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2020 RUTGERS TURFGRASS PROCEEDINGS

The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey in cooperation with the New Jersey Turfgrass Association. The purpose of this document is to provide a forum for the dissemination of information and the exchange of ideas and knowledge. The proceedings provide turfgrass managers, research scientists, extension specialists, and industry personnel with opportunities to communicate with co-workers. Through this forum, these professionals also reach a more general audience, which includes the public.

This proceedings 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, 2020

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INTRODUCTION

Tall fescue (*Festuca arundinacea*), 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 continues to be 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 2017 and 2019 (Tables 1 to 4). All tests were established by hand sowing 1.41 oz of seed per 3x5 ft plot (5.9 lb per 1000 ft²), except for the 2018 NTEP test which was sown at the rate

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of 2.29 oz of seed per 4x6 ft plot (5.9lb per 1000 ft²). Tests were sown during the month of August (Table 4) or September (Tables 1 to 3). All tests were arranged in randomized complete block designs with three replications, and a 6-inch unseeded border was placed between plots to limit contamination.

Dimension (dithiopyr) was used on all tall fescue trials for preemergent control of annual grass and broadleaf weeds. Weedar 64 (2,4-D) and Lontrel (clopyralid) were used to control broadleaf weeds as needed. Criterion (imidacloprid) was used to control grubs in June on all trials except for the 2017 trial (Table 1). Segway (cyazofamid) was used after seedling emergence to control pythium disease when conditions were favorable for the pathogen. 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 except for the 2018 trial (Table 2) where the mowing height was raised to 2.5" through the 2020 growing season to promote brown patch disease.

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 more subjective 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, ground cover, disease rating, uniformity, density, etc.) to distinguish cultivars or selections that were equally ranked based on turf quality ratings. In addition to data collected in 2020, 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 2017 tall fescue test (Table 1), NAI-ST5-R13, NAI-ST5-R9, AH1, TD2, and NAI-ROS-IY had the highest turf quality ratings, while Crewcut II and GO-FNKY had the lowest turf quality ratings. In the 2018 tall fescue test (Table 2), RW2, AH1, AH2, and TD2 had the highest turf quality ratings, while ORTF-16-1, GO-18-FNKY, and RAD-TF112R had the lowest turf quality ratings. In the 2018 NTEP tall fescue test (Table 3), AH2, Bonfire, and AH1 had the highest turf quality ratings, while BAR FA 8228 and Kentucky-31 had the lowest turf quality ratings. In the 2019 tall fescue test (Table 4), PPG-TF 359, PK3, and GO-RH2O had the highest turf quality ratings, while Palmer, 06-WALK, and PST-5SLF 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 2018 tall fescue test (Table 2), Raptor LS, Bullseye LTZ, PPG-TF 303, and AH2 had the best resistance to brown patch whereas Birmingham, Copious, LNSTF1, and Rowdy exhibited the most disease. In the 2018 NTEP tall fescue, AH2, K18-RS6, DLFPS-321/3705, Dynamite 2LS, and Triad had the best resistance to brown patch, while AST8218LM, NAI-FQZ-17, and GBR-TF3 were the most susceptible to the disease.

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 2017 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----				Ground	----Brown Patch ³ ----	
	2018-2020 Avg.	2018 Avg.	2019 Avg.	2020 Avg.	Cover ² 12 Oct. 2017	20 Aug. 2018	23 July 2019
1 NAI-ST5-R13	6.9	6.9	7.1	6.8	66.7	7.2	3.7
2 NAI-ST5-R9	6.7	6.5	6.9	6.8	68.3	7.2	5.7
3 AH1	6.7	7.0	7.0	6.2	71.7	7.5	4.7
4 TD2	6.7	6.9	6.8	6.3	73.3	6.5	4.0
5 NAI-ROS-IY	6.6	6.7	7.0	6.2	65.0	7.0	4.7
6 NAI-ST5-R5	6.6	6.7	6.7	6.4	56.7	7.7	5.7
7 Bullseye LTZ	6.6	7.0	6.1	6.6	81.7	7.7	4.0
8 TMT1	6.6	6.6	7.1	6.0	61.7	7.2	4.3
9 Genius	6.5	6.7	6.5	6.4	78.3	7.5	4.7
10 BPS	6.5	6.3	6.5	6.7	56.7	6.8	4.3
11 NAI-ROS-RR	6.5	6.4	6.9	6.1	63.3	7.0	4.3
12 NAI-ST5-R11	6.4	5.7	6.8	6.8	53.3	7.2	5.7
13 Bonfire	6.4	6.5	6.5	6.2	71.7	7.3	4.3
14 NAI-3N2	6.4	6.7	6.5	6.0	66.7	7.3	4.3
15 PPG-TF 304	6.4	6.4	6.9	5.9	65.0	8.0	5.3
16 Avenger III	6.4	6.4	6.7	6.1	66.7	7.7	4.3
17 AH2	6.4	6.9	6.4	5.8	68.3	8.0	3.7
18 NAI-ST5-R7	6.4	6.2	6.7	6.2	70.0	6.3	4.0
19 PPG-TF 250	6.3	6.7	6.2	6.0	63.3	6.5	4.3
20 NAI-ST5-R15	6.3	5.6	6.8	6.5	50.0	6.7	4.7
21 Spyder II LS	6.2	6.1	6.4	6.2	61.7	7.0	3.3
22 PPG-TF 252	6.2	6.5	6.5	5.7	65.0	7.5	5.0
23 PPG-TF 249	6.2	6.7	6.1	5.8	60.0	6.8	4.0
24 Firenze II	6.1	6.1	6.6	5.8	75.0	6.3	4.3
25 NAI-ST5-R1	6.1	6.2	6.2	6.0	70.0	7.0	5.7
26 NAI-ST5-R8	6.1	6.3	6.2	6.0	61.7	6.2	5.0
27 RS4	6.1	5.9	6.3	6.1	48.3	6.8	3.7
28 WB2	6.1	6.3	5.9	6.1	58.3	7.2	5.0
29 LTD	6.0	6.1	6.1	5.9	65.0	7.0	4.3
30 NAI-ST5-R17	6.0	5.4	6.5	6.2	46.7	6.8	4.7
31 3N1	6.0	5.7	6.2	6.2	56.7	7.2	3.7
32 PPG-TF 299	6.0	6.0	6.4	5.5	60.0	6.5	3.7
33 RC2	6.0	6.1	5.5	6.3	61.7	7.5	4.3
34 RC3	5.9	5.9	6.1	5.8	58.3	7.3	5.0
35 PPG-TF 306	5.9	5.8	6.5	5.5	61.7	6.8	4.0

(Continued)

