

Tall Fescue Shade Cultivar Evaluation Trial

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Introduction

This is the first full year of data from tall fescue growing in natural shade conditions. 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 ft². Fertilizer was applied at 2 lb N/1,000 ft² over the course of the growing season with a 28-0-5 fertilizer. The mowing height is three inches. Significant shade is provided by the shade tree cultivar trial, which the turfgrass trial is planted under.

Digital images were taken monthly starting in April through November. Digital images were captured with the use of a light box to ensure a consistent lighting and a 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 each month's rating dates.

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.

The cultivars did not receive any damage from diseases, insects, or drought this year. Limited light conditions did change some of the performance of many of the cultivars, dropping the percent green cover over the year.

Acknowledgements

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Table 1. Percent green cover ratings for the tall fescue shade cultivar trial, ISU Horticulture Research Station, Ames, IA.

| Cultivar | Percent green cover ¹ | | | | | | | |
|-----------------|----------------------------------|------|------|------|------|-------|------|------|
| | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. |
| Naturally Green | 53.5 | 86.0 | 84.1 | 86.5 | 97.1 | 97.7 | 93.2 | 94.4 |
| Paramount | 47.9 | 71.0 | 76.4 | 91.2 | 98.8 | 98.4 | 95.2 | 94.0 |
| DLFPS-321/3693 | 69.1 | 79.2 | 79.0 | 94.0 | 99.3 | 99.2 | 97.8 | 95.9 |
| DLFPS-321/3694 | 61.8 | 80.1 | 76.4 | 85.7 | 97.6 | 98.6 | 97.6 | 96.3 |
| DLFPS-321/3695 | 61.5 | 68.2 | 72.0 | 78.1 | 96.8 | 96.0 | 92.6 | 94.1 |
| TMT1 | 58.1 | 73.5 | 82.0 | 90.5 | 97.2 | 98.7 | 95.8 | 94.0 |
| ATF2116 | 56.6 | 67.5 | 81.5 | 88.1 | 97.9 | 97.4 | 96.3 | 96.2 |
| NT-3 | 66.5 | 69.3 | 74.6 | 90.5 | 98.5 | 98.6 | 97.1 | 96.5 |
| RS1 | 60.6 | 87.5 | 87.4 | 93.8 | 98.7 | 98.9 | 97.1 | 96.1 |
| 5LSS | 64.7 | 78.8 | 89.6 | 92.3 | 98.4 | 98.7 | 97.5 | 97.5 |
| BGR-TF3 | 69.0 | 84.1 | 81.0 | 87.7 | 97.7 | 98.0 | 94.2 | 94.9 |
| ATF 1768 | 53.6 | 54.3 | 67.4 | 90.4 | 97.1 | 97.5 | 97.2 | 94.8 |
| DLFPS-TF/3550 | 67.2 | 77.6 | 81.2 | 92.9 | 96.9 | 98.0 | 91.6 | 96.1 |
| DLFPS-TF/3552 | 69.3 | 86.5 | 85.4 | 91.0 | 98.9 | 98.9 | 97.2 | 97.6 |
| DLFPS-TF/3553 | 53.6 | 76.1 | 80.9 | 90.6 | 98.2 | 98.8 | 96.7 | 97.0 |
| DLFPS-321/3679 | 62.7 | 65.8 | 77.1 | 86.8 | 97.6 | 97.8 | 89.5 | 89.4 |
