cultivars, including a number of new experimental cultivars. Iowa State University is home to both a traffic tolerance and shade setting of this trial.

Materials and Methods

Research was conducted at the Iowa State University Horticulture Research Station, Ames, Iowa. Before planting, the ground was cleared of all vegetative cover with a nonselective herbicide (glyphosate).

The trial was planted September 18, 2018. Plots are 4 ft by 5 ft in size, and all cultivars are replicated three times. Supplemental irrigation was provided during establishment and a starter fertilizer (10-10-10) was applied at seeding providing 1 lb nitrogen (N)/1,000 ft^2. Fertilizer was applied at 0.5 lb N/1,000 ft^2 monthly (April-October) using a 28-0-3 granular fertilizer. The mowing height is 3 in. Simulated athletic field traffic is applied in three of the five years the study is conducted. A modified Baldree Athletic Field Traffic Simulator was used to simulate athletic field traffic.

Digital images were taken monthly April to November. Digital images were captured with the use of a light box to ensure a consistent lighting and digital camera. Images were scanned using Sigma Scan for percent green cover (1-100% cover), color (1 = light green color and 9 = dark green color), and turfgrass quality (1 = poor and 6 = acceptable quality). Visual ratings also were taken during this time period, but not presented here.

Results and Discussion

Significant differences existed between cultivars for percent cover, color (data not shown), and quality (data not shown) for all rating dates. Those in August and Sepember are under simulated traffic, and those in October and November are for recovery from traffic.

The values listed under each month in Table 1 are the averages of the percent green cover. The last row states the Fisher's LSD (least significant difference), which is a statistical measurement of how widely the data in each column must vary before these are considered to be different from one another.

Acknowledgements

Appreciation is extended to the NTEP organization for funding to conduct this project. Special appreciation also to Thomas Gould, Simon Mitbo, Spencer Sherrick, Nathan Underwood, and Colin Laswell for their help on plot maintenance, traffic simulation, and data collection.

Table 1. Monthly percent green cover ratings for tall fescue cultivars subjected to fall simulated athletic field traffic, ISU Horticulture Research Station, Ames, IA.