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Cultivar or Selection	-----Turf Quality ¹ -----				Ground	----Brown Patch ³ ----	
	2018-2020 Avg.	2018 Avg.	2019 Avg.	2020 Avg.	Cover ² 12 Oct. 2017	20 Aug. 2018	23 July 2019
36 NAI-CT2	5.9	6.0	5.9	5.9	60.0	6.8	4.3
37 RDC	5.9	5.6	6.3	5.7	65.0	5.7	4.0
38 TF 431	5.9	6.2	6.0	5.5	66.7	6.5	4.0
39 PPG-TF 251	5.8	5.8	5.8	6.0	51.7	5.8	3.7
40 3B2	5.8	5.9	5.7	5.9	60.0	6.3	3.7
41 DLFPS-321/3678	5.8	6.0	5.7	5.7	68.3	6.8	5.3
42 PST-5LSS	5.8	5.7	5.9	5.8	50.0	6.8	2.7
43 PPG-TF 300	5.8	6.3	5.9	5.2	53.3	7.2	3.3
44 PPG-TF 307	5.8	6.0	5.8	5.5	63.3	7.0	4.7
45 NAI-ST5-R19	5.8	5.6	6.1	5.6	50.0	6.7	4.7
46 TF 420	5.8	6.2	5.6	5.5	63.3	6.5	4.7
47 NAI-ST5-R14	5.8	5.3	6.0	6.0	43.3	5.5	3.7
48 NAI-ST5-R21	5.8	5.5	5.8	5.9	55.0	7.2	4.3
49 PPG-TF 254	5.7	5.7	6.4	5.0	56.7	6.8	5.0
50 PPG-TF 292	5.7	6.1	5.5	5.5	66.7	6.7	3.7
51 PPG-TF 283	5.7	6.0	5.7	5.3	58.3	6.7	4.7
52 PPG-TF 295	5.7	5.8	5.7	5.5	66.7	6.0	3.3
53 PPG-TF 305	5.7	5.8	5.7	5.5	58.3	7.0	4.0
54 TF 424	5.6	5.9	5.6	5.3	75.0	5.7	5.0
55 PPG-TF 303	5.6	5.9	6.0	4.9	55.0	6.8	4.0
56 BBS	5.6	5.8	5.7	5.3	66.7	6.3	3.7
57 PPG-TF 245	5.6	5.7	5.5	5.7	53.3	6.3	4.0
58 Supersonic	5.6	5.3	5.8	5.7	51.7	6.2	4.3
59 TF 427	5.6	5.8	5.5	5.4	65.0	6.7	4.3
60 NSE	5.5	5.6	5.6	5.4	58.3	7.0	4.3
61 TF 416	5.5	5.6	5.6	5.4	63.3	6.7	4.0
62 TF 426	5.5	6.4	5.1	5.0	71.7	7.0	4.0
63 TF 418	5.5	5.3	5.6	5.6	51.7	6.0	5.0
64 Titanium 2LS	5.5	5.7	5.1	5.6	43.3	6.8	4.7
65 NAI-ST5-R6	5.5	5.7	5.2	5.4	51.7	4.5	3.0
66 TF 430	5.4	5.6	5.0	5.8	58.3	6.0	4.0
67 Screamer LS	5.4	5.0	5.5	5.8	56.7	6.0	4.0
68 DLFPS-321/3679	5.4	5.5	5.3	5.3	65.0	5.8	4.0
69 PPG-TF 229	5.4	5.4	5.3	5.4	60.0	4.3	4.3
70 PPG-TF 285	5.4	6.0	5.0	5.1	73.3	6.5	3.7

(Continued)

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Cultivar or Selection	-----Turf Quality ¹ -----				Ground	----Brown Patch ³ ----	
	2018-2020 Avg.	2018 Avg.	2019 Avg.	2020 Avg.	Cover ² 12 Oct. 2017	20 Aug. 2018	23 July 2019
71 PPG-TF 233	5.3	5.9	4.8	5.3	71.7	6.0	3.7
72 PPG-TF 231	5.3	6.0	4.8	5.1	66.7	6.0	4.7
73 DLFPS-321/3677	5.3	5.7	5.1	5.1	70.0	7.2	4.7
74 NAI-ST5-R4	5.3	5.6	5.2	5.0	63.3	4.0	3.7
75 PPG-TF 248	5.3	5.7	5.1	5.0	63.3	6.2	4.3
76 Regenerate	5.2	4.9	5.0	5.8	60.0	6.0	4.3
77 PPG-TF 232	5.2	5.4	5.0	5.2	68.3	5.5	3.7
78 NAI-ST5-R10	5.2	5.0	5.3	5.3	61.7	5.0	4.3
79 Faith	5.2	5.3	4.9	5.4	55.0	5.8	4.0
80 Padre 2	5.1	5.4	5.1	5.0	65.0	5.7	4.7
81 Annapolis	5.1	5.6	4.9	4.7	60.0	6.0	4.0
82 Technique	5.1	5.6	4.8	4.8	80.0	5.8	5.0
83 Rhizing Moon	5.0	4.8	4.9	5.4	56.7	5.2	3.3
84 PPG-TF 230	5.0	5.4	4.5	5.3	65.0	5.0	4.0
85 Reflection	5.0	5.5	4.5	5.0	60.0	6.8	3.7
86 Spyder LS	5.0	5.3	4.8	4.8	56.7	5.7	3.3
87 Firecracker SLS	5.0	5.4	4.4	5.2	51.7	5.8	4.3
88 TF 417	5.0	5.0	5.0	4.9	60.0	6.5	4.3
89 TF 419	5.0	4.5	5.2	5.2	56.7	4.0	4.0
90 TF 423	5.0	5.2	5.0	4.7	56.7	6.3	4.0
91 TF 396	4.9	5.2	4.5	5.1	58.3	6.3	3.7
92 Embrace	4.9	4.9	4.7	5.2	50.0	5.0	4.7
93 Maestro	4.9	5.6	4.6	4.5	58.3	6.0	3.7
94 PPG-TF 234	4.9	5.1	4.5	5.1	65.0	4.5	4.0
95 Xtender	4.9	5.4	4.3	4.9	58.3	6.2	4.0
96 Falcon IV	4.9	4.8	5.2	4.6	56.7	5.7	3.3
97 LTNS TF Blend 1	4.9	5.3	4.4	4.9	53.3	6.5	3.3
98 Raptor III	4.9	5.0	4.6	5.0	66.7	6.2	3.7
99 Bloodhound	4.8	5.2	4.2	5.1	65.0	6.7	4.0
100 Rowdy	4.8	5.2	4.2	5.1	66.7	4.7	4.0
101 TF 269 SEL M2	4.8	5.2	4.5	4.8	66.7	6.0	3.3
102 NAI-ST5-R12	4.8	4.5	4.8	5.3	43.3	4.8	3.3
103 Renegade DT	4.8	4.9	4.9	4.7	58.3	5.5	3.7
104 NAI-ST5-R20	4.8	4.6	4.5	5.3	55.0	5.0	4.0
105 NAI-ST5-R18	4.8	4.3	4.7	5.4	50.0	5.5	4.7

(Continued)

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Cultivar or Selection	-----Turf Quality ¹ -----				Ground	----Brown Patch ³ ----	
	2018-2020 Avg.	2018 Avg.	2019 Avg.	2020 Avg.	Cover ² 12 Oct. 2017	20 Aug. 2018	23 July 2019
106 Thor	4.8	5.5	4.1	4.8	71.7	6.7	3.7
107 TF 395	4.8	5.3	4.4	4.6	71.7	5.5	4.3
108 PPG-TF 176	4.8	5.3	4.4	4.6	51.7	6.3	4.7
109 RAD-TF123	4.7	5.2	4.7	4.3	53.3	5.8	3.7
110 MET-3	4.7	5.1	4.4	4.6	63.3	6.2	5.0
111 Copious	4.7	5.4	4.1	4.6	63.3	5.7	3.3
112 Temple	4.7	5.1	4.8	4.3	46.7	5.8	3.7
113 NAI-ST5-R2	4.7	5.0	4.3	4.9	51.7	5.5	3.0
114 TF 394	4.7	4.7	4.6	4.8	60.0	5.8	4.0
115 RAD-TF114	4.7	4.6	4.8	4.7	61.7	4.0	3.7
116 TF 403	4.7	5.0	4.7	4.4	58.3	6.0	3.7
117 TF 400	4.7	5.3	4.2	4.5	58.3	6.2	4.0
118 TF 422	4.7	5.0	4.4	4.6	65.0	5.2	4.0
119 RAD-TF110	4.7	4.6	4.9	4.5	55.0	4.5	2.7
120 Amity	4.7	4.4	4.4	5.2	65.0	5.0	4.7
121 TF 425	4.6	5.1	4.3	4.5	51.7	5.3	4.0
122 Valkyrie LS	4.6	5.1	4.0	4.8	61.7	5.7	5.0
123 Bizem	4.6	5.1	4.2	4.6	60.0	5.8	4.0
124 Crossfire 4	4.6	4.9	4.4	4.5	66.7	5.0	4.0
125 PPG-TF 203	4.6	5.0	4.2	4.5	66.7	5.3	4.0
126 PSG PO1	4.6	4.7	4.3	4.7	55.0	4.3	4.0
127 Foxhound	4.6	5.1	4.2	4.4	63.3	5.2	4.3
128 Bravo 2	4.6	4.4	4.7	4.5	41.7	3.7	3.0
129 Hounddog 8	4.5	5.0	4.5	4.1	58.3	5.5	4.3
130 Avenger II	4.5	4.3	4.6	4.8	46.7	5.8	4.3
131 Black Tail	4.5	4.6	4.2	4.8	53.3	5.2	3.3
132 Diablo	4.5	4.9	4.2	4.4	65.0	4.5	3.3
133 Trinity	4.5	5.1	4.5	4.0	70.0	6.2	4.3
134 Firewall	4.5	4.4	4.3	4.8	56.7	4.8	4.0
135 Rebounder	4.5	4.9	4.1	4.5	66.7	5.2	4.3
136 Unitus	4.5	5.3	4.1	4.0	66.7	5.3	4.3
137 Finelawn H2O	4.5	4.6	4.2	4.6	56.7	4.2	3.0
138 NAI-ST5-R16	4.5	4.1	4.1	5.2	51.7	4.2	4.3
139 TF 308	4.4	4.7	3.9	4.8	50.0	5.3	2.7
140 Bandit	4.4	4.7	4.0	4.6	56.7	4.8	2.7