| LBF | 62.7 | 64.2 | 68.6 | 89.0 | 97.7 | 98.0 | 94.7 | 93.0 |
| TD2 | 67.0 | 81.7 | 90.6 | 84.4 | 97.2 | 98.4 | 97.5 | 97.9 |
| DLFPS-321/3696 | 65.9 | 76.4 | 84.9 | 92.5 | 97.1 | 98.1 | 96.2 | 96.6 |
| DLFPS-321/3699 | 64.7 | 82.5 | 90.0 | 95.6 | 97.4 | 98.6 | 97.1 | 95.8 |
| Grande 3 | 54.1 | 69.4 | 77.8 | 89.7 | 95.9 | 98.5 | 97.6 | 95.9 |
| Fayette | 50.0 | 63.6 | 75.0 | 93.4 | 97.3 | 98.0 | 96.7 | 95.1 |
| JT-517 | 52.0 | 63.5 | 75.3 | 80.0 | 95.5 | 97.5 | 89.3 | 91.1 |
| JS-DTT | 68.2 | 78.7 | 80.5 | 95.0 | 99.1 | 98.9 | 97.4 | 97.8 |
| RDC | 76.1 | 92.6 | 90.8 | 88.2 | 98.5 | 98.9 | 97.0 | 95.6 |
| BAR 9FE MAS | 55.6 | 63.9 | 67.1 | 88.4 | 96.1 | 97.5 | 95.3 | 96.1 |
| BAR FA 8228 | 67.2 | 78.9 | 85.0 | 89.3 | 97.1 | 98.1 | 94.2 | 94.4 |
| COL-TF-148 | 50.5 | 68.1 | 81.1 | 88.7 | 98.5 | 97.9 | 97.4 | 96.9 |
| LTP-TF-122 | 56.2 | 76.6 | 79.3 | 85.5 | 98.4 | 97.3 | 97.1 | 97.0 |
| LTP-TF-111 | 47.1 | 65.1 | 70.0 | 91.2 | 98.4 | 98.8 | 97.4 | 95.8 |
| K18-ROE | 61.8 | 78.3 | 87.5 | 88.0 | 98.1 | 98.4 | 97.0 | 92.7 |
| K18-NSE | 67.0 | 84.4 | 93.3 | 91.5 | 98.8 | 98.2 | 97.7 | 98.3 |
| BY-TF-169 | 68.0 | 77.5 | 81.9 | 91.9 | 97.4 | 98.6 | 86.4 | 91.6 |
| DLFPS-321/3701 | 61.9 | 57.9 | 59.6 | 89.3 | 99.2 | 99.1 | 97.4 | 97.3 |
| DLFPS-321/3702 | 59.1 | 83.7 | 87.4 | 94.2 | 98.9 | 98.2 | 96.3 | 96.8 |
| DLFPS-321/3703 | 62.9 | 63.5 | 68.4 | 91.6 | 98.6 | 98.7 | 96.5 | 96.4 |
| PST-5TRN | 31.7 | 58.3 | 73.6 | 87.3 | 96.2 | 98.3 | 96.6 | 90.1 |
| PST-5GQ | 48.9 | 60.2 | 70.9 | 82.4 | 96.2 | 94.1 | 94.4 | 95.4 |
| PST-5MCMO | 37.2 | 52.1 | 61.2 | 89.6 | 98.1 | 98.5 | 94.7 | 95.0 |
| ProGold | 62.2 | 81.0 | 78.7 | 92.3 | 99.0 | 98.8 | 95.7 | 95.8 |
| PST-5E6 | 48.8 | 48.4 | 59.4 | 89.5 | 94.8 | 97.2 | 97.0 | 95.1 |
| PST-5THM | 45.6 | 68.5 | 76.5 | 74.6 | 96.3 | 88.5 | 96.7 | 95.0 |
| PST-5BYOB | 56.9 | 71.1 | 79.1 | 94.5 | 98.3 | 98.8 | 97.0 | 93.9 |
| Lifeguard | 61.1 | 83.8 | 88.0 | 91.9 | 98.4 | 98.8 | 96.6 | 93.9 |
| PST-5MINK | 46.8 | 62.9 | 74.1 | 89.3 | 98.1 | 98.0 | 94.2 | 91.1 |
| Moondance | 45.9 | 53.4 | 68.7 | 90.6 | 98.0 | 98.7 | 96.2 | 94.3 |
| PST-5SQB | 55.4 | 74.0 | 76.8 | 89.0 | 98.9 | 91.3 | 97.1 | 95.8 |
| PST-5DZM | 37.5 | 51.2 | 62.7 | 80.8 | 95.6 | 98.0 | 96.1 | 90.7 |
| PST-5GLBS | 65.0 | 73.9 | 82.3 | 91.8 | 99.0 | 97.9 | 97.4 | 96.6 |
| PST-5DART | 42.6 | 48.1 | 65.5 | 89.5 | 97.9 | 98.3 | 96.3 | 95.9 |

Table 1 (continued). Percent green cover ratings for the tall fescue shade cultivar trial, ISU Horticulture Research Station, Ames, IA.