	Percent green cover[1]							
Cultivars	**Apr.**	**May**	**June**	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**
Naturally Green	53.5	86.0	84.1	86.5	46.2	14.5	56.5	42.5
Paramount	47.9	71.0	76.4	91.2	54.3	21.4	53.6	53.8
DLFPS-321/3693	69.1	79.2	79.0	94.0	57.9	20.8	78.0	62.3
DLFPS-321/3694	61.8	80.1	76.4	85.7	43.9	16.5	68.8	52.3
DLFPS-321/3695	61.5	68.2	72.0	78.1	44.8	18.1	61.8	54.5
TMT1	58.1	73.5	82.0	90.5	58.3	26.9	66.3	51.5
ATF2116	56.6	67.5	81.5	88.1	40.3	15.6	57.5	40.2
NT-3	66.5	69.3	74.6	90.5	48.8	22.2	73.8	68.9
RS1	60.6	87.5	87.4	93.8	61.6	21.8	69.6	64.4
5LSS	64.7	78.8	89.6	92.3	37.9	11.8	46.6	37.6
BGR-TF3	69.0	84.1	81.0	87.7	59.6	22.6	75.3	67.7
ATF 1768	53.6	54.3	67.4	90.4	41.2	13.9	65.0	48.9
DLFPS-TF/3550	67.2	77.6	81.2	92.9	31.5	14.4	59.7	51.8
DLFPS-TF/3552	69.3	86.5	85.4	91.0	58.6	14.3	71.6	58.3
DLFPS-TF/3553	53.6	76.1	80.9	90.6	44.7	17.8	64.4	53.2
DLFPS-321/3679	62.7	65.8	77.1	86.8	45.0	12.8	53.8	40.3
LBF	62.7	64.2	68.6	89.0	46.5	18.8	64.2	56.6
TD2	67.0	81.7	90.6	84.4	47.0	16.4	68.6	64.5
DLFPS-321/3696	65.9	76.4	84.9	92.5	49.3	16.2	61.1	52.1
DLFPS-321/3699	64.7	82.5	90.0	95.6	53.1	18.3	74.6	61.0
Grande 3	54.1	69.4	77.8	89.7	52.0	20.6	72.0	57.9
Fayette	50.0	63.6	75.0	93.4	60.4	21.6	78.3	64.6
JT-517	52.0	63.5	75.3	80.0	35.1	13.5	63.6	44.8
JS-DTT	68.2	78.7	80.5	95.0	50.3	16.1	65.1	52.7
RDC	76.1	92.6	90.8	88.2	41.4	16.7	61.1	48.4
BAR 9FE MAS	55.6	63.9	67.1	88.4	30.4	10.2	48.7	40.8
BAR FA 8228	67.2	78.9	85.0	89.3	40.7	14.7	58.6	44.2
COL-TF-148	50.5	68.1	81.1	88.7	48.9	18.5	66.5	58.0
LTP-TF-122	56.2	76.6	79.3	85.5	50.7	19.1	71.9	54.7
LTP-TF-111	47.1	65.1	70.0	91.2	53.9	18.3	65.0	57.0
K18-ROE	61.8	78.3	87.5	88.0	66.1	20.7	69.7	62.9
K18-NSE	67.0	84.4	93.3	91.5	38.4	9.7	45.9	35.6
BY-TF-169	68.0	77.5	81.9	91.9	47.3	15.9	57.3	51.5
DLFPS-321/3701	61.9	57.9	59.6	89.3	51.2	14.3	69.3	47.5
DLFPS-321/3702	59.1	83.7	87.4	94.2	53.7	20.5	69.7	48.8
DLFPS-321/3703	62.9	63.5	68.4	91.6	56.4	19.3	69.2	59.8
PST-5TRN	31.7	58.3	73.6	87.3	51.2	18.3	63.9	59.2
PST-5GQ	48.9	60.2	70.9	82.4	45.0	16.7	61.6	49.7
PST-5MCMO	37.2	52.1	61.2	89.6	37.2	13.5	56.4	47.3
ProGold	62.2	81.0	78.7	92.3	55.5	25.2	66.7	53.1
PST-5E6	48.8	48.4	59.4	89.5	42.3	13.4	58.8	47.1
PST-5THM	45.6	68.5	76.5	74.6	51.9	21.3	66.2	54.6
PST-5BYOB	56.9	71.1	79.1	94.5	49.1	17.6	65.1	47.4
Lifeguard	61.1	83.8	88.0	91.9	50.9	16.7	55.4	47.8
PST-5MINK	46.8	62.9	74.1	89.3	47.2	22.3	69.6	44.7
Moondance	45.9	53.4	68.7	90.6	45.6	15.0	62.2	43.7
PST-5SQB	55.4	74.0	76.8	89.0	54.0	13.3	50.5	53.8
PST-5DZM	37.5	51.2	62.7	80.8	41.5	13.6	56.9	41.6
PST-5GLBS	65.0	73.9	82.3	91.8	48.3	20.5	64.2	56.3
PST-5DART	42.6	48.1	65.5	89.5	54.1	18.8	72.3	56.9
PST-5DC24	52.0	40.4	46.2	82.6	35.1	10.2	50.3	42.0
Tango	47.4	55.3	64.1	88.4	31.1	10.2	56.6	33.9

Table 1 (continued). Monthly percent green cover ratings for tall fescue cultivars subjected to fall simulated athletic field traffic, ISU Horticulture Research Station, Ames, IA.