(Continued)

Table 1. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----				Ground	----Brown Patch ³ ----	
	2018-2020 Avg.	2018 Avg.	2019 Avg.	2020 Avg.	Cover ² 12 Oct. 2017	20 Aug. 2018	23 July 2019
141 Meridian	4.4	4.9	4.1	4.3	60.0	5.2	3.7
142 Bullseye	4.4	4.8	3.8	4.6	60.0	5.2	4.3
143 RAD-TF112	4.4	4.3	4.4	4.5	58.3	4.3	2.7
144 Merida	4.4	5.3	3.9	4.1	65.0	5.7	3.3
145 TF 429	4.4	5.0	3.8	4.5	53.3	5.3	2.7
146 Rebel V	4.4	4.7	4.0	4.6	55.0	5.3	5.0
147 Terrano	4.4	4.8	3.8	4.6	66.7	6.0	4.7
148 Nightcrawler	4.4	4.6	4.1	4.5	58.3	5.3	3.3
149 TF 428	4.4	4.5	3.9	4.7	55.0	4.2	4.3
150 RAD-TF125	4.3	4.6	4.1	4.3	46.7	5.0	2.7
151 Fesnova	4.3	4.9	3.9	4.2	66.7	4.5	3.3
152 Jamboree	4.3	4.5	3.6	4.6	63.3	5.0	3.3
153 Firaces	4.2	4.6	3.8	4.2	66.7	4.8	3.7
154 NAI-ST5-R3	4.2	5.4	3.2	4.0	56.7	6.3	3.7
155 Turfway	4.2	4.9	3.7	3.9	53.3	5.3	4.3
156 Falcon H2O	4.1	4.1	4.1	4.2	51.7	4.3	3.7
157 Essential	4.1	3.9	4.1	4.4	48.3	4.2	4.0
158 Shenandoah Elite	4.1	4.1	3.8	4.5	55.0	5.2	3.7
159 Fayette	4.1	4.2	3.8	4.3	51.7	4.8	4.0
160 Garrison	4.1	4.2	3.8	4.3	60.0	4.3	3.7
161 LTNS TF Blend 2	4.1	4.6	3.6	4.0	60.0	4.2	3.0
162 TF 421	4.1	4.4	3.6	4.2	55.0	5.3	3.7
163 Persuasion	4.0	4.2	3.3	4.6	50.0	4.5	3.0
164 Dynamite LS	4.0	4.4	3.7	4.1	51.7	4.2	3.3
165 Selkirk	4.0	3.9	4.0	4.2	40.0	4.7	3.7
166 Cannavaro	4.0	3.8	3.7	4.5	30.0	4.3	3.7
167 Catalyst	3.9	4.3	3.2	4.3	48.3	4.8	2.7
168 Mustang 4	3.9	4.0	3.8	3.8	51.7	5.3	4.3
169 Speedway	3.8	4.1	3.4	4.0	51.7	4.0	3.7
170 Houndog 6	3.8	4.2	3.4	3.7	63.3	4.5	2.7
171 Crossfire 3	3.7	4.0	3.3	3.8	55.0	3.5	3.7
172 Grande 3	3.7	3.8	3.1	4.0	56.7	4.8	4.0
173 Scorpion II	3.6	3.6	3.3	4.0	43.3	4.2	2.3
174 Guardian 41	3.6	4.3	2.9	3.6	61.7	4.2	3.7
175 Renegade H2O	3.6	4.0	3.0	3.7	58.3	3.7	2.7

(Continued)

Table 1. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2017 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----				Ground	----Brown Patch ³ ----	
	2018-2020 Avg.	2018 Avg.	2019 Avg.	2020 Avg.	Cover ² 12 Oct. 2017	20 Aug. 2018	23 July 2019
176 Birmingham	3.6	4.3	2.9	3.5	66.7	3.5	3.0
177 GO-MT	3.5	3.6	3.1	3.8	53.3	3.7	3.3
178 GO-MNKY	3.5	3.8	3.0	3.5	58.3	4.3	2.7
179 Blackwatch 2	3.5	3.8	2.9	3.7	60.0	4.3	3.0
180 SR 8650	3.4	3.7	3.1	3.5	60.0	3.5	3.3
181 Blade Runner II	3.4	3.8	2.5	3.8	48.3	4.0	3.3
182 Corona	3.3	3.8	3.1	3.1	50.0	3.2	3.7
183 Grande II	3.2	3.5	2.5	3.5	46.7	3.8	3.0
184 Thunderstruck	3.1	3.4	2.6	3.4	45.0	2.7	2.7
185 Cayenne	3.0	3.3	2.7	3.1	51.7	3.2	3.7
186 Rhizing Star	3.0	3.3	2.5	3.1	38.3	3.3	3.0
187 Green Hornet	2.9	3.6	2.2	3.0	61.7	4.8	2.7
188 GO-FT	2.8	2.7	2.6	3.1	45.0	3.0	2.3
189 Crewcut II	2.3	2.1	1.9	2.8	33.3	2.3	2.7
190 GO-FNKY	1.9	2.0	1.4	2.3	40.0	2.3	2.7
LSD @ 5%=	0.6	0.8	0.9	0.9	13.4	1.6	1.4
CV	7.9	9.6	11.6	10.8	14.1	19.9	21.9

¹9 = best turf quality

²100 = complete cover

³9 = least disease

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----			Establish-	Gray Leaf	----Brown Patch ⁴ ----	
	2018-2020 Avg.	2019 Avg.	2020 Avg.	ment ² 2018 Avg.	Spot ³ 2018 Avg.	22 Jul. 2019	2020 Avg.
1 RW2	6.8	7.0	6.5	7.0	7.7	5.7	5.7
2 AH1	6.6	6.9	6.3	7.0	7.7	5.0	4.8
3 AH2	6.4	6.8	5.9	8.0	7.3	5.3	5.8
4 TD2	6.3	6.5	6.2	7.0	7.3	4.0	4.3
5 RW1	6.3	6.9	5.7	7.0	6.0	7.0	5.2
6 BSL	6.2	6.9	5.6	7.0	6.7	6.7	5.3
7 Raptor LS	6.2	6.7	5.8	6.7	6.3	6.3	6.3
8 NSE	6.2	6.5	5.9	6.7	7.0	6.3	5.2
9 Bonfire	6.1	6.3	5.9	7.0	7.7	4.7	4.8
10 PPG-TF 310	6.1	6.1	6.1	6.3	7.0	4.0	5.3
11 PPG-TF 235	6.1	6.2	5.9	6.3	6.0	6.3	5.0
12 PPG-TF 317	6.1	6.5	5.7	6.7	7.0	5.0	5.5
13 RS1	6.1	6.4	5.8	6.0	7.7	5.3	5.0
14 Maestro	6.1	6.1	6.0	7.0	7.7	4.3	4.5
15 PW3	6.0	6.4	5.7	6.0	7.7	6.0	5.0
16 PW5	6.0	6.6	5.4	7.0	8.3	4.3	4.3
17 PPG-TF 303	6.0	6.1	5.8	6.7	6.7	5.0	5.8
18 PPG-TF 304	6.0	6.0	5.9	6.3	7.3	4.7	4.0
19 GO-18-RH2O-BS	6.0	6.0	5.9	6.7	6.3	4.0	4.8
20 Grande 3	6.0	5.9	6.1	6.0	7.0	4.7	4.8
21 GTO	5.9	6.2	5.6	7.3	7.3	6.0	3.8
22 ENS	5.9	5.8	6.0	4.7	6.3	4.7	4.2
23 Bullseye LTZ	5.9	5.9	5.8	6.7	5.7	4.0	5.8
24 Technique	5.8	5.9	5.7	6.0	7.0	4.7	5.5
25 PPG-TF 319	5.8	6.1	5.6	6.7	6.7	6.3	4.8
26 PW1	5.8	6.3	5.2	6.7	8.3	4.0	4.2
27 PPG-TF 295	5.8	5.9	5.6	6.7	6.0	4.7	4.5
28 PW4	5.7	6.1	5.4	5.3	7.0	5.7	4.5
29 PPG-TF 321	5.7	6.2	5.3	7.3	7.0	4.7	4.0
30 NAI-404-18	5.7	5.8	5.7	6.0	6.3	5.0	5.7
31 Paramount	5.7	5.9	5.5	6.7	6.7	5.7	5.3
32 Padre II	5.7	6.0	5.4	6.3	6.7	5.0	4.0
33 PST-5LSS	5.7	6.0	5.4	6.7	5.0	4.7	4.5
34 PPG-TF 266	5.7	5.8	5.6	6.0	7.0	5.0	3.7
35 Witchita	5.7	6.2	5.1	6.0	6.7	4.7	4.5