| Cultivar | Percent green cover ¹ | | | | | | | |
|----------------|----------------------------------|------|------|------|------|-------|------|------|
| | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. |
| PST-5DC24 | 52.0 | 40.4 | 46.2 | 82.6 | 93.1 | 93.3 | 96.5 | 92.2 |
| Tango | 47.4 | 55.3 | 64.1 | 88.4 | 96.7 | 97.6 | 94.1 | 95.0 |
| 3N1 | 50.4 | 58.5 | 72.2 | 82.2 | 98.7 | 97.8 | 97.0 | 92.7 |
| Bandit | 62.6 | 73.1 | 71.1 | 86.6 | 94.9 | 96.0 | 94.7 | 91.2 |
| Copious TF | 35.9 | 64.0 | 78.0 | 89.5 | 98.2 | 98.5 | 94.4 | 94.5 |
| Padre 2 | 65.4 | 70.5 | 75.7 | 92.1 | 97.7 | 98.8 | 98.2 | 96.8 |
| Bravo 2 | 55.2 | 70.6 | 74.1 | 85.6 | 97.1 | 97.3 | 94.2 | 94.1 |
| NAI-FQZ-17 | 40.5 | 62.3 | 71.4 | 81.9 | 97.8 | 98.0 | 95.3 | 92.4 |
| DLFPS-321/3705 | 60.5 | 82.1 | 87.8 | 94.3 | 98.9 | 98.8 | 96.3 | 95.6 |
| DLFPS-321/3706 | 63.0 | 68.9 | 80.3 | 89.4 | 97.9 | 87.8 | 96.3 | 89.6 |
| DLFPS-321/3707 | 58.6 | 72.1 | 79.2 | 85.4 | 98.3 | 98.4 | 94.6 | 94.0 |
| DLFPS-321/3708 | 49.0 | 69.1 | 74.7 | 94.6 | 98.9 | 98.5 | 93.5 | 93.0 |
| BAR-TF-134 | 72.1 | 80.8 | 84.5 | 94.4 | 98.9 | 98.7 | 98.8 | 98.2 |
| BAR-FA8230 | 47.4 | 50.2 | 70.0 | 71.9 | 97.3 | 97.6 | 94.9 | 93.0 |
| AH1 | 65.7 | 72.8 | 85.0 | 93.6 | 99.2 | 99.2 | 97.8 | 98.1 |
| PPG-TF-249 | 58.5 | 78.0 | 86.2 | 97.0 | 98.4 | 98.7 | 97.7 | 95.7 |
| PPG-TF-262 | 65.8 | 81.5 | 78.6 | 88.9 | 98.1 | 98.3 | 96.4 | 96.2 |
| PPG-TF-267 | 55.4 | 71.4 | 73.8 | 92.7 | 99.0 | 98.5 | 96.8 | 94.5 |
| AH2 | 70.6 | 91.8 | 88.1 | 95.4 | 98.8 | 99.5 | 98.1 | 95.9 |
| K18-RS6 | 50.3 | 69.1 | 80.5 | 90.6 | 98.7 | 98.8 | 97.7 | 96.0 |
| K18-WB1 | 65.8 | 76.3 | 86.6 | 91.8 | 99.2 | 98.9 | 98.2 | 98.0 |
| RH1 | 63.3 | 64.5 | 77.0 | 89.0 | 98.1 | 98.5 | 98.3 | 97.0 |
| RH3 | 72.4 | 69.3 | 89.4 | 85.4 | 95.9 | 95.5 | 97.1 | 96.8 |
| JT 233 | 60.4 | 69.5 | 81.3 | 95.7 | 98.4 | 98.6 | 97.8 | 92.6 |
