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This publication includes lecture notes of papers presented at the 2019 GREEN EXPO Turf and Landscape Conference. Publication of these lectures provides a readily available source of information

covering a wide range of topics and includes technical and popular presentations of importance to the turfgrass industry.

This proceedings also includes research papers that contain original research findings and reviews of selected subjects in turfgrass science. These papers are presented primarily to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

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PERFORMANCE OF TALL FESCUE CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS, 2019

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INTRODUCTION

Tall fescue (*Schedonorus arundinaceus*), a cool-season grass that is native to Europe and some parts of Africa (Buckner et al., 1979), was introduced to the United States in the 1600s (Beard, 2013). Tall fescue gained popularity after the release of the first commercial cultivar 'Kentucky-31' in 1940, which enhanced forage production in the United States. The first turf-type tall fescue cultivar, 'Rebel', was released in 1979 (Funk et al., 1981), and since then, tall fescue has become one of the major cool-season turf species used in the United States. Tall fescue has many attributes that have increased the popularity of this species including winter hardiness, adaptability to a wide range of soils, persistence (especially under low maintenance conditions) and tolerance to shade and drought. Tall fescue has a deep root system that enhances drought tolerance and allows the plant to maintain green color in dry conditions. Tall fescue also has among the best heat tolerance of the cool-season grasses. These qualities have increased the use of tall fescue in home lawns, sports fields, golf course roughs, recreational fields, sod farms, and roadsides.

The Rutgers tall fescue breeding program over the years has focused on enhanced turf quality characteristics (color, uniformity, texture, and density), disease resistance, wear tolerance, improved winter performance and the presence of endophytes. Endophytic fungi live symbiotically inside the turfgrass stem and leaf tissues (intercellular areas) and produce alkaloids that enhance tolerance to above-ground insect feeding (Funk et al., 1993). The incorporation of endophytic fungi in tall fescue has been a major breeding objective for many years.

One of the major limitations of tall fescue is its susceptibility to brown patch, caused by *Rhizoctonia solani*, which is a soilborne disease of both cool- and

warm-season turfgrasses that occurs during warm and humid weather conditions. Brown patch symptoms include blighted, circular to irregularly-shaped patches in the turf canopy, which quickly fade to light brown color. Gray leaf spot, caused by *Pyricularia oryzae*, is another disease of increasing significance in tall fescue. This disease is common on annual and perennial ryegrasses, and in recent years has become problematic in tall fescue throughout the Northeast region. Breeding for disease resistance is one of the main objectives of the Rutgers breeding program. The demand for disease resistant cultivars with enhanced turf quality and superior performance is high among consumers.

Another major objective of the Rutgers turfgrass breeding program is to improve drought tolerance in tall fescue. The program utilizes an automated rainout shelter to screen for drought tolerance in tall fescue in the summer months. As a result of its use, drought tolerance in tall fescue has greatly improved. The Rutgers turfgrass breeding program has continued to develop improved tall fescue cultivars for the above-mentioned traits. At present, thousands of germplasm sources have gone through numerous cycles of selection and hybridization to improve turf quality, disease and insect resistance, and wear and drought tolerance. To achieve these objectives, collected germplasm has also been incorporated in the breeding program to introduce beneficial genes into tall fescue populations.

PROCEDURES

Four tall fescue trials were established at the Rutgers Plant Biology Research and Extension Farm at Adelphia, NJ between 2016 and 2018 (Tables 1 to 4). All tests were established in September by hand sowing

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1.41 oz of seed per 3x5 ft plot (5.9 lb per 1000 ft²), except for the 2018 NTEP test (Table 4), which was sown at the rate of 2.29 oz of seed per 4x6 ft plot (5.9 lb per 1000 ft²). All tests were arranged in randomized complete block designs with three replications, and each plot had a 6-inch unseeded border to limit contamination.

Dimension (dithiopyr) was used on all tall fescue trials for preemergent control of annual grass and broadleaf weeds. Topeka (dicamba, dimethylamine salt), Weedar 64 (2,4-D), and Lontrel (clopyralid) were used to control broadleaf weeds. Merit (imidacloprid) was used to control grubs in June. Segway (cyazofamid) was used in August to control pythium disease. The annual rate of nitrogen and mowing height for each trial are represented in (Table 5). Single fertilizer applications did not exceed 1.0 lbs N/1000 ft². The trials were maintained to encourage biotic and abiotic stresses but were irrigated to avoid drought stress. Turf plots were mowed regularly to 1.5" height.

Tall fescue trials were evaluated monthly during the growing season for turf quality and when differences were evident for establishment, genetic color, brown patch, and gray leaf spot. All turf plots were rated by multiple evaluators to limit personal biases toward particular traits. All ratings, except those for ground cover, were based on a 1 to 9 scale, with 9 representing the most desirable turf characteristics. Ground cover ratings were based on a 0 to 100 scale, with 100 representing complete cover. Data was summarized and subjected to an analysis of variance (ANOVA), and means were separated using Fisher's protected least significant difference (LSD) mean separation test.

RESULTS AND DISCUSSION

Results for the tall fescue trials were ranked by overall turf quality. High turf quality averages indicate good disease resistance, dark-green color, high shoot density and uniformity, fine leaf texture, low growth habit, good mowing quality, and minimal damage from insects. Trials were further ranked using additional parameters (i.e., establishment, color, disease rating, etc.) to distinguish cultivars or selections that were equally ranked based on turf quality ratings. In addition to data collected in 2019, data from previous

years are also included in the tables. These data have been discussed in prior proceedings articles and are included here for viewer convenience.

Turf Quality

Improvements in turf quality including finer leaf texture and higher shoot density have increased the use of tall fescue in athletic fields, parks and recreational areas, golf courses, and home lawns. In the 2016 tall fescue test (Table 1), PPG-TF-268, RH2, RH4, PPG-TF-276, and PPG-TF-265 had the highest turf quality ratings, while GO-FKYT, LLT-993, LLT-825, and LLT-621 had the lowest turf quality ratings. In the 2017 tall fescue test (Table 2), NAI-ST5-R13, AH1, TD2, NAI-ROS-IY, and TMT1 had the highest turf quality ratings, while Rhizing Star, Green Hornet, GO-FT, Crewcut II, and GO-FNKY had the lowest turf quality ratings. In the 2018 tall fescue test (Table 3), RW2, AH1, RW1, BSL, and AH2 had the highest turf quality ratings, while NAI-TF18-FWN12, GO-18-FNKY, and ORTF-16-1 had the lowest turf quality ratings. In the 2018 NTEP tall fescue test (Table 4), AH2, Bonfire, TMT1, AH1, and DLFPS-321/3699 had the highest turf quality ratings, while BAR FA 8228, RAD-TF0.0, and Kentucky-31 had the lowest turf quality ratings.

Brown Patch

Brown patch is a major disease of tall fescue, causing significant damage during humid and warm weather conditions. In the 2016 tall fescue test (Table 1), PPG-TF-265, RHF, PPG-TF-264, 3B3, and PPG-TF-263 had the best resistance to brown patch whereas GO-ATO, Thunderstruck, GO-FKYT, GO-FNKY, LLT-825, and LLT-621 were the most susceptible. In the 2017 tall fescue test (Table 2), NAI-ST5-R5, NAI-ST5-R9, NAI-ST5-R11, NAI-ST5-R1, PPG-TF-304, and DLFPS-321/3678 had the best resistance to brown patch whereas Scorpion II and GO-FT exhibited the most disease. In the 2018 tall fescue test (Table 3), RW1, BSL, HWP, NSE, PPG-TF-235, and PPG-TF-319 had the best resistance to brown patch whereas RAD-TF99, RAD-TF113, GO-18-FNKY, and NAI-TF18-FWN12 were the most susceptible to brown patch disease.

Genetic Color

In the United States, a dark green turf color is typically considered more desirable when compared to a light green turf color. A focus of the Rutgers turfgrass breeding program has been to breed for darker green cultivars of tall fescue. The 2018 NTEP tall fescue test (Table 4) was evaluated for genetic color in October 2019. This rating is based on a 1 to 9 scale where 1 = light green and 9 = dark green. The darkest colored entries in the test were SETFM2, A-TF31, AST8218LM, AST8118LM, DLFPS-321/2679, Turbo SS, and RAD-TF0.0, while the lightest colored entries were K18-NSE, Moondance, Escalade, 5LSS, and Kentucky-31.

SUMMARY

At Rutgers, turfgrass breeders are continuing to make progress in improving tall fescue to extend its acceptance in the turfgrass industry and among consumers. Resistance to brown patch and gray leaf spot diseases, rapid establishment, and higher turf quality are among the primary goals of tall fescue breeding programs. Ongoing evaluation of cultivars and germplasm helps to identify superior lines that can be used by breeders to develop new cultivars. Efforts to collect germplasm and incorporate endophytes in tall fescue may lead to increased persistence and tolerance to aboveground insect feeding. Therefore, the efforts to improve tall fescue would extend its utility to areas where it has not been used before and would be suitable to different regions in the United States.