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----			Establish-	Gray Leaf	----Brown Patch ⁴ ----	
	2018-2020 Avg.	2019 Avg.	2020 Avg.	ment ² 2018 Avg.	Spot ³ 2018 Avg.	22 Jul. 2019	2020 Avg.
36 RS4	5.6	5.7	5.5	6.0	7.0	5.0	5.7
37 PW2	5.6	5.5	5.7	6.0	7.3	4.0	4.8
38 PPG-TF 250	5.6	5.6	5.5	6.3	6.0	4.0	4.2
39 RDC	5.5	5.7	5.4	6.3	5.3	4.0	4.5
40 PPG-TF KS	5.5	6.0	5.1	6.3	7.7	4.3	4.3
41 Rockwell	5.5	5.7	5.4	5.3	6.0	5.3	4.5
42 Firecracker SLS	5.5	6.0	5.0	5.3	6.3	6.0	3.2
43 Bullseye	5.5	5.4	5.6	6.3	5.7	5.0	4.0
44 PW6	5.5	5.5	5.4	6.3	7.7	4.3	4.3
45 PPG-TF 307	5.5	5.7	5.2	6.3	7.7	4.0	4.3
46 Valkyrie LS	5.4	5.3	5.6	6.7	6.7	4.0	4.8
47 Titanium 2LS	5.4	5.7	5.0	6.0	5.7	4.7	3.5
48 PPG-TF 232	5.4	5.6	5.1	7.7	6.7	4.7	4.8
49 NAI-ST6-18	5.4	5.5	5.3	5.3	6.3	4.0	5.3
50 Traverse 2	5.4	5.4	5.3	6.0	4.7	4.7	3.5
51 Rowdy	5.3	5.6	5.1	6.7	5.3	4.3	2.5
52 Hot Rod	5.3	5.3	5.3	5.0	6.7	4.7	4.5
53 Supersonic	5.2	5.4	5.1	6.3	6.3	5.0	3.3
54 Thor	5.2	5.7	4.7	6.7	7.3	5.0	3.8
55 Regenerate	5.2	5.4	5.0	6.0	6.3	4.3	3.2
56 PPG-TF 322	5.2	5.8	4.7	5.3	6.0	5.0	4.0
57 Raptor III	5.2	5.2	5.2	5.7	4.7	4.0	4.0
58 Crossfire 4	5.2	5.4	5.0	6.7	5.3	5.3	4.2
59 Avenger II	5.2	5.5	4.8	6.3	5.7	5.0	5.2
60 Trinity	5.2	5.3	5.0	5.3	6.7	4.0	4.0
61 Black Tail	5.1	5.5	4.6	6.3	7.0	4.7	3.8
62 Nightcrawler	5.0	5.7	4.3	6.7	7.7	5.0	4.0
63 Rebounder	5.0	5.1	4.9	5.3	4.7	4.3	3.0
64 PST-5FOE	5.0	5.5	4.4	7.7	7.3	2.7	4.8
65 Annapolis	5.0	5.1	4.8	6.7	5.3	5.0	3.8
66 RAD-TF123	5.0	4.9	5.0	5.0	6.7	3.0	3.2
67 Michelangelo	5.0	5.2	4.7	6.0	6.3	5.0	4.5
68 RH FN-Syn	4.9	5.0	4.8	5.3	7.0	3.7	4.8
69 Firewall	4.9	5.1	4.7	6.3	6.0	4.7	4.7
70 Embrace	4.9	5.2	4.7	6.0	6.7	3.7	4.3

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----			Establish-	Gray Leaf	----Brown Patch ⁴ ----	
	2018-2020 Avg.	2019 Avg.	2020 Avg.	ment ² 2018 Avg.	Spot ³ 2018 Avg.	22 Jul. 2019	2020 Avg.
71 Maestro	4.9	5.1	4.7	6.3	6.7	4.0	4.7
72 Diablo	4.9	5.2	4.5	5.7	7.3	4.7	4.2
73 Fayette	4.9	5.3	4.5	5.3	5.7	5.0	4.0
74 MET-3	4.8	5.0	4.6	6.0	6.0	4.0	4.0
75 4th Millennium	4.8	5.3	4.4	5.7	6.0	5.3	3.5
76 Bizem	4.8	5.4	4.2	6.3	5.3	4.3	4.7
77 Screamer LS	4.8	5.0	4.6	6.0	5.3	3.7	4.0
78 Reflection	4.8	5.0	4.5	6.0	6.3	5.0	4.3
79 Temple	4.8	5.0	4.6	6.0	5.7	5.0	4.5
80 PST-5ZRX	4.8	5.2	4.4	5.3	6.0	4.7	4.2
81 Foxhound	4.8	5.2	4.4	5.7	6.7	5.0	3.3
82 BAR FA 8268	4.8	5.1	4.4	6.7	4.7	3.3	4.8
83 Copious	4.8	5.0	4.5	6.7	8.0	3.3	2.3
84 Turfway	4.8	5.3	4.2	6.3	6.7	4.0	3.5
85 Falcon IV	4.7	4.8	4.5	6.3	4.7	5.0	3.5
86 Standout	4.7	4.6	4.7	5.3	6.0	3.0	3.7
87 Xtender	4.6	5.0	4.3	6.3	5.7	4.3	3.3
88 PST-5MINI	4.6	4.9	4.4	5.3	7.0	3.0	4.0
89 Spyder LS	4.6	5.2	4.0	5.3	5.7	3.7	2.7
90 Finelawn H2O	4.6	4.7	4.5	5.7	4.7	3.7	3.3
91 PST-5ZIP	4.6	4.8	4.3	6.7	6.3	4.0	4.0
92 Birmingham	4.6	4.9	4.2	7.0	4.7	3.3	2.0
93 Merida	4.5	4.9	4.1	5.7	4.3	3.0	3.8
94 Mustang 4	4.5	4.8	4.3	5.0	4.3	3.7	4.2
95 Renegade DT	4.5	4.8	4.2	5.7	6.0	3.0	2.8
96 SR 8650	4.5	5.0	4.0	5.7	4.3	4.0	3.0
97 BAR FA 8269	4.5	4.9	4.1	4.3	4.3	3.3	3.5
98 Fesnova	4.5	5.2	3.7	7.3	5.3	4.3	3.2
99 Firaces	4.4	4.6	4.2	6.0	6.3	3.0	3.5
100 Crossfire 3	4.4	4.7	4.1	7.0	5.7	3.3	3.0
101 Bloodhound	4.4	4.1	4.7	5.3	5.7	3.3	3.7
102 Escalade	4.4	4.6	4.2	6.0	3.0	4.3	3.2
103 GO-18-AOMK-BS	4.4	4.4	4.3	4.7	6.3	3.0	3.3
104 Memphis	4.4	4.6	4.1	6.0	4.3	4.0	3.3
105 Terrano	4.3	5.0	3.7	6.3	5.0	4.3	4.0

(Continued)