| JT 268 | 49.2 | 74.1 | 82.9 | 94.4 | 98.4 | 98.3 | 96.5 | 96.8 |
| PPG-TF 244 | 75.3 | 80.7 | 81.6 | 95.6 | 99.0 | 98.8 | 98.3 | 97.8 |
| PPG-TF 305 | 60.0 | 78.5 | 85.4 | 94.6 | 98.5 | 97.7 | 96.8 | 91.0 |
| PPG-TF 316 | 54.2 | 73.0 | 77.3 | 94.1 | 99.2 | 99.0 | 97.2 | 97.3 |
| RC4 | 47.3 | 56.2 | 67.3 | 95.9 | 97.1 | 97.8 | 96.3 | 94.7 |
| PPG-TF-257 | 60.6 | 65.8 | 82.0 | 85.3 | 98.7 | 98.8 | 97.4 | 90.2 |
| PPG-TF-238 | 56.3 | 69.0 | 72.8 | 92.9 | 98.1 | 98.5 | 96.2 | 93.5 |
| PPG-TF-254 | 39.1 | 61.2 | 71.6 | 72.9 | 95.0 | 93.5 | 97.6 | 97.0 |
| PPG-TF-308 | 43.7 | 40.7 | 55.2 | 91.4 | 96.5 | 93.0 | 91.2 | 90.7 |
| PPG-TF-255 | 44.2 | 61.5 | 67.9 | 91.5 | 98.7 | 98.8 | 98.2 | 97.0 |
| PPG-TF-312 | 68.6 | 77.9 | 86.7 | 91.1 | 98.9 | 99.2 | 98.4 | 97.7 |
| PPG-TF-315 | 60.7 | 72.2 | 79.3 | 93.3 | 98.8 | 98.6 | 97.9 | 96.8 |
| PPG-TF-336 | 66.4 | 74.9 | 75.3 | 95.2 | 97.6 | 98.6 | 98.0 | 91.2 |
| PPG-TF-337 | 47.6 | 55.5 | 77.4 | 86.6 | 98.7 | 98.5 | 97.8 | 96.3 |
| ZRC1 | 61.0 | 76.4 | 85.2 | 94.8 | 98.6 | 98.7 | 97.5 | 94.9 |
| PPG-TF-231 | 62.8 | 74.9 | 87.5 | 91.9 | 98.6 | 98.2 | 97.3 | 95.5 |
| PPG-TF-306 | 53.6 | 69.6 | 73.6 | 83.9 | 98.4 | 97.6 | 98.1 | 97.3 |
| PPG-TF-318 | 53.5 | 82.0 | 88.7 | 93.9 | 98.8 | 98.9 | 98.4 | 94.8 |
| Bullseye | 48.8 | 56.1 | 72.3 | 87.8 | 98.0 | 97.4 | 91.4 | 88.8 |
| Firehawk SLT | 52.3 | 56.7 | 76.4 | 88.6 | 98.5 | 98.6 | 97.9 | 96.8 |
| Hemi | 58.5 | 70.1 | 79.1 | 89.7 | 96.4 | 98.0 | 96.5 | 95.8 |
| Bullseye LTZ | 70.5 | 86.6 | 90.3 | 94.6 | 98.3 | 98.3 | 98.3 | 96.9 |
| Turbo SS | 47.1 | 57.0 | 65.4 | 82.2 | 93.9 | 97.5 | 92.0 | 92.2 |
| Dragster | 50.5 | 68.9 | 74.6 | 87.1 | 97.6 | 98.7 | 97.0 | 95.0 |
| GO-RH20 | 37.3 | 55.2 | 71.6 | 73.7 | 97.2 | 98.6 | 96.2 | 93.1 |
| Birmingham | 68.9 | 78.1 | 82.1 | 91.5 | 97.9 | 98.6 | 96.9 | 96.0 |
| GO-AOMK | 41.6 | 55.2 | 67.1 | 78.3 | 96.6 | 97.3 | 88.0 | 90.4 |