ACKNOWLEDGEMENTS

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Table 1. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2016 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|--------------|-------------------------------------|-----------------|
| | 2017-2019 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 22 Aug. 2018 | 23 July 2019 |
| 1 PPG-TF 268 | 6.6 | 6.7 | 6.4 | 6.8 | 7.0 | 5.0 |
| 2 RH2 | 6.6 | 6.4 | 6.6 | 6.8 | 7.7 | 4.3 |
| 3 RH4 | 6.6 | 6.5 | 6.7 | 6.6 | 7.3 | 4.3 |
| 4 PPG-TF 276 | 6.6 | 6.6 | 6.2 | 6.9 | 6.3 | 5.3 |
| 5 PPG-TF 265 | 6.5 | 6.5 | 6.6 | 6.4 | 8.0 | 6.7 |
| 6 PPG-TF 255 | 6.4 | 6.7 | 6.7 | 5.9 | 7.3 | 5.3 |
| 7 PPG-TF 257 | 6.4 | 6.5 | 6.5 | 6.2 | 6.3 | 5.0 |
| 8 PPG-TF 262 | 6.4 | 6.6 | 6.8 | 5.8 | 6.7 | 5.3 |
| 9 Honeymoon | 6.4 | 6.5 | 6.7 | 5.9 | 6.3 | 5.3 |
| 10 PPG-TF 267 | 6.4 | 6.6 | 6.3 | 6.1 | 7.0 | 4.0 |
| 11 RHF | 6.3 | 6.8 | 6.4 | 5.8 | 7.7 | 6.3 |
| 12 PPG-TF 274 | 6.3 | 6.1 | 6.4 | 6.4 | 6.7 | 5.7 |
| 13 RH3 | 6.3 | 6.5 | 5.9 | 6.4 | 5.7 | 5.7 |
| 14 PPG-TF 264 | 6.2 | 6.4 | 6.2 | 6.2 | 7.3 | 6.3 |
| 15 RHL1 | 6.2 | 5.9 | 6.2 | 6.6 | 6.0 | 4.3 |
| 16 PPG-TF 233 | 6.2 | 6.4 | 6.0 | 6.2 | 7.0 | 4.7 |
| 17 PPG-TF 254 | 6.2 | 6.0 | 6.4 | 6.1 | 7.3 | 5.7 |
| 18 PPG-TF 275 | 6.2 | 6.4 | 6.0 | 6.1 | 6.7 | 4.3 |
| 19 PPG-TF 277 | 6.1 | 6.2 | 6.1 | 6.0 | 8.0 | 5.7 |
| 20 PPG-TF 266 | 6.1 | 6.5 | 6.2 | 5.6 | 7.3 | 5.0 |
| 21 STL | 6.1 | 6.3 | 6.2 | 5.8 | 7.0 | 4.7 |
| 22 RH1 | 6.1 | 6.2 | 6.1 | 5.9 | 5.3 | 3.7 |
| 23 PPG-TF 263 | 6.0 | 6.3 | 6.0 | 5.8 | 6.7 | 6.0 |
| 24 Estrena | 6.0 | 6.1 | 6.0 | 5.9 | 7.0 | 4.7 |
| 25 Firehawk SLT | 6.0 | 6.4 | 6.0 | 5.7 | 7.0 | 3.7 |
| 26 PPG-TF 256 | 6.0 | 6.2 | 6.0 | 5.8 | 6.0 | 4.7 |
| 27 PPG-TF 260 | 6.0 | 6.1 | 6.0 | 5.9 | 7.3 | 5.0 |
| 28 PPG-TF 273 | 6.0 | 6.0 | 6.0 | 5.9 | 6.7 | 5.0 |
| 29 PPG-TF 252 | 6.0 | 6.0 | 5.8 | 6.1 | 6.3 | 4.7 |
| 30 PPG-TF 232 | 6.0 | 6.5 | 6.1 | 5.5 | 5.7 | 4.3 |
| 31 3B3 | 6.0 | 6.1 | 5.7 | 6.1 | 6.3 | 6.3 |
| 32 TSE | 6.0 | 6.2 | 6.2 | 5.6 | 6.3 | 4.3 |
| 33 WDS | 5.9 | 6.0 | 5.8 | 5.9 | 6.7 | 4.7 |
| 34 PPG-TF 245 | 5.9 | 6.0 | 5.8 | 5.7 | 5.0 | 4.7 |
| 35 RS4 | 5.8 | 5.8 | 5.7 | 6.1 | 5.7 | 5.7 |

(Continued)

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|-----------------------|--------------------------------------|--------------|--------------|--------------|-------------------------------------|-----------------|
| | 2017-2019 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 22 Aug. 2018 | 23 July 2019 |
| 36 PPG-TF 269 | 5.8 | 6.3 | 5.8 | 5.4 | 5.7 | 4.3 |
| 37 PPG-TF 271 | 5.8 | 6.2 | 5.9 | 5.4 | 5.7 | 4.3 |
| 38 PPG-TF 270 | 5.8 | 5.8 | 5.6 | 6.0 | 4.7 | 3.3 |
| 39 PPG-TF 278 | 5.7 | 6.0 | 5.6 | 5.5 | 7.0 | 3.3 |
| 40 ROE | 5.7 | 5.8 | 5.4 | 5.8 | 7.0 | 5.7 |
| 41 Amity | 5.7 | 6.3 | 5.3 | 5.5 | 4.7 | 5.3 |
| 42 PPG-TF 203 | 5.6 | 6.5 | 5.2 | 5.2 | 5.7 | 3.7 |
| 43 Regenerate | 5.6 | 6.4 | 5.1 | 5.3 | 4.7 | 4.0 |
| 44 PPG-TF 230 | 5.6 | 5.7 | 5.5 | 5.6 | 5.3 | 3.7 |
| 45 PST-5DART | 5.5 | 5.8 | 5.4 | 5.5 | 6.3 | 3.0 |
| 46 PST-SYN-5DWL | 5.5 | 5.9 | 5.2 | 5.6 | 5.7 | 3.3 |
| 47 PPG-TF 231 | 5.5 | 6.4 | 5.0 | 5.1 | 4.3 | 4.7 |
| 48 PPG-TF 261 | 5.5 | 5.4 | 5.5 | 5.4 | 6.0 | 3.7 |
| 49 Raptor III | 5.5 | 6.1 | 5.1 | 5.2 | 5.0 | 3.7 |
| 50 Screamer LS | 5.5 | 5.7 | 5.5 | 5.2 | 5.7 | 3.0 |
| 51 Avenger II | 5.4 | 5.8 | 5.0 | 5.4 | 4.0 | 4.7 |
| 52 PPG-TF 272 | 5.4 | 5.6 | 5.2 | 5.4 | 5.3 | 3.7 |
| 53 Temple | 5.3 | 5.4 | 5.2 | 5.4 | 5.0 | 3.7 |
| 54 PST-5MINK | 5.3 | 5.6 | 5.0 | 5.4 | 5.7 | 2.3 |
| 55 PPG-TF 248 | 5.3 | 5.1 | 5.4 | 5.3 | 5.3 | 4.3 |
| 56 Titanium 2LS | 5.3 | 5.8 | 5.0 | 4.9 | 4.0 | 4.0 |
| 57 Reflection | 5.2 | 6.1 | 5.0 | 4.6 | 3.0 | 4.0 |
| 58 PST-5DAW-15 | 5.2 | 5.5 | 4.8 | 5.2 | 4.7 | 3.7 |
| 59 Black Tail | 5.2 | 5.5 | 5.0 | 5.0 | 4.7 | 3.0 |
| 60 PST-5SQB-BS | 5.1 | 5.2 | 5.0 | 5.2 | 5.7 | 3.3 |
| 61 PPG-TF 279 | 5.1 | 5.8 | 5.0 | 4.5 | 5.3 | 3.3 |
| 62 LS 1200 | 5.1 | 5.3 | 5.0 | 5.0 | 3.0 | 4.3 |
| 63 PST-5DZP | 5.0 | 6.1 | 4.7 | 4.3 | 4.3 | 3.0 |
| 64 Lifeguard | 5.0 | 5.6 | 4.9 | 4.6 | 5.3 | 3.3 |
| 65 Shenandoah Elite | 5.0 | 5.7 | 4.6 | 4.7 | 3.7 | 3.7 |
| 66 Annapolis | 5.0 | 5.7 | 4.7 | 4.5 | 3.7 | 3.3 |
| 67 LLT-251 | 5.0 | 5.9 | 4.5 | 4.5 | 5.0 | 2.3 |
| 68 PST-5MCD | 4.8 | 5.5 | 4.7 | 4.2 | 4.3 | 3.0 |
| 69 Embrace | 4.8 | 5.4 | 4.4 | 4.6 | 3.0 | 3.3 |
| 70 PST-53D2 | 4.8 | 5.4 | 4.7 | 4.3 | 4.7 | 3.0 |

(Continued)