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----			Establish-	Gray Leaf	----Brown Patch ⁴ ----		
	2018-2020 Avg.	2019 Avg.	2020 Avg.	ment ² 2018 Avg.	Spot ³ 2018 Avg.	22 Jul. 2019	2020 Avg.	
106	Dynamite LS	4.3	4.9	3.8	5.0	6.7	4.3	3.5
107	RAD-TF113	4.3	3.9	4.7	5.0	4.3	2.0	2.7
108	Rising Moon	4.3	4.8	3.8	5.0	6.3	3.0	3.8
109	Meridian	4.3	4.4	4.2	6.0	5.3	3.0	2.8
110	Thunderstruck	4.3	4.5	4.0	6.7	6.3	3.0	2.8
111	RAD-TF99	4.3	4.1	4.4	5.7	4.7	2.0	3.0
112	PST-5T24	4.3	4.9	3.6	6.0	7.3	3.7	4.2
113	BAR FA 8223	4.2	4.7	3.8	6.7	6.3	2.7	2.5
114	Unitus	4.2	4.4	4.1	5.7	7.3	3.3	3.5
115	Bravo 2	4.2	4.7	3.7	5.0	5.7	3.0	3.7
116	RAD-TF103	4.2	3.6	4.8	4.7	3.3	2.3	3.7
117	Leonardo	4.1	4.6	3.6	5.7	4.0	3.7	3.0
118	Palomar	4.1	4.3	3.8	6.0	4.3	3.7	2.7
119	Persuasion	4.1	4.0	4.1	4.3	4.3	3.3	3.3
120	Tribute II	4.0	4.8	3.3	6.7	4.7	3.0	3.2
121	RAD-TF90R	4.0	3.7	4.2	5.3	5.0	2.3	3.3
122	LNSTF1	3.9	4.5	3.4	5.3	5.3	4.0	2.3
123	Escalante	3.9	4.2	3.6	5.0	4.0	3.7	3.3
124	Talladega	3.9	4.3	3.4	5.7	4.0	3.7	2.5
125	Blade Runner II	3.8	4.2	3.5	6.3	4.0	3.0	4.3
126	Trending	3.8	4.1	3.5	5.0	6.3	2.3	3.7
127	06-WALK	3.8	4.0	3.6	6.7	3.3	3.0	3.3
128	NAI-TF18-FWN12	3.8	3.4	4.1	5.0	4.7	1.7	3.3
129	RAD-TF112R	3.7	3.5	3.8	5.3	4.3	2.7	2.3
130	GO-18-FNKY	3.5	3.4	3.6	4.7	3.7	2.0	2.5
131	ORTF-16-1	2.0	2.2	1.8	5.3	3.7	2.3	2.5
	LSD @ 5%=	0.6	0.8	0.8	1.5	1.4	1.7	1.5
	CV	7.8	8.9	10.5	15.0	14.2	25.5	24.0

¹9 = best turf quality
²9 = best establishment
³9 = least disease
⁴9 = least disease

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2018 National Turfgrass Evaluation Program (NTEP) test.

	-----Turf Quality ¹ -----			Gray Leaf				-----Genetic Color ⁴ -----		Brown		Uniformity ⁷	Density ⁸
	2018-20	2019	2020	Spot ²	-----Ground Cover ³ -----			Patch ⁵	Texture ⁶				
	Avg.	Avg.	Avg.	2018	2018	26 Sep.	15 Oct.	16 Oct.	5 Nov.	13 Aug.	5 Nov.		
						2018	2018	2019	2020	2020	2020	2020	2020
1 AH2	7.3	7.5	7.1	7.3	78.3	65.0	91.7	7.3	5.0	8.7	8.0	9.0	8.7
2 Bonfire	7.0	7.3	6.6	7.3	75.8	60.0	91.7	6.7	5.3	6.7	6.0	7.3	7.3
3 AH1	6.9	6.8	7.1	7.0	70.0	60.0	80.0	7.0	6.0	8.0	7.0	7.3	8.0
4 COL-TF-148	6.6	6.6	6.6	7.0	63.3	43.3	83.3	6.0	4.0	8.3	6.7	7.3	7.3
5 TMT1	6.5	6.8	6.3	6.3	76.7	63.3	90.0	8.3	5.7	7.7	5.7	6.3	5.7
6 K18-RS6	6.5	6.3	6.6	6.0	65.8	53.3	78.3	6.3	4.0	8.7	7.3	7.7	8.7
7 DLFPS-321/3699	6.5	6.7	6.2	7.3	70.8	53.3	88.3	8.3	6.7	7.3	6.0	6.0	6.7
8 Titanium G-LS	6.4	6.5	6.4	7.0	65.0	45.0	85.0	8.0	7.3	7.3	5.7	6.0	6.7
9 BAR-TF-134	6.4	6.3	6.5	6.3	69.2	55.0	83.3	5.7	4.7	7.7	7.7	7.3	9.0
10 Firenza II	6.3	6.3	6.3	6.3	62.5	50.0	75.0	7.7	6.3	7.7	6.3	7.7	6.7
11 Firecracker G-LS	6.3	6.5	6.0	6.7	63.3	45.0	81.7	7.3	6.3	8.3	6.3	5.7	7.0
12 Spyder II LS	6.3	6.1	6.5	5.0	69.2	51.7	86.7	6.0	4.0	8.0	7.7	7.7	8.3
13 Degas	6.3	6.4	6.1	6.7	58.3	41.7	75.0	7.3	5.3	8.0	6.0	7.0	8.0
14 DLFPS-321/3695	6.2	6.4	6.1	5.3	65.0	53.3	76.7	7.0	5.3	7.7	6.7	7.0	6.7
15 DLFPS-321/3705	6.2	5.9	6.5	5.7	66.7	51.7	81.7	7.0	4.0	8.7	6.0	6.7	6.7
16 TD2	6.2	6.1	6.3	5.7	60.8	46.7	75.0	6.7	4.7	7.7	7.0	7.0	8.3
17 DLFPS-TF/3552	6.1	6.1	6.1	5.7	61.7	45.0	78.3	8.0	5.3	8.0	7.0	6.7	6.7
18 TF445	6.1	6.2	6.0	5.7	62.5	51.7	73.3	5.7	6.0	7.7	6.0	8.0	7.3
19 PPG-TF-249	6.1	6.0	6.2	5.3	69.2	61.7	76.7	7.3	6.3	7.7	6.7	5.7	8.0
20 RDC	6.1	6.2	5.9	5.7	70.8	61.7	80.0	6.7	3.3	7.3	6.3	7.0	6.3

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(Continued)

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2018 National Turfgrass Evaluation Program (NTEP) test.

		-----Turf Quality ¹ -----			Gray Leaf				-----Genetic Color ⁴ -----		Brown		Uniformity ⁷	Density ⁸
		2018-20	2019	2020	Spot ²	-----Ground Cover ³ -----			Patch ⁵	Texture ⁶				
		Avg.	Avg.	Avg.	2018	2018	26 Sep.	15 Oct.	16 Oct.	5 Nov.	13 Aug.	5 Nov.		
					2018	2018	2019	2020	2020	2020	2020	2020	2020	
21	O'Keefe	6.1	6.1	6.0	6.3	52.5	31.7	73.3	7.0	5.0	7.0	6.3	6.7	7.7
22	RS1	6.0	6.0	6.1	5.3	65.0	51.7	78.3	6.3	5.3	7.0	6.7	8.3	7.7
23	GLX ACED	6.0	6.5	5.6	7.0	70.0	56.7	83.3	6.3	4.0	8.0	4.7	6.7	6.3
24	PPG-TF-257	6.0	5.9	6.2	5.7	61.7	50.0	73.3	7.7	6.3	6.7	6.3	6.0	6.3
25	NAI-ROS4	6.0	6.0	5.9	5.0	59.2	48.3	70.0	6.3	5.3	7.3	6.3	6.3	7.0
26	Dynamite G-LS	5.9	6.1	5.7	6.3	70.0	55.0	85.0	6.3	6.0	7.7	5.7	6.0	7.7
27	Dragster	5.9	6.0	5.9	6.7	60.0	46.7	73.3	7.0	4.3	7.7	6.3	6.0	7.7
28	DLFPS-321/3693	5.9	5.7	6.1	6.3	74.2	61.7	86.7	7.0	5.3	7.3	7.3	7.0	7.3
29	DLFPS-321/3696	5.9	6.6	5.3	6.3	70.8	58.3	83.3	7.0	7.0	6.3	5.0	4.3	5.0
30	PPG-TF-306	5.9	5.8	6.0	6.0	60.0	43.3	76.7	7.0	7.0	7.7	7.0	7.0	7.3
31	DLFPS-321/3694	5.9	5.7	6.1	4.0	65.8	55.0	76.7	8.0	6.0	7.7	6.3	5.7	7.0
32	PPG-TF 316	5.9	5.7	6.0	5.7	60.0	45.0	75.0	7.7	6.0	7.7	6.3	7.3	7.7
33	NAI-3N2	5.9	6.0	5.7	6.3	69.2	61.7	76.7	6.3	6.3	6.3	5.7	6.0	5.7
34	RHF	5.9	5.6	6.1	5.7	66.7	50.0	83.3	6.0	4.7	7.7	7.3	7.3	8.0
35	Genius	5.8	5.4	6.3	5.0	59.2	43.3	75.0	6.7	4.3	7.7	7.0	6.7	7.0
36	NAI-ST5	5.8	5.9	5.7	6.0	59.2	46.7	71.7	7.7	5.7	8.3	5.7	7.0	7.0
37	DLFPS-TF/3550	5.8	5.9	5.7	5.3	59.2	40.0	78.3	6.0	6.0	7.7	6.3	6.7	6.0
38	Dynamite 2LS	5.8	5.6	6.0	5.0	65.0	60.0	70.0	7.0	4.7	8.7	7.0	7.0	7.7
39	Grande 3	5.8	6.0	5.6	6.7	69.2	50.0	88.3	6.0	5.7	8.0	5.7	7.3	7.3
40	K18-NSE	5.8	5.5	6.1	5.3	55.8	40.0	71.7	5.3	4.3	7.7	7.7	7.7	8.7