Table 1 (continued). Percent green cover ratings for the tall fescue shade cultivar trial, ISU Horticulture Research Station, Ames, IA.

| Cultivar | Percent green cover ¹ | | | | | | | |
|-------------------------------|----------------------------------|------|------|------|------|-------|------|------|
| | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. |
| NAI-3N2 | 64.0 | 63.7 | 79.2 | 93.7 | 97.5 | 98.5 | 97.1 | 92.1 |
| NAI-ROS4 | 37.7 | 51.5 | 72.8 | 90.8 | 95.3 | 97.1 | 88.3 | 96.1 |
| NAI-TUE | 45.5 | 55.5 | 64.5 | 88.0 | 97.2 | 98.1 | 91.7 | 94.3 |
| NAI-ST5 | 43.2 | 63.2 | 73.6 | 82.0 | 97.8 | 98.7 | 97.4 | 97.0 |
| SE5302 | 50.7 | 70.6 | 79.9 | 92.9 | 98.3 | 98.3 | 98.1 | 96.7 |
| SE5STAR | 41.5 | 57.5 | 71.4 | 88.8 | 97.8 | 98.6 | 87.0 | 94.8 |
| SE5CR1 | 58.4 | 68.4 | 78.2 | 86.8 | 98.1 | 99.0 | 90.6 | 95.6 |
| SETF104 | 47.9 | 65.5 | 73.8 | 86.0 | 98.2 | 97.8 | 95.9 | 91.7 |
| SETFM2 | 58.0 | 65.6 | 75.1 | 88.5 | 97.9 | 97.6 | 96.4 | 91.2 |
| SETFM3 | 55.5 | 70.2 | 76.0 | 88.0 | 99.0 | 98.3 | 96.2 | 96.1 |
| 3B2 | 32.3 | 70.1 | 77.9 | 82.4 | 91.4 | 91.1 | 97.2 | 91.6 |
| RAD--TF105 | 53.1 | 58.8 | 64.8 | 91.8 | 96.5 | 96.8 | 95.0 | 93.2 |
| RAD-TF0.0 | 52.0 | 62.5 | 75.2 | 79.8 | 96.5 | 98.0 | 94.4 | 96.7 |
| RHL2 | 64.5 | 64.3 | 75.8 | 96.0 | 97.9 | 95.6 | 97.7 | 95.6 |
| Raptor III | 51.6 | 56.6 | 62.9 | 83.4 | 98.1 | 98.7 | 95.5 | 94.3 |
| RHF | 78.8 | 85.3 | 87.3 | 93.0 | 98.8 | 98.8 | 96.0 | 97.2 |
| PPG-TF-313 | 64.0 | 79.5 | 89.1 | 93.2 | 98.4 | 99.0 | 97.7 | 97.1 |
| PPG-TF-320 | 71.5 | 79.5 | 85.5 | 95.0 | 98.3 | 98.5 | 97.1 | 95.8 |
| PPG-TF-323 | 73.0 | 79.3 | 85.4 | 94.4 | 99.0 | 98.7 | 97.5 | 96.5 |
| PPG-TF-338 | 72.8 | 82.4 | 89.2 | 91.8 | 99.0 | 99.2 | 96.8 | 97.5 |
| Estrena | 65.7 | 83.6 | 89.6 | 92.8 | 98.4 | 98.1 | 95.5 | 93.3 |
| AST8118LM | 53.7 | 70.1 | 90.0 | 90.1 | 97.9 | 98.4 | 97.2 | 96.3 |
| AST8218LM | 66.6 | 87.4 | 84.9 | 91.2 | 97.9 | 97.7 | 96.8 | 90.6 |
| A-TF31 | 53.0 | 69.4 | 80.5 | 85.0 | 98.7 | 98.6 | 96.5 | 95.6 |
| Palomar | 60.9 | 63.7 | 71.3 | 87.4 | 96.1 | 97.2 | 93.4 | 89.5 |
| Escalade | 64.7 | 81.8 | 79.4 | 86.8 | 98.1 | 98.1 | 97.1 | 96.2 |
| OG-WALK | 48.8 | 69.3 | 75.2 | 91.3 | 96.5 | 97.1 | 96.3 | 91.9 |
| TF445 | 64.8 | 76.7 | 82.0 | 86.3 | 97.9 | 98.4 | 97.4 | 96.2 |
| TF456 | 48.9 | 60.0 | 73.6 | 91.6 | 98.4 | 98.9 | 97.5 | 96.7 |
| FC15-01P | 41.1 | 57.0 | 61.5 | 79.6 | 96.8 | 97.3 | 95.5 | 91.5 |
| Kentucky-31 | 65.9 | 71.9 | 76.3 | 80.9 | 96.9 | 97.9 | 93.9 | 87.3 |
| LSD (0.05)² | 25.1 | 24.3 | 18.2 | 14.6 | 2.8 | 5.1 | 5.9 | 6.1 |

¹Percent green cover is the average quality rated monthly with digital image analysis on a 0-100 scale.

²Means were separated using Fisher's LSD.