	Percent green cover[1]							
Cultivars	**Apr.**	**May**	**June**	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**
3N1	50.4	58.5	72.2	82.2	50.0	20.0	61.7	55.3
Bandit	62.6	73.1	71.1	86.6	44.7	17.5	71.9	52.2
Copious TF	35.9	64.0	78.0	89.5	54.7	22.3	75.3	46.5
Padre 2	65.4	70.5	75.7	92.1	52.5	16.7	62.5	63.2
Bravo 2	55.2	70.6	74.1	85.6	41.3	11.9	55.4	39.3
NAI-FQZ-17	40.5	62.3	71.4	81.9	45.3	13.1	62.2	59.3
DLFPS-321/3705	60.5	82.1	87.8	94.3	54.6	22.5	72.9	59.4
DLFPS-321/3706	63.0	68.9	80.3	89.4	50.3	14.4	59.0	47.6
DLFPS-321/3707	58.6	72.1	79.2	85.4	42.1	10.6	49.9	40.0
DLFPS-321/3708	49.0	69.1	74.7	94.6	40.5	14.8	46.9	41.8
BAR-TF-134	72.1	80.8	84.5	94.4	44.7	13.1	63.2	51.1
BAR-FA8230	47.4	50.2	70.0	71.9	42.5	19.0	60.7	46.7
AH1	65.7	72.8	85.0	93.6	55.7	17.3	63.1	48.9
PPG-TF-249	58.5	78.0	86.2	97.0	65.7	24.6	73.8	62.8
PPG-TF-262	65.8	81.5	78.6	88.9	53.6	16.9	58.1	45.6
PPG-TF-267	55.4	71.4	73.8	92.7	45.3	16.3	56.1	36.2
AH2	70.6	91.8	88.1	95.4	54.0	11.9	57.3	39.4
K18-RS6	50.3	69.1	80.5	90.6	53.9	18.5	61.8	51.2
K18-WB1	65.8	76.3	86.6	91.8	51.8	14.0	57.7	50.8
RH1	63.3	64.5	77.0	89.0	58.5	19.3	74.9	57.8
RH3	72.4	69.3	89.4	85.4	55.5	18.4	77.5	59.9
JT 233	60.4	69.5	81.3	95.7	56.4	16.9	71.7	54.2
JT 268	49.2	74.1	82.9	94.4	57.3	19.5	68.2	51.7
PPG-TF 244	75.3	80.7	81.6	95.6	47.7	12.7	65.6	48.5
PPG-TF 305	60.0	78.5	85.4	94.6	53.4	21.6	76.6	49.2
PPG-TF 316	54.2	73.0	77.3	94.1	54.9	17.6	73.0	50.7
RC4	47.3	56.2	67.3	95.9	47.5	20.8	71.0	59.5
PPG-TF-257	60.6	65.8	82.0	85.3	58.7	18.7	70.8	50.2
PPG-TF-238	56.3	69.0	72.8	92.9	52.0	18.7	65.3	50.4
PPG-TF-254	39.1	61.2	71.6	72.9	59.3	26.8	79.3	71.3
PPG-TF-308	43.7	40.7	55.2	91.4	56.0	20.7	68.5	57.1
PPG-TF-255	44.2	61.5	67.9	91.5	59.1	19.9	72.9	64.5
PPG-TF-312	68.6	77.9	86.7	91.1	59.4	17.5	68.0	52.0
PPG-TF-315	60.7	72.2	79.3	93.3	51.1	16.7	68.9	56.1
PPG-TF-336	66.4	74.9	75.3	95.2	53.6	15.4	73.8	51.1
PPG-TF-337	47.6	55.5	77.4	86.6	47.7	10.0	59.1	30.1
ZRC1	61.0	76.4	85.2	94.8	60.4	20.8	71.8	55.6
PPG-TF-231	62.8	74.9	87.5	91.9	59.8	19.3	65.5	50.0
PPG-TF-306	53.6	69.6	73.6	83.9	57.5	16.8	60.4	45.9
PPG-TF-318	53.5	82.0	88.7	93.9	57.0	15.1	62.4	55.8
Bullseye	48.8	56.1	72.3	87.8	44.1	14.8	49.4	38.6
Firehawk SLT	52.3	56.7	76.4	88.6	50.9	13.7	70.7	56.6
Hemi	58.5	70.1	79.1	89.7	57.0	21.3	75.7	64.6
Bullseye LTZ	70.5	86.6	90.3	94.6	56.4	20.1	77.9	57.1
Turbo SS	47.1	57.0	65.4	82.2	38.0	16.4	56.3	48.2
Dragster	50.5	68.9	74.6	87.1	49.8	14.8	64.6	52.2
GO-RH20	37.3	55.2	71.6	73.7	48.7	18.1	75.0	60.9
Burmingham	68.9	78.1	82.1	91.5	54.8	21.6	79.5	63.4
GO-AOMK	41.6	55.2	67.1	78.3	36.3	14.2	51.9	33.4
NAI-3N2	64.0	63.7	79.2	93.7	48.0	19.7	66.5	51.0
NAI-ROS4	37.7	51.5	72.8	90.8	37.3	11.0	46.1	41.7
NAI-TUE	45.5	55.5	64.5	88.0	51.2	13.8	54.5	43.2