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| Cultivar or Selection | -----Turf Quality ¹ ----- | | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|--------------|-------------------------------------|-----------------|
| | 2017-2019 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 22 Aug. 2018 | 23 July 2019 |
| 71 Thor | 4.8 | 5.3 | 4.3 | 4.7 | 3.7 | 4.0 |
| 72 Maestro | 4.7 | 5.5 | 4.3 | 4.4 | 3.3 | 4.3 |
| 73 PST-5BYOB | 4.7 | 5.3 | 4.6 | 4.2 | 4.0 | 4.0 |
| 74 Finelawn H2O | 4.7 | 5.2 | 4.5 | 4.4 | 3.3 | 2.7 |
| 75 PST-5LYM | 4.6 | 4.9 | 4.5 | 4.3 | 4.7 | 3.0 |
| 76 Xtender | 4.6 | 5.4 | 4.0 | 4.3 | 2.3 | 3.0 |
| 77 EGC | 4.5 | 5.1 | 4.4 | 4.1 | 4.7 | 2.7 |
| 78 Diablo | 4.5 | 5.5 | 4.1 | 4.0 | 3.0 | 2.7 |
| 79 Terrano | 4.5 | 5.4 | 4.3 | 3.9 | 4.3 | 4.7 |
| 80 Faith | 4.5 | 5.2 | 4.3 | 3.8 | 3.7 | 3.7 |
| 81 Dynamic II | 4.4 | 5.3 | 4.4 | 3.7 | 3.3 | 3.3 |
| 82 Moondance | 4.4 | 4.7 | 4.7 | 3.8 | 5.0 | 4.3 |
| 83 Dynamite LS | 4.4 | 5.6 | 3.9 | 3.7 | 3.3 | 2.7 |
| 84 Trinity | 4.4 | 4.8 | 4.3 | 4.1 | 4.7 | 3.3 |
| 85 PST-5ZIP | 4.4 | 5.1 | 4.0 | 4.1 | 3.7 | 3.0 |
| 86 Swagger | 4.4 | 5.0 | 4.1 | 4.0 | 4.0 | 2.7 |
| 87 Firecracker SLS | 4.4 | 5.3 | 4.2 | 3.6 | 3.0 | 3.3 |
| 88 PST-5BRK | 4.3 | 5.3 | 4.1 | 3.7 | 3.0 | 3.0 |
| 89 Rowdy | 4.3 | 5.4 | 4.1 | 3.4 | 3.7 | 3.3 |
| 90 Meridian | 4.3 | 5.3 | 4.0 | 3.7 | 2.3 | 2.0 |
| 91 PST-5MINI-14 | 4.3 | 4.9 | 4.3 | 3.7 | 4.0 | 3.3 |
| 92 LLT-338 | 4.3 | 5.1 | 3.9 | 3.9 | 3.7 | 2.3 |
| 93 Firaces | 4.2 | 5.0 | 3.9 | 3.8 | 2.7 | 3.0 |
| 94 LLT-630 | 4.2 | 5.1 | 3.7 | 3.8 | 4.3 | 3.0 |
| 95 Falcon H2O | 4.2 | 5.0 | 3.9 | 3.8 | 4.3 | 2.7 |
| 96 PST-525D | 4.2 | 5.2 | 4.0 | 3.4 | 3.7 | 2.0 |
| 97 Renegade DT | 4.2 | 5.2 | 3.8 | 3.5 | 2.7 | 2.7 |
| 98 PST-5STAR | 4.1 | 4.6 | 3.7 | 4.0 | 3.0 | 2.3 |
| 99 Endeavor II | 4.1 | 4.7 | 4.1 | 3.5 | 3.3 | 3.0 |
| 100 Ares | 4.1 | 4.9 | 3.6 | 3.7 | 3.0 | 2.7 |
| 101 GO-ATO | 4.1 | 4.9 | 4.1 | 3.2 | 3.3 | 1.7 |
| 102 Persuasion | 4.1 | 4.7 | 3.6 | 3.8 | 3.7 | 3.3 |
| 103 Duration | 4.0 | 5.0 | 3.8 | 3.3 | 4.0 | 3.0 |
| 104 PST-5BPO | 4.0 | 4.8 | 3.6 | 3.7 | 2.3 | 2.3 |
| 105 Falcon IV | 4.0 | 4.8 | 3.6 | 3.6 | 4.3 | 3.0 |

(Continued)

Table 1. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2016 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|--------------|-------------------------------------|-----------------|
| | 2017-2019 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 22 Aug. 2018 | 23 July 2019 |
| 106 PST-5SDS | 4.0 | 4.9 | 3.8 | 3.3 | 2.7 | 2.3 |
| 107 Fesnova | 3.9 | 4.7 | 3.7 | 3.4 | 3.7 | 2.7 |
| 108 LLT-652 | 3.9 | 4.3 | 3.8 | 3.6 | 4.0 | 2.3 |
| 109 Shenandoah III | 3.9 | 4.6 | 3.7 | 3.4 | 3.7 | 2.0 |
| 110 Thunderstruck | 3.9 | 5.2 | 3.3 | 3.1 | 2.3 | 1.7 |
| 111 GO-AO | 3.9 | 4.7 | 3.7 | 3.3 | 3.0 | 2.7 |
| 112 Greenkeeper | 3.9 | 4.7 | 3.7 | 3.2 | 3.3 | 3.3 |
| 113 PST-5T20 | 3.9 | 4.8 | 3.5 | 3.3 | 2.7 | 2.3 |
| 114 RainDance | 3.8 | 4.5 | 3.5 | 3.5 | 2.3 | 2.0 |
| 115 Renegade H2O | 3.8 | 4.8 | 3.6 | 3.1 | 4.3 | 2.0 |
| 116 Stingray | 3.8 | 4.6 | 3.3 | 3.6 | 3.0 | 2.0 |
| 117 Saltillo | 3.8 | 4.8 | 3.0 | 3.4 | 1.3 | 3.3 |
| 118 Tribute II | 3.8 | 4.5 | 3.7 | 3.1 | 2.7 | 2.0 |
| 119 LLT-809 | 3.6 | 4.5 | 3.3 | 3.1 | 3.0 | 2.0 |
| 120 Sequester | 3.6 | 4.3 | 3.7 | 2.9 | 3.3 | 3.3 |
| 121 Sungazer | 3.6 | 4.2 | 3.6 | 3.1 | 3.0 | 3.3 |
| 122 Tar Heel II | 3.6 | 4.6 | 3.5 | 2.7 | 4.0 | 3.3 |
| 123 PST-5BGR | 3.6 | 4.5 | 3.3 | 3.1 | 2.3 | 3.3 |
| 124 LLT-816 | 3.5 | 4.4 | 3.0 | 3.0 | 2.0 | 2.0 |
| 125 ATV | 3.4 | 4.6 | 3.1 | 2.7 | 2.7 | 2.0 |
| 126 PST-5SIS | 3.4 | 4.1 | 3.1 | 3.1 | 2.3 | 3.0 |
| 127 LLT-404 | 3.4 | 4.4 | 3.2 | 2.7 | 3.0 | 3.3 |
| 128 LLT-810 | 3.4 | 4.2 | 3.2 | 2.8 | 3.7 | 2.0 |
| 129 GO-FNKY | 3.3 | 3.4 | 3.5 | 3.2 | 2.3 | 1.3 |
| 130 Scorpion II | 3.3 | 3.5 | 3.4 | 3.1 | 3.0 | 2.0 |
| 131 GO-FKYT | 3.2 | 3.7 | 3.1 | 2.9 | 3.3 | 1.7 |
| 132 LLT-993 | 3.2 | 4.0 | 2.9 | 2.7 | 2.0 | 2.0 |
| 133 LLT-825 | 3.2 | 4.3 | 2.6 | 2.7 | 1.3 | 1.3 |
| 134 LLT-621 | 3.1 | 4.2 | 2.8 | 2.4 | 2.3 | 1.3 |
| LSD at 5%= | 0.7 | 0.8 | 0.9 | 1.0 | 2.1 | 1.7 |
| CV | 8.6 | 8.9 | 11.5 | 13.5 | 28.0 | 28.9 |

¹9 = best turf quality

²9 = least disease

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|-------------------------------------|-----------------|
| | 2018-2019 Avg. | 2018 Avg. | 2019 Avg. | 20 Aug. 2018 | 23 July 2019 |
| 1 NAI-ST5-R13 | 7.0 | 6.9 | 7.1 | 7.2 | 3.7 |
| 2 AH1 | 7.0 | 7.0 | 7.0 | 7.5 | 4.7 |
| 3 TD2 | 6.9 | 6.9 | 6.8 | 6.5 | 4.0 |
| 4 NAI-ROS-IY | 6.9 | 6.7 | 7.0 | 7.0 | 4.7 |
| 5 TMT1 | 6.9 | 6.6 | 7.1 | 7.2 | 4.3 |
| 6 NAI-ST5-R5 | 6.7 | 6.7 | 6.7 | 7.7 | 5.7 |
| 7 NAI-ST5-R9 | 6.7 | 6.5 | 6.9 | 7.2 | 5.7 |
| 8 PPG-TF 304 | 6.7 | 6.4 | 6.9 | 8.0 | 5.3 |
| 9 AH2 | 6.7 | 6.9 | 6.4 | 8.0 | 3.7 |
| 10 NAI-ROS-RR | 6.6 | 6.4 | 6.9 | 7.0 | 4.3 |
| 11 3N2 | 6.6 | 6.7 | 6.5 | 7.3 | 4.3 |
| 12 Genius | 6.6 | 6.7 | 6.5 | 7.5 | 4.7 |
| 13 Bullseye LTZ | 6.6 | 7.0 | 6.1 | 7.7 | 4.0 |
| 14 PPG-TF 308 | 6.6 | 6.4 | 6.7 | 7.7 | 4.3 |
| 15 JS-DTT | 6.5 | 6.5 | 6.5 | 7.3 | 4.3 |
| 16 PPG-TF 252 | 6.5 | 6.5 | 6.5 | 7.5 | 5.0 |
| 17 PPG-TF 250 | 6.5 | 6.7 | 6.2 | 6.5 | 4.3 |
| 18 NAI-ST5-R7 | 6.5 | 6.2 | 6.7 | 6.3 | 4.0 |
| 19 BPS | 6.4 | 6.3 | 6.5 | 6.8 | 4.3 |
| 20 PPG-TF 249 | 6.4 | 6.7 | 6.1 | 6.8 | 4.0 |
| 21 PPG-TF 244 | 6.3 | 6.1 | 6.6 | 6.3 | 4.3 |
| 22 NAI-ST5-R11 | 6.3 | 5.7 | 6.8 | 7.2 | 5.7 |
| 23 ZRC1 | 6.3 | 6.1 | 6.4 | 7.0 | 3.3 |
| 24 NAI-ST5-R8 | 6.2 | 6.3 | 6.2 | 6.2 | 5.0 |
| 25 PPG-TF 299 | 6.2 | 6.0 | 6.4 | 6.5 | 3.7 |
| 26 NAI-ST5-R1 | 6.2 | 6.2 | 6.2 | 7.0 | 5.7 |
| 27 NAI-ST5-R15 | 6.2 | 5.6 | 6.8 | 6.7 | 4.7 |
| 28 PPG-TF 306 | 6.2 | 5.8 | 6.5 | 6.8 | 4.0 |
| 29 PPG-TF 300 | 6.1 | 6.3 | 5.9 | 7.2 | 3.3 |
| 30 RS4 | 6.1 | 5.9 | 6.3 | 6.8 | 3.7 |
| 31 WB2 | 6.1 | 6.3 | 5.9 | 7.2 | 5.0 |
| 32 LTD | 6.1 | 6.1 | 6.1 | 7.0 | 4.3 |
| 33 PPG-TF 254 | 6.1 | 5.7 | 6.4 | 6.8 | 5.0 |
| 34 TF 431 | 6.1 | 6.2 | 6.0 | 6.5 | 4.0 |
| 35 RC3 | 6.0 | 5.9 | 6.1 | 7.3 | 5.0 |