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(Continued)

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2018 National Turfgrass Evaluation Program (NTEP) test.

		-----Turf Quality ¹ -----			Gray Leaf				-----Genetic Color ⁴ -----		Brown		Uniformity ⁷	Density ⁸
		2018-20	2019	2020	Spot ²	-----Ground Cover ³ -----			Patch ⁵	Texture ⁶				
		Avg.	Avg.	Avg.	2018	2018	26 Sep.	15 Oct.	16 Oct.	5 Nov.	13 Aug.	5 Nov.		
						2018	2018	2019	2020	2020	2020	2020	2020	
41	GO-RH20	5.8	5.2	6.3	5.0	58.3	45.0	71.7	8.0	6.3	8.3	6.0	7.0	8.3
42	5LSS	5.8	5.5	6.0	5.3	66.7	53.3	80.0	4.7	2.7	6.7	7.3	6.3	7.3
43	Honeymoon	5.8	5.3	6.2	4.7	55.8	46.7	65.0	6.7	5.7	8.3	7.0	6.7	7.7
44	Triad	5.7	5.5	6.0	6.7	64.2	45.0	83.3	7.3	7.0	8.7	5.3	6.0	6.7
45	DLFPS-321/3707	5.7	5.4	6.0	5.7	57.5	41.7	73.3	6.7	5.3	7.3	6.3	6.3	8.0
46	Stealth	5.7	5.4	6.0	5.0	58.3	48.3	68.3	5.7	5.3	8.3	6.0	7.0	6.7
47	JT 233	5.7	5.9	5.5	6.0	62.5	46.7	78.3	6.7	7.0	7.3	6.3	6.0	7.0
48	Tank	5.7	5.8	5.5	6.3	67.5	48.3	86.7	7.0	6.3	7.3	6.3	4.7	6.0
49	RH1	5.7	5.6	5.7	5.7	58.3	43.3	73.3	6.7	6.3	7.0	5.7	6.3	7.7
50	Teacher	5.7	5.2	6.1	5.3	61.7	46.7	76.7	6.3	4.3	8.0	7.7	7.0	8.3
51	PST-5MCMO	5.6	6.0	5.2	6.3	61.7	50.0	73.3	6.0	4.0	7.3	5.0	6.0	6.3
52	Avenger III	5.6	5.5	5.8	6.0	68.3	58.3	78.3	7.3	6.0	7.0	6.0	5.7	6.3
53	NAI-TUE	5.6	5.7	5.5	6.0	65.0	56.7	73.3	8.3	7.0	7.3	4.7	5.3	5.7
54	BY-TF-169	5.6	5.4	5.8	5.0	53.3	36.7	70.0	7.0	4.3	7.7	7.0	7.7	7.3
55	Symphony	5.6	5.2	6.0	4.3	60.0	55.0	65.0	7.3	6.7	7.3	6.3	7.3	7.0
56	JT 268	5.6	5.3	5.8	5.7	59.2	43.3	75.0	7.7	6.7	8.0	5.7	6.3	5.7
57	PPG-TF-318	5.5	5.5	5.5	5.0	62.5	50.0	75.0	7.0	5.3	7.7	6.3	7.3	7.0
58	RH3	5.5	5.2	5.9	5.0	60.0	48.3	71.7	5.7	4.0	7.7	5.0	6.7	7.3
59	TF456	5.5	5.4	5.6	5.3	65.8	50.0	81.7	5.7	5.3	7.3	5.3	7.0	6.7
60	PPG-TF-337	5.5	5.1	5.9	5.3	60.8	46.7	75.0	7.3	6.0	7.3	6.7	5.0	7.0

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(Continued)

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2018 National Turfgrass Evaluation Program (NTEP) test.

		-----Turf Quality ¹ -----			Gray Leaf		-----Ground Cover ³ -----			-----Genetic Color ⁴ -----		Brown	Texture ⁶ 5 Nov. 2020	Uniformity ⁷ 5 Nov. 2020	Density ⁸ 5 Nov. 2020
		2018-20	2019	2020	Spot ²	2018	26 Sep.	15 Oct.	16 Oct.	5 Nov.	Patch ⁵	13 Aug.			
		Avg.	Avg.	Avg.	Avg.	Avg.	2018	2018	2019	2020	2020				
61	PPG-TF-320	5.5	5.2	5.7	5.0	59.2	48.3	70.0	7.0	5.7	8.3	5.7	6.0	6.3	
62	PPG-TF-231	5.5	5.7	5.3	4.7	62.5	51.7	73.3	6.7	7.3	7.3	6.0	5.7	7.0	
63	NT-3	5.4	4.7	6.1	3.7	53.3	45.0	61.7	7.3	5.7	6.7	6.3	6.7	5.7	
64	PPG-TF-262	5.4	4.9	6.0	3.7	50.8	40.0	61.7	7.3	6.7	8.0	6.7	7.0	7.7	
65	DLFPS-321/3708	5.4	5.2	5.6	6.0	60.0	46.7	73.3	7.3	7.7	7.3	6.7	6.0	7.0	
66	PPG-TF-312	5.4	4.8	6.0	5.0	55.8	40.0	71.7	5.7	3.0	8.3	7.3	6.3	8.0	
67	PST-5GLBS	5.4	5.8	4.9	5.7	58.3	41.7	75.0	6.3	4.7	7.3	4.3	6.7	5.3	
68	DLFPS-321/3706	5.3	4.6	6.0	4.3	49.2	36.7	61.7	6.3	3.3	7.7	7.3	6.0	7.7	
69	Bullseye LTZ	5.3	5.4	5.3	5.7	62.5	48.3	76.7	7.0	5.3	7.0	5.3	5.7	6.7	
70	DLFPS-TF/3553	5.3	5.1	5.5	5.0	60.0	43.3	76.7	7.0	6.3	7.7	5.7	6.0	7.3	
71	Paramount	5.3	5.0	5.6	4.7	64.2	56.7	71.7	6.7	5.3	6.7	5.3	6.7	6.7	
72	Copious TF	5.3	5.7	4.8	6.0	67.5	56.7	78.3	8.0	7.7	6.0	6.0	5.3	4.0	
73	DLFPS-321/3701	5.2	5.1	5.4	4.7	55.8	43.3	68.3	7.7	6.0	7.0	5.7	5.3	6.7	
74	ProGold	5.2	5.5	4.9	5.7	66.7	56.7	76.7	5.7	4.7	6.3	5.0	5.0	4.3	
75	K18-WB1	5.2	4.7	5.7	4.3	52.5	43.3	61.7	6.7	5.0	7.0	7.0	6.7	8.3	
76	PST-5TRN	5.2	5.4	5.0	6.3	60.8	46.7	75.0	6.7	5.3	7.0	4.3	5.0	6.0	
77	PPG-TF-267	5.2	5.1	5.2	4.3	56.7	45.0	68.3	6.7	6.7	7.0	6.0	6.7	6.7	
78	ATF 1768	5.1	5.5	4.8	5.0	61.7	50.0	73.3	8.0	5.7	6.3	4.7	5.3	4.3	
79	SE53D2	5.1	5.4	4.8	5.0	57.5	46.7	68.3	5.7	6.7	7.0	4.0	5.0	5.0	
80	PST-5THM	5.1	5.5	4.7	6.7	63.3	55.0	71.7	6.3	4.7	6.0	4.0	4.7	3.7	

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(Continued)

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2018 National Turfgrass Evaluation Program (NTEP) test.