Table 1 (continued). Monthly percent green cover ratings for tall fescue cultivars subjected to fall simulated athletic field traffic, ISU Horticulture Research Station, Ames, IA.

	Percent green cover[1]							
Cultivars	**Apr.**	**May**	**June**	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**
NAI-ST5	43.2	63.2	73.6	82.0	33.9	8.2	50.9	36.6
SE5302	50.7	70.6	79.9	92.9	57.5	23.3	76.3	62.6
SE5STAR	41.5	57.5	71.4	88.8	57.2	22.3	76.3	58.7
SE5CR1	58.4	68.4	78.2	86.8	42.0	11.4	50.6	39.6
SETF104	47.9	65.5	73.8	86.0	45.4	14.3	53.7	47.5
SETFM2	58.0	65.6	75.1	88.5	50.3	21.0	60.0	47.5
SETFM3	55.5	70.2	76.0	88.0	48.1	16.7	65.4	50.8
3B2	32.3	70.1	77.9	82.4	50.5	17.2	68.1	50.9
RAD--TF105	53.1	58.8	64.8	91.8	36.7	13.0	52.0	37.7
RAD-TF0.0	52.0	62.5	75.2	79.8	47.8	18.7	57.6	50.4
RHL2	64.5	64.3	75.8	96.0	35.9	11.1	51.8	47.4
Raptor III	51.6	56.6	62.9	83.4	38.4	15.1	49.4	44.1
RHF	78.8	85.3	87.3	93.0	76.8	24.7	79.4	62.9
PPG-TF-313	64.0	79.5	89.1	93.2	63.1	18.8	64.2	50.0
PPG-TF-320	71.5	79.5	85.5	95.0	59.6	18.0	66.4	48.6
PPG-TF-323	73.0	79.3	85.4	94.4	54.6	19.4	69.5	56.4
PPG-TF-338	72.8	82.4	89.2	91.8	74.6	30.8	78.5	68.9
Estrena	65.7	83.6	89.6	92.8	39.5	13.3	46.0	39.7
AST8118LM	53.7	70.1	90.0	90.1	50.7	23.0	68.8	65.9
AST8218LM	66.6	87.4	84.9	91.2	54.2	20.3	66.0	48.5
A-TF31	53.0	69.4	80.5	85.0	49.1	19.8	62.9	46.5
Palomar	60.9	63.7	71.3	87.4	49.6	20.3	52.3	47.6
Escalade	64.7	81.8	79.4	86.8	57.8	20.2	75.2	62.3
OG-WALK	48.8	69.3	75.2	91.3	46.2	18.6	67.8	58.5
TF445	64.8	76.7	82.0	86.3	64.5	20.6	81.9	61.2
TF456	48.9	60.0	73.6	91.6	72.0	28.0	82.6	69.6
FC15-01P	41.1	57.0	61.5	79.6	47.6	19.5	68.1	55.2
Kentucky-31	65.9	71.9	76.3	80.9	25.3	7.3	45.4	29.6
LSD (0.05)[2]	25.1	24.3	18.2	14.6	19.6	10.8	23.9	22.8

[1]Percent green cover is the average quality rated monthly with digital image analysis on a 0-100 scale.
[2]Means were separated using Fisher's LSD.