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|-------------------------------------|-----------------|
| | 2018-2019 Avg. | 2018 Avg. | 2019 Avg. | 20 Aug. 2018 | 23 July 2019 |
| 36 RDC | 6.0 | 5.6 | 6.3 | 5.7 | 4.0 |
| 37 PPG-TF 303 | 6.0 | 5.9 | 6.0 | 6.8 | 4.0 |
| 38 3N1 | 6.0 | 5.7 | 6.2 | 7.2 | 3.7 |
| 39 NAI-CT2 | 5.9 | 6.0 | 5.9 | 6.8 | 4.3 |
| 40 PPG-TF 307 | 5.9 | 6.0 | 5.8 | 7.0 | 4.7 |
| 41 NAI-ST5-R17 | 5.9 | 5.4 | 6.5 | 6.8 | 4.7 |
| 42 DLFPS-321/3678 | 5.9 | 6.0 | 5.7 | 6.8 | 5.3 |
| 43 TF 420 | 5.9 | 6.2 | 5.6 | 6.5 | 4.7 |
| 44 NAI-ST5-R19 | 5.9 | 5.6 | 6.1 | 6.7 | 4.7 |
| 45 PPG-TF 283 | 5.9 | 6.0 | 5.7 | 6.7 | 4.7 |
| 46 RC2 | 5.8 | 6.1 | 5.5 | 7.5 | 4.3 |
| 47 PPG-TF 292 | 5.8 | 6.1 | 5.5 | 6.7 | 3.7 |
| 48 3B2 | 5.8 | 5.9 | 5.7 | 6.3 | 3.7 |
| 49 PST-5LSS | 5.8 | 5.7 | 5.9 | 6.8 | 2.7 |
| 50 TF 424 | 5.8 | 5.9 | 5.6 | 5.7 | 5.0 |
| 51 TF 426 | 5.8 | 6.4 | 5.1 | 7.0 | 4.0 |
| 52 PPG-TF 251 | 5.8 | 5.8 | 5.8 | 5.8 | 3.7 |
| 53 PPG-TF 305 | 5.7 | 5.8 | 5.7 | 7.0 | 4.0 |
| 54 BBS | 5.7 | 5.8 | 5.7 | 6.3 | 3.7 |
| 55 PPG-TF 295 | 5.7 | 5.8 | 5.7 | 6.0 | 3.3 |
| 56 NAI-ST5-R21 | 5.7 | 5.5 | 5.8 | 7.2 | 4.3 |
| 57 TF 427 | 5.7 | 5.8 | 5.5 | 6.7 | 4.3 |
| 58 NAI-ST5-R14 | 5.6 | 5.3 | 6.0 | 5.5 | 3.7 |
| 59 NSE | 5.6 | 5.6 | 5.6 | 7.0 | 4.3 |
| 60 TF 416 | 5.6 | 5.6 | 5.6 | 6.7 | 4.0 |
| 61 PPG-TF 245 | 5.6 | 5.7 | 5.5 | 6.3 | 4.0 |
| 62 Supersonic | 5.5 | 5.3 | 5.8 | 6.2 | 4.3 |
| 63 PPG-TF 285 | 5.5 | 6.0 | 5.0 | 6.5 | 3.7 |
| 64 NAI-ST5-R6 | 5.5 | 5.7 | 5.2 | 4.5 | 3.0 |
| 65 TF 418 | 5.4 | 5.3 | 5.6 | 6.0 | 5.0 |
| 66 NAI-ST5-R4 | 5.4 | 5.6 | 5.2 | 4.0 | 3.7 |
| 67 PPG-TF 231 | 5.4 | 6.0 | 4.8 | 6.0 | 4.7 |
| 68 Titanium 2LS | 5.4 | 5.7 | 5.1 | 6.8 | 4.7 |
| 69 DLFPS-321/3679 | 5.4 | 5.5 | 5.3 | 5.8 | 4.0 |
| 70 DLFPS-321/3677 | 5.4 | 5.7 | 5.1 | 7.2 | 4.7 |

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|-------------------------------------|-----------------|
| | 2018-2019 Avg. | 2018 Avg. | 2019 Avg. | 20 Aug. 2018 | 23 July 2019 |
| 71 PPG-TF 248 | 5.4 | 5.7 | 5.1 | 6.2 | 4.3 |
| 72 PPG-TF 229 | 5.4 | 5.4 | 5.3 | 4.3 | 4.3 |
| 73 PPG-TF 233 | 5.4 | 5.9 | 4.8 | 6.0 | 3.7 |
| 74 TF 430 | 5.3 | 5.6 | 5.0 | 6.0 | 4.0 |
| 75 Annapolis | 5.3 | 5.6 | 4.9 | 6.0 | 4.0 |
| 76 Padre 2 | 5.2 | 5.4 | 5.1 | 5.7 | 4.7 |
| 77 Screamer LS | 5.2 | 5.0 | 5.5 | 6.0 | 4.0 |
| 78 Technique | 5.2 | 5.6 | 4.8 | 5.8 | 5.0 |
| 79 PPG-TF 232 | 5.2 | 5.4 | 5.0 | 5.5 | 3.7 |
| 80 NAI-ST5-R10 | 5.1 | 5.0 | 5.3 | 5.0 | 4.3 |
| 81 TF 423 | 5.1 | 5.2 | 5.0 | 6.3 | 4.0 |
| 82 Maestro | 5.1 | 5.6 | 4.6 | 6.0 | 3.7 |
| 83 Faith | 5.1 | 5.3 | 4.9 | 5.8 | 4.0 |
| 84 Spyder LS | 5.1 | 5.3 | 4.8 | 5.7 | 3.3 |
| 85 TF 417 | 5.0 | 5.0 | 5.0 | 6.5 | 4.3 |
| 86 Reflection | 5.0 | 5.5 | 4.5 | 6.8 | 3.7 |
| 87 Falcon IV | 5.0 | 4.8 | 5.2 | 5.7 | 3.3 |
| 88 Regenerate | 5.0 | 4.9 | 5.0 | 6.0 | 4.3 |
| 89 RAD-TF123 | 5.0 | 5.2 | 4.7 | 5.8 | 3.7 |
| 90 Temple | 4.9 | 5.1 | 4.8 | 5.8 | 3.7 |
| 91 PPG-TF 230 | 4.9 | 5.4 | 4.5 | 5.0 | 4.0 |
| 92 Renegade DT | 4.9 | 4.9 | 4.9 | 5.5 | 3.7 |
| 93 TF 395 | 4.9 | 5.3 | 4.4 | 5.5 | 4.3 |
| 94 Firecracker SLS | 4.9 | 5.4 | 4.4 | 5.8 | 4.3 |
| 95 TF 396 | 4.9 | 5.2 | 4.5 | 6.3 | 3.7 |
| 96 TF 269 SEL M2 | 4.9 | 5.2 | 4.5 | 6.0 | 3.3 |
| 97 LTNS TF Blend 1 | 4.9 | 5.3 | 4.4 | 6.5 | 3.3 |
| 98 PPG-TF 176 | 4.9 | 5.3 | 4.4 | 6.3 | 4.7 |
| 99 TF 419 | 4.9 | 4.5 | 5.2 | 4.0 | 4.0 |
| 100 Xtender | 4.9 | 5.4 | 4.3 | 6.2 | 4.0 |
| 101 TF 403 | 4.9 | 5.0 | 4.7 | 6.0 | 3.7 |
| 102 Rhizing Moon | 4.9 | 4.8 | 4.9 | 5.2 | 3.3 |
| 103 PPG-TF 234 | 4.8 | 5.1 | 4.5 | 4.5 | 4.0 |
| 104 Embrace | 4.8 | 4.9 | 4.7 | 5.0 | 4.7 |
| 105 Thor | 4.8 | 5.5 | 4.1 | 6.7 | 3.7 |

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|-------------------------------------|-----------------|
| | 2018-2019 Avg. | 2018 Avg. | 2019 Avg. | 20 Aug. 2018 | 23 July 2019 |
| 106 Raptor III | 4.8 | 5.0 | 4.6 | 6.2 | 3.7 |
| 107 Copious | 4.8 | 5.4 | 4.1 | 5.7 | 3.3 |
| 108 MET-3 | 4.8 | 5.1 | 4.4 | 6.2 | 5.0 |
| 109 Trinity | 4.8 | 5.1 | 4.5 | 6.2 | 4.3 |
| 110 TF 400 | 4.8 | 5.3 | 4.2 | 6.2 | 4.0 |
| 111 Hounddog 8 | 4.8 | 5.0 | 4.5 | 5.5 | 4.3 |
| 112 Padre 2 | 4.8 | 5.2 | 4.3 | 5.8 | 3.7 |
| 113 TF 422 | 4.7 | 5.0 | 4.4 | 5.2 | 4.0 |
| 114 Bloodhound | 4.7 | 5.2 | 4.2 | 6.7 | 4.0 |
| 115 Rowdy | 4.7 | 5.2 | 4.2 | 4.7 | 4.0 |
| 116 TF 425 | 4.7 | 5.1 | 4.3 | 5.3 | 4.0 |
| 117 RAD-TF114 | 4.7 | 4.6 | 4.8 | 4.0 | 3.7 |
| 118 RAD-TF110 | 4.7 | 4.6 | 4.9 | 4.5 | 2.7 |
| 119 Unitus | 4.7 | 5.3 | 4.1 | 5.3 | 4.3 |
| 120 Crossfire 4 | 4.6 | 4.9 | 4.4 | 5.0 | 4.0 |
| 121 TF 394 | 4.6 | 4.7 | 4.6 | 5.8 | 4.0 |
| 122 Bizem | 4.6 | 5.1 | 4.2 | 5.8 | 4.0 |
| 123 NAI-ST5-R12 | 4.6 | 4.5 | 4.8 | 4.8 | 3.3 |
| 124 NAI-ST5-R2 | 4.6 | 5.0 | 4.3 | 5.5 | 3.0 |
| 125 Foxhound | 4.6 | 5.1 | 4.2 | 5.2 | 4.3 |
| 126 PPG-TF 203 | 4.6 | 5.0 | 4.2 | 5.3 | 4.0 |
| 127 Merida | 4.6 | 5.3 | 3.9 | 5.7 | 3.3 |
| 128 Maestro | 4.6 | 4.9 | 4.3 | 5.0 | 4.3 |
| 129 NAI-ST5-R20 | 4.6 | 4.6 | 4.5 | 5.0 | 4.0 |
| 130 Diablo | 4.6 | 4.9 | 4.2 | 4.5 | 3.3 |
| 131 Valkyrie LS | 4.6 | 5.1 | 4.0 | 5.7 | 5.0 |
| 132 Bravo 2 | 4.6 | 4.4 | 4.7 | 3.7 | 3.0 |
| 133 NAI-ST5-R18 | 4.5 | 4.3 | 4.7 | 5.5 | 4.7 |
| 134 PSG PO1 | 4.5 | 4.7 | 4.3 | 4.3 | 4.0 |
| 135 Meridian | 4.5 | 4.9 | 4.1 | 5.2 | 3.7 |
| 136 Rebounder | 4.5 | 4.9 | 4.1 | 5.2 | 4.3 |
| 137 Avenger II | 4.4 | 4.3 | 4.6 | 5.8 | 4.3 |
| 138 Black Tail | 4.4 | 4.6 | 4.2 | 5.2 | 3.3 |
| 139 Amity | 4.4 | 4.4 | 4.4 | 5.0 | 4.7 |
| 140 Fesnova | 4.4 | 4.9 | 3.9 | 4.5 | 3.3 |