	-----Turf Quality ¹ -----			Gray Leaf				-----Genetic Color ⁴ -----		Brown		Uniformity ⁷	Density ⁸	
	2018-20	2019	2020	Spot ²	-----Ground Cover ³ -----			Patch ⁵	Texture ⁶					
	Avg.	Avg.	Avg.	2018	2018	26 Sep.	15 Oct.	16 Oct.	5 Nov.	13 Aug.	5 Nov.			5 Nov.
					2018	2018	2019	2020	2020	2020	2020	2020		
81	PST-5BYOB	5.1	5.5	4.6	5.3	64.2	56.7	71.7	7.3	6.3	4.7	4.3	4.7	4.7
82	SESCR1	5.1	4.4	5.7	4.0	46.7	36.7	56.7	5.7	5.0	7.3	6.7	7.7	7.7
83	DLFPS-321/3702	5.0	4.8	5.3	4.0	49.2	40.0	58.3	7.0	6.7	7.3	5.7	7.0	7.0
84	AST8218LM	5.0	5.1	5.0	6.0	59.2	48.3	70.0	8.7	7.7	3.3	6.3	3.3	4.7
85	Kizzle	5.0	5.2	4.9	4.3	56.7	51.7	61.7	6.0	4.7	6.3	4.0	6.0	5.0
86	Hemi	5.0	4.9	5.1	4.0	55.8	40.0	71.7	5.7	6.7	7.0	5.0	5.7	6.7
87	Lifeguard	5.0	5.2	4.8	5.0	63.3	56.7	70.0	5.7	6.0	6.7	4.7	6.3	5.7
88	Moondance GLX	5.0	5.5	4.5	6.0	67.5	55.0	80.0	5.3	4.7	5.7	4.0	5.3	3.7
89	Padre 2	4.9	4.9	5.0	4.0	62.5	55.0	70.0	7.0	6.7	6.0	5.0	5.7	5.3
90	Raptor III	4.9	4.4	5.4	4.3	58.3	50.0	66.7	6.7	5.0	7.7	6.0	6.0	6.0
91	PST-5E6	4.8	4.5	5.1	4.3	51.7	38.3	65.0	6.3	4.0	7.3	5.0	6.0	6.0
92	PST-5GQ	4.8	4.8	4.8	4.7	55.8	41.7	70.0	6.3	5.0	7.0	5.0	6.0	5.3
93	DLFPS-321/3679	4.8	4.7	4.8	4.3	58.3	45.0	71.7	8.7	7.0	8.0	5.0	5.3	5.7
94	BAR 9FE MAS	4.8	5.1	4.4	7.3	67.5	53.3	81.7	7.7	7.0	5.0	4.3	4.0	5.0
95	PST-5MINK	4.7	5.1	4.3	5.3	65.0	53.3	76.7	7.3	6.3	5.3	4.0	4.0	3.7
96	RAD-TF105	4.7	4.1	5.4	4.0	50.0	40.0	60.0	8.3	6.7	7.3	6.0	6.0	7.7
97	A-TF31	4.7	5.2	4.2	5.7	65.8	60.0	71.7	8.7	8.0	5.7	4.0	4.3	4.7
98	3B2	4.6	4.6	4.6	4.3	55.0	43.3	66.7	7.3	6.3	6.3	5.7	5.3	5.7
99	Bullseye	4.5	4.7	4.4	4.3	53.3	38.3	68.3	7.0	6.7	6.0	4.0	4.7	4.7
100	SETFM3	4.5	4.5	4.5	4.7	52.5	41.7	63.3	7.7	7.3	5.7	4.3	4.3	4.7

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(Continued)

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2018 National Turfgrass Evaluation Program (NTEP) test.

	Turf Quality ¹	Gray Leaf						Brown						
		Turf Quality ¹			Spot ²	Ground Cover ³			Genetic Color ⁴		Patch ⁵	Texture ⁶	Uniformity ⁷	Density ⁸
		2018-20 Avg.	2019 Avg.	2020 Avg.	2018 Avg.	2018 Avg.	26 Sep. 2018	15 Oct. 2018	16 Oct. 2019	5 Nov. 2020	13 Aug. 2020	5 Nov. 2020	5 Nov. 2020	5 Nov. 2020
101 LBF	4.5	4.6	4.4	3.7	55.8	48.3	63.3	8.3	7.7	5.7	5.3	3.7	4.7	
102 Monument	4.5	4.4	4.6	5.0	61.7	51.7	71.7	6.3	5.0	6.7	4.7	5.0	4.3	
103 BAR-FA8230	4.5	4.7	4.3	5.3	60.8	55.0	66.7	6.3	6.7	6.0	3.7	3.7	5.0	
104 Naturally Green	4.5	4.4	4.5	3.0	65.8	61.7	70.0	8.0	8.0	5.7	4.3	4.7	3.7	
105 DLFPS-321/3703	4.5	4.3	4.6	4.3	51.7	41.7	61.7	6.7	6.7	7.0	5.0	4.3	5.3	
106 Birmingham	4.5	4.5	4.4	5.0	59.2	50.0	68.3	7.0	7.3	5.3	3.7	3.7	4.0	
107 Firehawk SLT	4.4	4.0	4.8	3.3	49.2	38.3	60.0	6.3	6.7	7.3	5.0	5.3	5.3	
108 3N1	4.4	4.7	4.0	4.7	57.5	43.3	71.7	7.0	7.3	5.0	5.0	5.0	5.3	
109 AST8118LM	4.4	4.9	3.8	5.7	67.5	55.0	80.0	8.7	8.3	4.7	3.7	3.3	3.3	
110 SETF104	4.3	3.8	4.8	3.0	48.3	38.3	58.3	6.7	6.3	7.0	6.0	6.3	6.3	
111 BGR-TF3	4.3	4.5	4.1	4.0	60.0	51.7	68.3	8.0	7.3	4.0	4.0	3.7	3.3	
112 Tango	4.2	4.4	4.0	4.0	52.5	46.7	58.3	7.3	6.3	5.7	4.7	4.3	4.0	
113 Bravo 2	4.2	4.5	3.8	3.7	58.3	50.0	66.7	7.3	6.3	5.0	4.0	3.7	4.3	
114 PST-5DZM	4.1	3.8	4.4	3.7	46.7	31.7	61.7	7.0	5.7	5.7	5.0	5.7	4.7	
115 GO-AOMK	4.1	4.2	4.0	5.0	48.3	33.3	63.3	8.0	7.3	6.7	4.7	4.7	5.3	
116 Fayette	4.1	4.1	4.0	4.0	54.2	43.3	65.0	8.0	6.7	5.0	4.7	3.3	3.7	
117 Estrena	4.1	3.3	4.8	2.3	51.7	48.3	55.0	6.3	5.3	7.3	5.0	5.0	6.0	
118 SE5STAR	4.0	4.4	3.6	4.7	54.2	38.3	70.0	5.7	7.0	5.3	4.3	3.7	4.0	
119 ATF2116	4.0	4.0	4.0	3.7	50.0	40.0	60.0	8.3	7.7	5.7	3.7	4.3	3.3	
120 PST-5DC24	4.0	4.2	3.8	4.7	51.7	41.7	61.7	7.7	7.0	5.7	4.0	4.0	3.7	

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(Continued)

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded in September 2018 at Adelphia, NJ. Includes all entries from the 2018 National Turfgrass Evaluation Program (NTEP) test.