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|-------------------------------------|-----------------|
| | 2018-2019 Avg. | 2018 Avg. | 2019 Avg. | 20 Aug. 2018 | 23 July 2019 |
| 141 Finelawn H2O | 4.4 | 4.6 | 4.2 | 4.2 | 3.0 |
| 142 TF 429 | 4.4 | 5.0 | 3.8 | 5.3 | 2.7 |
| 143 RAD-TF112 | 4.4 | 4.3 | 4.4 | 4.3 | 2.7 |
| 144 Bandit | 4.4 | 4.7 | 4.0 | 4.8 | 2.7 |
| 145 RAD-TF125 | 4.4 | 4.6 | 4.1 | 5.0 | 2.7 |
| 146 Rebel V | 4.3 | 4.7 | 4.0 | 5.3 | 5.0 |
| 147 Bullseye | 4.3 | 4.8 | 3.8 | 5.2 | 4.3 |
| 148 Firewall | 4.3 | 4.4 | 4.3 | 4.8 | 4.0 |
| 149 Nightcrawler | 4.3 | 4.6 | 4.1 | 5.3 | 3.3 |
| 150 Terrano | 4.3 | 4.8 | 3.8 | 6.0 | 4.7 |
| 151 Turfway | 4.3 | 4.9 | 3.7 | 5.3 | 4.3 |
| 152 TF 308 | 4.3 | 4.7 | 3.9 | 5.3 | 2.7 |
| 153 NAI-ST5-R3 | 4.3 | 5.4 | 3.2 | 6.3 | 3.7 |
| 154 Firaces | 4.2 | 4.6 | 3.8 | 4.8 | 3.7 |
| 155 TF 428 | 4.2 | 4.5 | 3.9 | 4.2 | 4.3 |
| 156 LTNS TF Blend 2 | 4.1 | 4.6 | 3.6 | 4.2 | 3.0 |
| 157 NAI-ST5-R16 | 4.1 | 4.1 | 4.1 | 4.2 | 4.3 |
| 158 Falcon H2O | 4.1 | 4.1 | 4.1 | 4.3 | 3.7 |
| 159 Jamboree | 4.1 | 4.5 | 3.6 | 5.0 | 3.3 |
| 160 Dynamite LS | 4.0 | 4.4 | 3.7 | 4.2 | 3.3 |
| 161 Essential | 4.0 | 3.9 | 4.1 | 4.2 | 4.0 |
| 162 Fayette | 4.0 | 4.2 | 3.8 | 4.8 | 4.0 |
| 163 TF 421 | 4.0 | 4.4 | 3.6 | 5.3 | 3.7 |
| 164 Garrison | 4.0 | 4.2 | 3.8 | 4.3 | 3.7 |
| 165 Shenandoah Elite | 4.0 | 4.1 | 3.8 | 5.2 | 3.7 |
| 166 Selkirk | 3.9 | 3.9 | 4.0 | 4.7 | 3.7 |
| 167 Mustang 4 | 3.9 | 4.0 | 3.8 | 5.3 | 4.3 |
| 168 Houndog 6 | 3.8 | 4.2 | 3.4 | 4.5 | 2.7 |
| 169 Cannavaro | 3.8 | 3.8 | 3.7 | 4.3 | 3.7 |
| 170 Persuasion | 3.8 | 4.2 | 3.3 | 4.5 | 3.0 |
| 171 Catalyst | 3.8 | 4.3 | 3.2 | 4.8 | 2.7 |
| 172 Speedway | 3.7 | 4.1 | 3.4 | 4.0 | 3.7 |
| 173 Crossfire 3 | 3.7 | 4.0 | 3.3 | 3.5 | 3.7 |
| 174 Guardian 41 | 3.6 | 4.3 | 2.9 | 4.2 | 3.7 |
| 175 Selkirk | 3.6 | 3.8 | 3.3 | 5.2 | 3.3 |

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | -----Brown Patch ² ----- | |
|-----------------------|--------------------------------------|--------------|--------------|-------------------------------------|-----------------|
| | 2018-2019 Avg. | 2018 Avg. | 2019 Avg. | 20 Aug. 2018 | 23 July 2019 |
| 176 Birmingham | 3.6 | 4.3 | 2.9 | 3.5 | 3.0 |
| 177 Renegade H2O | 3.5 | 4.0 | 3.0 | 3.7 | 2.7 |
| 178 Grande 3 | 3.5 | 3.8 | 3.1 | 4.8 | 4.0 |
| 179 Scorpion II | 3.5 | 3.6 | 3.3 | 4.2 | 2.3 |
| 180 Corona | 3.4 | 3.8 | 3.1 | 3.2 | 3.7 |
| 181 GO-MNKY | 3.4 | 3.8 | 3.0 | 4.3 | 2.7 |
| 182 SR 8650 | 3.4 | 3.7 | 3.1 | 3.5 | 3.3 |
| 183 GO-MT | 3.4 | 3.6 | 3.1 | 3.7 | 3.3 |
| 184 Blackwatch 2 | 3.4 | 3.8 | 2.9 | 4.3 | 3.0 |
| 185 Blade Runner II | 3.2 | 3.8 | 2.5 | 4.0 | 3.3 |
| 186 Grande II | 3.0 | 3.5 | 2.5 | 3.8 | 3.0 |
| 187 Thunderstruck | 3.0 | 3.4 | 2.6 | 2.7 | 2.7 |
| 188 Cayenne | 3.0 | 3.3 | 2.7 | 3.2 | 3.7 |
| 189 Rhizing Star | 2.9 | 3.3 | 2.5 | 3.3 | 3.0 |
| 190 Green Hornet | 2.9 | 3.6 | 2.2 | 4.8 | 2.7 |
| 191 GO-FT | 2.7 | 2.7 | 2.6 | 3.0 | 2.3 |
| 192 Crewcut II | 2.0 | 2.1 | 1.9 | 2.3 | 2.7 |
| 193 GO-FNKY | 1.7 | 2.0 | 1.4 | 2.3 | 2.7 |
| LSD at 5%= CV | 0.7 8.5 | 0.8 9.6 | 0.9 11.6 | 1.6 19.9 | 1.4 21.9 |

¹9 = best turf quality

²9 = least disease

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

| Cultivar or Selection | Turf Quality ¹ 2019 Avg. | Establishment ² 2018 Avg. | Gray Leaf Spot ³ 2018 Avg. | Brown Patch ⁴ 22 Jul. 2019 |
|-----------------------|--|---|--|--|
| 1 RW2 | 7.0 | 7.0 | 7.7 | 5.7 |
| 2 AH1 | 6.9 | 7.0 | 7.7 | 5.0 |
| 3 RW1 | 6.9 | 7.0 | 6.0 | 7.0 |
| 4 BSL | 6.9 | 7.0 | 6.7 | 6.7 |
| 5 AH2 | 6.8 | 8.0 | 7.3 | 5.3 |
| 6 HWP | 6.7 | 6.7 | 6.3 | 6.3 |
| 7 PW5 | 6.6 | 7.0 | 8.3 | 4.3 |
| 8 NSE | 6.5 | 6.7 | 7.0 | 6.3 |
| 9 PPG-TF 317 | 6.5 | 6.7 | 7.0 | 5.0 |
| 10 TD2 | 6.5 | 7.0 | 7.3 | 4.0 |
| 11 PW3 | 6.4 | 6.0 | 7.7 | 6.0 |
| 12 RS1 | 6.4 | 6.0 | 7.7 | 5.3 |
| 13 JS-DTT | 6.3 | 7.0 | 7.7 | 4.7 |
| 14 PW1 | 6.3 | 6.7 | 8.3 | 4.0 |
| 15 GTO | 6.2 | 7.3 | 7.3 | 6.0 |
| 16 Wichita | 6.2 | 6.0 | 6.7 | 4.7 |
| 17 PPG-TF 235 | 6.2 | 6.3 | 6.0 | 6.3 |
| 18 PPG-TF 321 | 6.2 | 7.3 | 7.0 | 4.7 |
| 19 Maestro | 6.1 | 7.0 | 7.7 | 4.3 |
| 20 PPG-TF 303 | 6.1 | 6.7 | 6.7 | 5.0 |
| 21 PW4 | 6.1 | 5.3 | 7.0 | 5.7 |
| 22 PPG-TF 310 | 6.1 | 6.3 | 7.0 | 4.0 |
| 23 PPG-TF 319 | 6.1 | 6.7 | 6.7 | 6.3 |
| 24 PPG-TF 304 | 6.0 | 6.3 | 7.3 | 4.7 |
| 25 Padre II | 6.0 | 6.3 | 6.7 | 5.0 |
| 26 GO-18-RH2O-BS | 6.0 | 6.7 | 6.3 | 4.0 |
| 27 Firecracker SLS | 6.0 | 5.3 | 6.3 | 6.0 |
| 28 PST-5LSS | 6.0 | 6.7 | 5.0 | 4.7 |
| 29 PPG-TF KS | 6.0 | 6.3 | 7.7 | 4.3 |
| 30 Technique | 5.9 | 6.0 | 7.0 | 4.7 |
| 31 Paramount | 5.9 | 6.7 | 6.7 | 5.7 |
| 32 Grande 3 | 5.9 | 6.0 | 7.0 | 4.7 |
| 33 Bullseye LTZ | 5.9 | 6.7 | 5.7 | 4.0 |
| 34 PPG-TF 295 | 5.9 | 6.7 | 6.0 | 4.7 |
| 35 ENS | 5.8 | 4.7 | 6.3 | 4.7 |

(Continued)

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

| Cultivar or Selection | Turf Quality ¹ 2019 Avg. | Establishment ² 2018 Avg. | Gray Leaf Spot ³ 2018 Avg. | Brown Patch ⁴ 22 Jul. 2019 |
|-----------------------|--|---|--|--|
| 36 PPG-TF 266 | 5.8 | 6.0 | 7.0 | 5.0 |
| 37 NAI-404-18 | 5.8 | 6.0 | 6.3 | 5.0 |
| 38 PPG-TF 322 | 5.8 | 5.3 | 6.0 | 5.0 |
| 39 Nightcrawler | 5.7 | 6.7 | 7.7 | 5.0 |
| 40 Thor | 5.7 | 6.7 | 7.3 | 5.0 |
| 41 Titanium 2LS | 5.7 | 6.0 | 5.7 | 4.7 |
| 42 Rockwell | 5.7 | 5.3 | 6.0 | 5.3 |
| 43 PPG-TF 307 | 5.7 | 6.3 | 7.7 | 4.0 |
| 44 RS4 | 5.7 | 6.0 | 7.0 | 5.0 |
| 45 RDC | 5.7 | 6.3 | 5.3 | 4.0 |
| 46 PPG-TF 232 | 5.6 | 7.7 | 6.7 | 4.7 |
| 47 PPG-TF 250 | 5.6 | 6.3 | 6.0 | 4.0 |
| 48 Rowdy | 5.6 | 6.7 | 5.3 | 4.3 |
| 49 PST-5FOE | 5.5 | 7.7 | 7.3 | 2.7 |
| 50 PW6 | 5.5 | 6.3 | 7.7 | 4.3 |
| 51 Black Tail | 5.5 | 6.3 | 7.0 | 4.7 |
| 52 Avenger II | 5.5 | 6.3 | 5.7 | 5.0 |
| 53 PW2 | 5.5 | 6.0 | 7.3 | 4.0 |
| 54 NAI-ST6-18 | 5.5 | 5.3 | 6.3 | 4.0 |
| 55 Regenerate | 5.4 | 6.0 | 6.3 | 4.3 |
| 56 Bullseye | 5.4 | 6.3 | 5.7 | 5.0 |
| 57 Traverse 2 | 5.4 | 6.0 | 4.7 | 4.7 |
| 58 Supersonic | 5.4 | 6.3 | 6.3 | 5.0 |
| 59 Bizem | 5.4 | 6.3 | 5.3 | 4.3 |
| 60 Crossfire 4 | 5.4 | 6.7 | 5.3 | 5.3 |
| 61 Valkyrie LS | 5.3 | 6.7 | 6.7 | 4.0 |
| 62 Trinity | 5.3 | 5.3 | 6.7 | 4.0 |
| 63 Turfway | 5.3 | 6.3 | 6.7 | 4.0 |
| 64 Fayette | 5.3 | 5.3 | 5.7 | 5.0 |
| 65 Hot Rod | 5.3 | 5.0 | 6.7 | 4.7 |
| 66 4th Millennium | 5.3 | 5.7 | 6.0 | 5.3 |
| 67 Diablo | 5.2 | 5.7 | 7.3 | 4.7 |
| 68 Michelangelo | 5.2 | 6.0 | 6.3 | 5.0 |
| 69 Spyder LS | 5.2 | 5.3 | 5.7 | 3.7 |
| 70 Fesnova | 5.2 | 7.3 | 5.3 | 4.3 |

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

| Cultivar or Selection | Turf Quality ¹ 2019 Avg. | Establishment ² 2018 Avg. | Gray Leaf Spot ³ 2018 Avg. | Brown Patch ⁴ 22 Jul. 2019 | |
|-----------------------|--|---|--|--|-----|
| 71 | Foxhound | 5.2 | 5.7 | 6.7 | 5.0 |
| 72 | Embrace | 5.2 | 6.0 | 6.7 | 3.7 |
| 73 | PST-5ZRX | 5.2 | 5.3 | 6.0 | 4.7 |
| 74 | Raptor III | 5.2 | 5.7 | 4.7 | 4.0 |
| 75 | Firewall | 5.1 | 6.3 | 6.0 | 4.7 |
| 76 | Maestro | 5.1 | 6.3 | 6.7 | 4.0 |
| 77 | Annapolis | 5.1 | 6.7 | 5.3 | 5.0 |
| 78 | BAR FA 8268 | 5.1 | 6.7 | 4.7 | 3.3 |
| 79 | Rebounder | 5.1 | 5.3 | 4.7 | 4.3 |
| 80 | RH FN-Syn | 5.0 | 5.3 | 7.0 | 3.7 |
| 81 | Reflection | 5.0 | 6.0 | 6.3 | 5.0 |
| 82 | MET-3 | 5.0 | 6.0 | 6.0 | 4.0 |
| 83 | Screamer LS | 5.0 | 6.0 | 5.3 | 3.7 |
| 84 | Copious | 5.0 | 6.7 | 8.0 | 3.3 |
| 85 | SR 8650 | 5.0 | 5.7 | 4.3 | 4.0 |
| 86 | Xtender | 5.0 | 6.3 | 5.7 | 4.3 |
| 87 | Temple | 5.0 | 6.0 | 5.7 | 5.0 |
| 88 | Terrano | 5.0 | 6.3 | 5.0 | 4.3 |
| 89 | PST-5T24 | 4.9 | 6.0 | 7.3 | 3.7 |
| 90 | RAD-TF123 | 4.9 | 5.0 | 6.7 | 3.0 |
| 91 | Birmingham | 4.9 | 7.0 | 4.7 | 3.3 |
| 92 | Merida | 4.9 | 5.7 | 4.3 | 3.0 |
| 93 | PST-5MINI | 4.9 | 5.3 | 7.0 | 3.0 |
| 94 | BAR FA 8269 | 4.9 | 4.3 | 4.3 | 3.3 |
| 95 | Dynamite LS | 4.9 | 5.0 | 6.7 | 4.3 |
| 96 | Renegade DT | 4.8 | 5.7 | 6.0 | 3.0 |
| 97 | PST-5ZIP | 4.8 | 6.7 | 6.3 | 4.0 |
| 98 | Rising Moon | 4.8 | 5.0 | 6.3 | 3.0 |
| 99 | Falcon IV | 4.8 | 6.3 | 4.7 | 5.0 |
| 100 | Mustang 4 | 4.8 | 5.0 | 4.3 | 3.7 |
| 101 | Tribute II | 4.8 | 6.7 | 4.7 | 3.0 |
| 102 | Crossfire 3 | 4.7 | 7.0 | 5.7 | 3.3 |
| 103 | Bravo 2 | 4.7 | 5.0 | 5.7 | 3.0 |
| 104 | BAR FA 8223 | 4.7 | 6.7 | 6.3 | 2.7 |
| 105 | Finelawn H ₂ O | 4.7 | 5.7 | 4.7 | 3.7 |

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

| Cultivar or Selection | Turf Quality ¹ 2019 Avg. | Establishment ² 2018 Avg. | Gray Leaf Spot ³ 2018 Avg. | Brown Patch ⁴ 22 Jul. 2019 |
|-----------------------|--|---|--|--|
| 106 Standout | 4.6 | 5.3 | 6.0 | 3.0 |
| 107 Memphis | 4.6 | 6.0 | 4.3 | 4.0 |
| 108 Leonardo | 4.6 | 5.7 | 4.0 | 3.7 |
| 109 Firaces | 4.6 | 6.0 | 6.3 | 3.0 |
| 110 Escalade | 4.6 | 6.0 | 3.0 | 4.3 |
| 111 Thunderstruck | 4.5 | 6.7 | 6.3 | 3.0 |
| 112 LNSTF1 | 4.5 | 5.3 | 5.3 | 4.0 |
| 113 GO-18-AOMK-BS | 4.4 | 4.7 | 6.3 | 3.0 |
| 114 Unitus | 4.4 | 5.7 | 7.3 | 3.3 |
| 115 Meridian | 4.4 | 6.0 | 5.3 | 3.0 |
| 116 Palomar | 4.3 | 6.0 | 4.3 | 3.7 |
| 117 Talladega | 4.3 | 5.7 | 4.0 | 3.7 |
| 118 Escalante | 4.2 | 5.0 | 4.0 | 3.7 |
| 119 Blade Runner II | 4.2 | 6.3 | 4.0 | 3.0 |
| 120 Trending | 4.1 | 5.0 | 6.3 | 2.3 |
| 121 Bloodhound | 4.1 | 5.3 | 5.7 | 3.3 |
| 122 RAD-TF99 | 4.1 | 5.7 | 4.7 | 2.0 |
| 123 Persuasion | 4.0 | 4.3 | 4.3 | 3.3 |
| 124 06-WALK | 4.0 | 6.7 | 3.3 | 3.0 |
| 125 RAD-TF113 | 3.9 | 5.0 | 4.3 | 2.0 |
| 126 RAD-TF90R | 3.7 | 5.3 | 5.0 | 2.3 |
| 127 RAD-TF103 | 3.6 | 4.7 | 3.3 | 2.3 |
| 128 RAD-TF112R | 3.5 | 5.3 | 4.3 | 2.7 |
| 129 NAI-TF18-FWN12 | 3.4 | 5.0 | 4.7 | 1.7 |
| 130 GO-18-FNKY | 3.4 | 4.7 | 3.7 | 2.0 |
| 131 ORTF-16-1 | 2.2 | 5.3 | 3.7 | 2.3 |
| LSD @ 5%= CV | 0.8 8.9 | 1.5 15.0 | 1.4 14.2 | 1.7 25.5 |