		Turf Quality ¹			Gray Leaf				Genetic Color ⁴		Brown		Texture ⁶	Uniformity ⁷	Density ⁸
		2018-20	2019	2020	Spot ²	Ground Cover ³			16 Oct.	5 Nov.	Patch ⁵				
		Avg.	Avg.	Avg.	2018	2018	26 Sep.	15 Oct.	2019	2020	13 Aug.	5 Nov.			
121	Palomar	4.0	4.6	3.3	4.3	66.7	58.3	75.0	6.7	7.0	4.7	3.3	3.3	3.0	
122	Bandit	3.8	4.0	3.6	4.0	59.2	46.7	71.7	7.7	6.7	4.3	4.3	4.0	4.3	
123	SETFM2	3.8	3.7	3.8	4.0	50.8	41.7	60.0	9.0	7.7	5.3	4.3	4.0	4.7	
124	JT-517	3.7	3.8	3.6	3.3	51.7	36.7	66.7	7.7	6.7	5.0	4.0	4.0	4.0	
125	Grand Prix	3.7	3.7	3.6	3.0	50.8	38.3	63.3	8.0	7.0	5.0	4.3	4.3	4.7	
126	NAI-FQZ-17	3.6	4.0	3.3	3.7	56.7	45.0	68.3	7.3	6.7	4.0	3.3	4.0	3.3	
127	RAD-TF 115	3.6	3.0	4.1	3.0	52.5	45.0	60.0	8.7	8.0	5.3	4.3	3.7	6.3	
128	Escalade	3.6	3.7	3.4	3.0	54.2	46.7	61.7	5.3	6.3	5.0	3.3	3.3	4.0	
129	OG-WALK	3.4	3.6	3.3	3.7	55.0	48.3	61.7	7.3	7.3	5.0	3.0	4.3	4.0	
130	RAD-TF0.0	3.4	2.8	4.0	2.0	44.2	36.7	51.7	8.7	7.3	5.7	6.0	4.7	6.0	
131	BAR FA 8228	3.0	2.9	3.0	2.7	50.8	41.7	60.0	6.0	7.3	5.0	3.3	3.7	3.3	
132	Kentucky-31	1.2	1.3	1.1	2.0	57.5	56.7	58.3	1.0	1.0	5.0	1.0	1.3	1.0	
	LSD @ 5%=	0.8	1.0	0.8	1.4	12.2	13.7	14.1	1.5	1.5	1.6	1.4	1.8	1.7	
	CV=	9.4	12.2	9.2	17.5	12.7	17.7	12.1	13.1	15.3	14.3	15.8	19.6	17.4	

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¹9 = best turf quality

²9 = least disease

³100 = complete ground cover

⁴9 = darkest genetic color

⁵9 = least disease

⁶9 = finest texture

⁷9 = most uniform

⁸9 = most dense

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

Cultivar or Selection	Turf Quality ¹ 2019-2020 Avg.
1 PPG-TF 359	6.8
2 PK3	6.8
3 GO-RH2O	6.7
4 Rebounder	6.6
5 PK5	6.6
6 PK4	6.5
7 PPG-TF 352	6.5
8 Raptor III	6.5
9 PPG-TF 347	6.5
10 PPG-TF 363	6.5
11 Regenerate	6.5
12 PN2	6.4
13 PPG-TF 345	6.4
14 PPG-TF 361	6.4
15 PPG-TF 355	6.4
16 PPG-TF 354	6.4
17 ROS4-19H	6.4
18 PK1	6.4
19 PST-5LSS	6.3
20 NAI-3N1	6.3
21 PPG-TF 360	6.3
22 PN1	6.3
23 PPG-TF 351	6.3
24 PPG-TF 362	6.3
25 PKE	6.2
26 AH1	6.2
27 PPG-TF 364	6.2
28 PPG-TF 349	6.2
29 PPG-TF 346	6.2
30 NAI-ROS4	6.2
31 Valkyrie LS	6.2
32 PN3	6.2
33 PST-5TRN	6.1
34 PPG-TF 353	6.1
35 Maestro	6.1

(Continued)

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

Cultivar or Selection	Turf Quality ¹ 2019-2020 Avg.
36 Padre 2	6.1
37 ST17	6.1
38 NAI ST 5	6.0
39 Genius	6.0
40 Copious	6.0
41 PPG-TF 357	6.0
42 Avenger II	6.0
43 PK2	5.9
44 Black Tail	5.9
45 Michelangelo	5.9
46 PPG-TF 350	5.9
47 PPG-TF 365	5.9
48 PPG-TF 366	5.9
49 Firecracker SLS	5.9
50 Thor	5.9
51 PPG-TF 356	5.9
52 PPG-TF 348	5.9
53 Rockwell	5.9
54 Rowdy	5.9
55 Embrace	5.9
56 Rhambler 2	5.9
57 Technique	5.9
58 PST-5BGG	5.9
59 Wichita	5.8
60 PST-GLX Ace	5.8
61 GTO	5.8
62 Titanium 2LS	5.8
63 SuperSonic	5.8
64 Leonardo	5.8
65 RDC	5.8
66 4th Millennium	5.8
67 Unitus	5.7
68 Traverse 2	5.7
69 PPG-TF 358	5.7
70 GO-GLOK	5.7

(Continued)

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

Cultivar or Selection	Turf Quality ¹ 2019-2020 Avg.
71 Reflection	5.7
72 PST-R5DH6	5.7
73 PST-5HAF9	5.7
74 PST-5FOE	5.6
75 Inferno	5.6
76 Spyder LS	5.6
77 PST-5RZ17	5.6
78 PST-Sny-5BG19	5.6
79 SR 8650	5.6
80 CT2115-C1	5.5
81 PST-5MINK	5.5
82 Xtender	5.5
83 PST-5MCMO	5.5
84 PST-5VFD	5.5
85 Lifeguard	5.5
86 Slate	5.5
87 PST-5GQ	5.5
88 Crossfire 4	5.5
89 PST-5NOG-17	5.5
90 Fesnova	5.4
91 Trinity	5.4
92 Annapolis	5.4
93 PST-5E6	5.4
94 PST-5GLBS	5.4
95 PST-5BYOB	5.4
96 Bandit	5.4
97 Fayette	5.4
98 Pro Gold	5.4
99 Memphis	5.3
100 Foxhound	5.3
101 Laqertha	5.3
102 Dynamite LS	5.3
103 Monument	5.3
104 Bloodhound	5.3
105 Rhizing Moon	5.3

(Continued)

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

Cultivar or Selection	Turf Quality ¹ 2019-2020 Avg.
106 GO-AOMK	5.3
107 Bizem	5.3
108 Screamer LS	5.3
109 Renegade DT	5.3
110 PST-5DZM	5.2
111 JT-251	5.2
112 Temple	5.2
113 PST-5DC24	5.2
114 Crossfire 3	5.2
115 Kingdom	5.2
116 Tango	5.1
117 Diablo	5.1
118 Houndog 8	5.1
119 Nightcrawler	5.1
120 Tribute II	5.1
121 SST-18	5.1
122 Thunderstruck	5.1
123 Turfway	5.1
124 Renegade H2O	5.1
125 Falcon IV	5.1
126 Guardian 41	5.0
127 Birmingham	4.9
128 Bravo 2	4.9
129 Rodin	4.9
130 Firewall	4.9
131 Saltillo	4.9
132 Meridian	4.9
133 Grande 3	4.9
134 Mustang 4	4.9
135 PST-5ZR X	4.9
136 Garrison	4.8
137 Flame	4.8
138 PST-5ZIP	4.7
139 GO-MNKY	4.7
140 Terrano	4.7

(Continued)

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

Cultivar or Selection	Turf Quality ¹ 2019-2020 Avg.
141 Siesta	4.7
142 Hounddog 6	4.6
143 Essential	4.6
144 Jamboree	4.6
145 Darlington II	4.5
146 Venture	4.5
147 Blade Runner II	4.5
148 Summer	4.5
149 JT-783	4.4
150 Speedway	4.4
151 GWR-18	4.3
152 Monet	4.3
153 Quest	4.3
154 Esclalade	4.2
155 GO-FNKY	4.2
156 Da Vinci	4.2
157 Palmer	4.1
158 06-WALK	4.0
159 PST-5SLF	3.1
LSD @ 5%= CV	0.7 8.2

¹9 = best turf quality

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

	-----2017-----		-----2018-----		-----2019-----		-----2020-----	
	N ¹	Ht ²	N	Ht	N	Ht	N	Ht
Table 1 (2017)	1.25	1.5	4.5	1.5	3.75	1.5	0.75	1.5
Table 2 (2018)	–	–	2.55	1.5	4.5	1.5	3.5	2.5
Table 3 (2018)	–	–	2.05	1.5	5	1.5	3.5	1.5
Table 4 (2019)	–	–			1.25	1.5	2.25	1.5

¹Annual N applied (lb/1000 ft²)

²Mowing height (inches)