¹9 = best turf quality

²9 = best establishment

³9 = least disease

⁴9 = least disease

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2016 National Turfgrass Evaluation Program (NTEP) test.

| Cultivar or Selection | Turf | Gray Leaf | -----Ground Cover ³ ----- | | | Genetic |
|-----------------------|---|--------------------------------------|--------------------------------------|-----------------|-----------------|---------------------------------------|
| | Quality ¹ 2018-2019 Avg. | Spot ² 17 Oct. 2018 | 2018 Avg. | 26 Sep. 2018 | 15 Oct. 2018 | Color ⁴ 16 Oct. 2019 |
| 1 AH2 | 7.5 | 7.3 | 78.3 | 65.0 | 91.7 | 7.3 |
| 2 Bonfire | 7.3 | 7.3 | 75.8 | 60.0 | 91.7 | 6.7 |
| 3 TMT1 | 6.8 | 6.3 | 76.7 | 63.3 | 90.0 | 8.3 |
| 4 AH1 | 6.8 | 7.0 | 70.0 | 60.0 | 80.0 | 7.0 |
| 5 DLFPS-321/3699 | 6.7 | 7.3 | 70.8 | 53.3 | 88.3 | 8.3 |
| 6 COL-TF-148 | 6.6 | 7.0 | 63.3 | 43.3 | 83.3 | 6.0 |
| 7 DLFPS-321/3696 | 6.6 | 6.3 | 70.8 | 58.3 | 83.3 | 7.0 |
| 8 PPG-TF-315 | 6.5 | 6.7 | 63.3 | 45.0 | 81.7 | 7.3 |
| 9 GLX ACED | 6.5 | 7.0 | 70.0 | 56.7 | 83.3 | 6.3 |
| 10 PPG-TF-255 | 6.5 | 7.0 | 65.0 | 45.0 | 85.0 | 8.0 |
| 11 Degas | 6.4 | 6.7 | 58.3 | 41.7 | 75.0 | 7.3 |
| 12 DLFPS-321/3695 | 6.4 | 5.3 | 65.0 | 53.3 | 76.7 | 7.0 |
| 13 BAR-TF-134 | 6.3 | 6.3 | 69.2 | 55.0 | 83.3 | 5.7 |
| 14 K18-RS6 | 6.3 | 6.0 | 65.8 | 53.3 | 78.3 | 6.3 |
| 15 PPG-TF 244 | 6.3 | 6.3 | 62.5 | 50.0 | 75.0 | 7.7 |
| 16 RDC | 6.2 | 5.7 | 70.8 | 61.7 | 80.0 | 6.7 |
| 17 TF445 | 6.2 | 5.7 | 62.5 | 51.7 | 73.3 | 5.7 |
| 18 O'Keefe | 6.1 | 6.3 | 52.5 | 31.7 | 73.3 | 7.0 |
| 19 PPG-TF-254 | 6.1 | 6.3 | 70.0 | 55.0 | 85.0 | 6.3 |
| 20 DLFPS-TF/3552 | 6.1 | 5.7 | 61.7 | 45.0 | 78.3 | 8.0 |
| 21 TD2 | 6.1 | 5.7 | 60.8 | 46.7 | 75.0 | 6.7 |
| 22 ZRC1 | 6.1 | 5.0 | 69.2 | 51.7 | 86.7 | 6.0 |
| 23 PST-5MCMO | 6.0 | 6.3 | 61.7 | 50.0 | 73.3 | 6.0 |
| 24 Dragster | 6.0 | 6.7 | 60.0 | 46.7 | 73.3 | 7.0 |
| 25 RS1 | 6.0 | 5.3 | 65.0 | 51.7 | 78.3 | 6.3 |
| 26 NAI-ROS4 | 6.0 | 5.0 | 59.2 | 48.3 | 70.0 | 6.3 |
| 27 Grande 3 | 6.0 | 6.7 | 69.2 | 50.0 | 88.3 | 6.0 |
| 28 NAI-3N2 | 6.0 | 6.3 | 69.2 | 61.7 | 76.7 | 6.3 |
| 29 PPG-TF-249 | 6.0 | 5.3 | 69.2 | 61.7 | 76.7 | 7.3 |
| 30 NAI-ST5 | 5.9 | 6.0 | 59.2 | 46.7 | 71.7 | 7.7 |
| 31 DLFPS-321/3705 | 5.9 | 5.7 | 66.7 | 51.7 | 81.7 | 7.0 |
| 32 DLFPS-TF/3550 | 5.9 | 5.3 | 59.2 | 40.0 | 78.3 | 6.0 |
| 33 JT 233 | 5.9 | 6.0 | 62.5 | 46.7 | 78.3 | 6.7 |
| 34 PPG-TF-257 | 5.9 | 5.7 | 61.7 | 50.0 | 73.3 | 7.7 |
| 35 PPG-TF-338 | 5.8 | 6.3 | 67.5 | 48.3 | 86.7 | 7.0 |

(Continued)

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2016 National Turfgrass Evaluation Program (NTEP) test.

| Cultivar or Selection | Turf | Gray Leaf | -----Ground Cover ³ ----- | | | Genetic |
|-----------------------|---|--------------------------------------|--------------------------------------|-----------------|-----------------|---------------------------------------|
| | Quality ¹ 2018-2019 Avg. | Spot ² 17 Oct. 2018 | 2018 Avg. | 26 Sep. 2018 | 15 Oct. 2018 | Color ⁴ 16 Oct. 2019 |
| 36 PPG-TF-306 | 5.8 | 6.0 | 60.0 | 43.3 | 76.7 | 7.0 |
| 37 PST-5GLBS | 5.8 | 5.7 | 58.3 | 41.7 | 75.0 | 6.3 |
| 38 PPG-TF 316 | 5.7 | 5.7 | 60.0 | 45.0 | 75.0 | 7.7 |
| 39 DLFPS-321/3694 | 5.7 | 4.0 | 65.8 | 55.0 | 76.7 | 8.0 |
| 40 DLFPS-321/3693 | 5.7 | 6.3 | 74.2 | 61.7 | 86.7 | 7.0 |
| 41 NAI-TUE | 5.7 | 6.0 | 65.0 | 56.7 | 73.3 | 8.3 |
| 42 Copious TF | 5.7 | 6.0 | 67.5 | 56.7 | 78.3 | 8.0 |
| 43 PPG-TF-231 | 5.7 | 4.7 | 62.5 | 51.7 | 73.3 | 6.7 |
| 44 RHF | 5.6 | 5.7 | 66.7 | 50.0 | 83.3 | 6.0 |
| 45 RH1 | 5.6 | 5.7 | 58.3 | 43.3 | 73.3 | 6.7 |
| 46 PPG-TF-336 | 5.6 | 5.0 | 65.0 | 60.0 | 70.0 | 7.0 |
| 47 ProGold | 5.5 | 5.7 | 66.7 | 56.7 | 76.7 | 5.7 |
| 48 PPG-TF-318 | 5.5 | 5.0 | 62.5 | 50.0 | 75.0 | 7.0 |
| 49 PST-5THM | 5.5 | 6.7 | 63.3 | 55.0 | 71.7 | 6.3 |
| 50 PPG-TF-323 | 5.5 | 6.7 | 64.2 | 45.0 | 83.3 | 7.3 |
| 51 K18-NSE | 5.5 | 5.3 | 55.8 | 40.0 | 71.7 | 5.3 |
| 52 PST-5BYOB | 5.5 | 5.3 | 64.2 | 56.7 | 71.7 | 7.3 |
| 53 ATF 1768 | 5.5 | 5.0 | 61.7 | 50.0 | 73.3 | 8.0 |
| 54 Moondance | 5.5 | 6.0 | 67.5 | 55.0 | 80.0 | 5.3 |
| 55 PPG-TF-308 | 5.5 | 6.0 | 68.3 | 58.3 | 78.3 | 7.3 |
| 56 5LSS | 5.5 | 5.3 | 66.7 | 53.3 | 80.0 | 4.7 |
| 57 TF456 | 5.4 | 5.3 | 65.8 | 50.0 | 81.7 | 5.7 |
| 58 DLFPS-321/3707 | 5.4 | 5.7 | 57.5 | 41.7 | 73.3 | 6.7 |
| 59 Genius | 5.4 | 5.0 | 59.2 | 43.3 | 75.0 | 6.7 |
| 60 PPG-TF-238 | 5.4 | 5.0 | 58.3 | 48.3 | 68.3 | 5.7 |
| 61 SE53D2 | 5.4 | 5.0 | 57.5 | 46.7 | 68.3 | 5.7 |
| 62 PST-5TRN | 5.4 | 6.3 | 60.8 | 46.7 | 75.0 | 6.7 |
| 63 Bullseye LTZ | 5.4 | 5.7 | 62.5 | 48.3 | 76.7 | 7.0 |
| 64 BY-TF-169 | 5.4 | 5.0 | 53.3 | 36.7 | 70.0 | 7.0 |
| 65 Honeymoon | 5.3 | 4.7 | 55.8 | 46.7 | 65.0 | 6.7 |
| 66 JT 268 | 5.3 | 5.7 | 59.2 | 43.3 | 75.0 | 7.7 |
| 67 DLFPS-321/3708 | 5.2 | 6.0 | 60.0 | 46.7 | 73.3 | 7.3 |
| 68 GO-RH20 | 5.2 | 5.0 | 58.3 | 45.0 | 71.7 | 8.0 |
| 69 PPG-TF-320 | 5.2 | 5.0 | 59.2 | 48.3 | 70.0 | 7.0 |
| 70 PPG-TF-313 | 5.2 | 5.3 | 61.7 | 46.7 | 76.7 | 6.3 |

(Continued)

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2016 National Turfgrass Evaluation Program (NTEP) test.

| Cultivar or Selection | Turf | Gray Leaf | -----Ground Cover ³ ----- | | | Genetic |
|-----------------------|---|--------------------------------------|--------------------------------------|-----------------|-----------------|---------------------------------------|
| | Quality ¹ 2018-2019 Avg. | Spot ² 17 Oct. 2018 | 2018 Avg. | 26 Sep. 2018 | 15 Oct. 2018 | Color ⁴ 16 Oct. 2019 |
| 71 Lifeguard | 5.2 | 5.0 | 63.3 | 56.7 | 70.0 | 5.7 |
| 72 A-TF31 | 5.2 | 5.7 | 65.8 | 60.0 | 71.7 | 8.7 |
| 73 RH3 | 5.2 | 5.0 | 60.0 | 48.3 | 71.7 | 5.7 |
| 74 K18-ROE | 5.2 | 4.3 | 56.7 | 51.7 | 61.7 | 6.0 |
| 75 PPG-TF 305 | 5.2 | 4.3 | 60.0 | 55.0 | 65.0 | 7.3 |
| 76 PST-5MINK | 5.1 | 5.3 | 65.0 | 53.3 | 76.7 | 7.3 |
| 77 PPG-TF-267 | 5.1 | 4.3 | 56.7 | 45.0 | 68.3 | 6.7 |
| 78 BAR 9FE MAS | 5.1 | 7.3 | 67.5 | 53.3 | 81.7 | 7.7 |
| 79 AST8218LM | 5.1 | 6.0 | 59.2 | 48.3 | 70.0 | 8.7 |
| 80 PPG-TF-337 | 5.1 | 5.3 | 60.8 | 46.7 | 75.0 | 7.3 |
| 81 DLFPS-TF/3553 | 5.1 | 5.0 | 60.0 | 43.3 | 76.7 | 7.0 |
| 82 DLFPS-321/3701 | 5.1 | 4.7 | 55.8 | 43.3 | 68.3 | 7.7 |
| 83 Paramount | 5.0 | 4.7 | 64.2 | 56.7 | 71.7 | 6.7 |
| 84 Padre 2 | 4.9 | 4.0 | 62.5 | 55.0 | 70.0 | 7.0 |
| 85 Hemi | 4.9 | 4.0 | 55.8 | 40.0 | 71.7 | 5.7 |
| 86 PPG-TF-262 | 4.9 | 3.7 | 50.8 | 40.0 | 61.7 | 7.3 |
| 87 AST8118LM | 4.9 | 5.7 | 67.5 | 55.0 | 80.0 | 8.7 |
| 88 PPG-TF-312 | 4.8 | 5.0 | 55.8 | 40.0 | 71.7 | 5.7 |
| 89 PST-5GQ | 4.8 | 4.7 | 55.8 | 41.7 | 70.0 | 6.3 |
| 90 DLFPS-321/3702 | 4.8 | 4.0 | 49.2 | 40.0 | 58.3 | 7.0 |
| 91 3N1 | 4.7 | 4.7 | 57.5 | 43.3 | 71.7 | 7.0 |
| 92 NT-3 | 4.7 | 3.7 | 53.3 | 45.0 | 61.7 | 7.3 |
| 93 BAR-FA8230 | 4.7 | 5.3 | 60.8 | 55.0 | 66.7 | 6.3 |
| 94 DLFPS-321/3679 | 4.7 | 4.3 | 58.3 | 45.0 | 71.7 | 8.7 |
| 95 K18-WB1 | 4.7 | 4.3 | 52.5 | 43.3 | 61.7 | 6.7 |
| 96 Bullseye | 4.7 | 4.3 | 53.3 | 38.3 | 68.3 | 7.0 |
| 97 3B2 | 4.6 | 4.3 | 55.0 | 43.3 | 66.7 | 7.3 |
| 98 Palomar | 4.6 | 4.3 | 66.7 | 58.3 | 75.0 | 6.7 |
| 99 DLFPS-321/3706 | 4.6 | 4.3 | 49.2 | 36.7 | 61.7 | 6.3 |
| 100 LBF | 4.6 | 3.7 | 55.8 | 48.3 | 63.3 | 8.3 |
| 101 SETFM3 | 4.5 | 4.7 | 52.5 | 41.7 | 63.3 | 7.7 |
| 102 Bravo 2 | 4.5 | 3.7 | 58.3 | 50.0 | 66.7 | 7.3 |
| 103 Birmingham | 4.5 | 5.0 | 59.2 | 50.0 | 68.3 | 7.0 |
| 104 PST-5E6 | 4.5 | 4.3 | 51.7 | 38.3 | 65.0 | 6.3 |
| 105 BGR-TF3 | 4.5 | 4.0 | 60.0 | 51.7 | 68.3 | 8.0 |

(Continued)

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2016 National Turfgrass Evaluation Program (NTEP) test.

| Cultivar or Selection | Turf | Gray Leaf | -----Ground Cover ³ ----- | | | Genetic |
|-----------------------|---|--------------------------------------|--------------------------------------|-----------------|-----------------|---------------------------------------|
| | Quality ¹ 2018-2019 Avg. | Spot ² 17 Oct. 2018 | 2018 Avg. | 26 Sep. 2018 | 15 Oct. 2018 | Color ⁴ 16 Oct. 2019 |
| 106 SE5STAR | 4.4 | 4.7 | 54.2 | 38.3 | 70.0 | 5.7 |
| 107 Raptor III | 4.4 | 4.3 | 58.3 | 50.0 | 66.7 | 6.7 |
| 108 Tango | 4.4 | 4.0 | 52.5 | 46.7 | 58.3 | 7.3 |
| 109 SESCO1 | 4.4 | 4.0 | 46.7 | 36.7 | 56.7 | 5.7 |
| 110 Naturally Green | 4.4 | 3.0 | 65.8 | 61.7 | 70.0 | 8.0 |
| 111 Monument | 4.4 | 5.0 | 61.7 | 51.7 | 71.7 | 6.3 |
| 112 DLFPS-321/3703 | 4.3 | 4.3 | 51.7 | 41.7 | 61.7 | 6.7 |
| 113 GO-AOMK | 4.2 | 5.0 | 48.3 | 33.3 | 63.3 | 8.0 |
| 114 PST-5DC24 | 4.2 | 4.7 | 51.7 | 41.7 | 61.7 | 7.7 |
| 115 Fayette | 4.1 | 4.0 | 54.2 | 43.3 | 65.0 | 8.0 |
| 116 RAD-TF105 | 4.1 | 4.0 | 50.0 | 40.0 | 60.0 | 8.3 |
| 117 Bandit | 4.0 | 4.0 | 59.2 | 46.7 | 71.7 | 7.7 |
| 118 ATF2116 | 4.0 | 3.7 | 50.0 | 40.0 | 60.0 | 8.3 |
| 119 NAI-FQZ-17 | 4.0 | 3.7 | 56.7 | 45.0 | 68.3 | 7.3 |
| 120 Firehawk SLT | 4.0 | 3.3 | 49.2 | 38.3 | 60.0 | 6.3 |
| 121 PST-5DZM | 3.8 | 3.7 | 46.7 | 31.7 | 61.7 | 7.0 |
| 122 JT-517 | 3.8 | 3.3 | 51.7 | 36.7 | 66.7 | 7.7 |
| 123 SETF104 | 3.8 | 3.0 | 48.3 | 38.3 | 58.3 | 6.7 |
| 124 SETFM2 | 3.7 | 4.0 | 50.8 | 41.7 | 60.0 | 9.0 |
| 125 Escalade | 3.7 | 3.0 | 54.2 | 46.7 | 61.7 | 5.3 |
| 126 Grand Prix | 3.7 | 3.0 | 50.8 | 38.3 | 63.3 | 8.0 |
| 127 OG-WALK | 3.6 | 3.7 | 55.0 | 48.3 | 61.7 | 7.3 |
| 128 Estrena | 3.3 | 2.3 | 51.7 | 48.3 | 55.0 | 6.3 |
| 129 Turbo SS | 3.0 | 3.0 | 52.5 | 45.0 | 60.0 | 8.7 |
| 130 BAR FA 8228 | 2.9 | 2.7 | 50.8 | 41.7 | 60.0 | 6.0 |
| 131 RAD-TF0.0 | 2.8 | 2.0 | 44.2 | 36.7 | 51.7 | 8.7 |
| 132 Kentucky-31 | 1.3 | 2.0 | 57.5 | 56.7 | 58.3 | 1.0 |
| LSD @ 5%= | 1.0 | 1.4 | 12.3 | 13.8 | 14.2 | 1.5 |

¹9 = best turf quality
²9 = least disease
³100 = complete cover
⁴9 = best genetic color

Table 5. Yearly nitrogen (N) applied and mowing height (Ht) on tall fescue trials established at Adelphia, NJ.

| | -----2016----- | | -----2017----- | | -----2018----- | | -----2019----- | |
|---------------------|----------------|-----------------|----------------|------|----------------|------|----------------|------|
| | N ¹ | Ht ² | N | Ht | N | Ht | N | Ht |
| Table 1 (2016) | 1.75 | 1.50 | 3.50 | 1.50 | 3.50 | 1.50 | 1.50 | 1.50 |
| Table 2 (2017) | – | – | 1.25 | 1.50 | 4.50 | 1.50 | 3.75 | 1.50 |
| Table 3 (2018) | – | – | – | – | 2.55 | 1.50 | 4.50 | 1.50 |
| Table 4 (2018 NTEP) | – | – | – | – | 2.05 | 1.50 | 5.00 | 1.50 |

¹Annual N applied (lb/1000 ft²)

²Mowing height (inches)