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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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Deborah Spinella, Proceedings Layout Editor
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PERFORMANCE OF KENTUCKY BLUEGRASS AT RUTGERS HORT. FARM NO. 2 DURING 2020

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INTRODUCTION

We operated both the Rutgers Wear Simulator (RWS; Bonos et al., 2001; Park et al., 2016) and Cady Traffic Simulator (CTS; Henderson et al., 2005; Park et al., 2016) on a strip-plot across entries of Kentucky bluegrass (*Poa pratensis* L.) at Rutgers University. This two-machine strategy has allowed us to assess the traffic tolerance of entries in the 2017 National Turfgrass Evaluation Program (NTEP) Kentucky Bluegrass Test (Park and Murphy, 2019; Park and Murphy 2020).

The objective of the study was to evaluate the traffic tolerance of entries in the 2017 NTEP Kentucky bluegrass Test using machines that imparted wear and compaction of the soil during the summer and autumn of 2020. A non-trafficked strip-plot enabled the evaluation of entry performance without traffic.

MATERIALS AND METHODS

Evaluation Trial

The 2017 NTEP Kentucky bluegrass Test (89 official entries) was seeded at 2.2 lb seed per 1000 ft² into 8- x 6-ft plots on 18 September 2017 on a well-drained loam (sand=44%; silt=41%; clay=15%) at Rutgers Hort. Farm No. 2 in North Brunswick, NJ. An unknown Kentucky bluegrass entry was also included in the evaluation. Entries were replicated three times.

Soil samples were extracted from two depths (thatch + mat layer [0.0 to 1.0-inch]; and 1.0 to 6.7-inch) in June 2020 and sent to the Rutgers Soil Testing Laboratory for analysis. Results indicated that the soil pH was 5.5 in the surface 1-inch (thatch-mat layer); soil phosphorous (P) and soil potassium (K) were 135 and 538 lb per acre, respectively. The soil pH was 6.1 at the 1.0- to 6.7-inch depth and soil P and K were 247

and 243 lbs per acre, respectively. Calcitic lime was applied to the test at 10 lb per 1000 ft² in June 2020 and 10 lb per 1000 ft² in November 2020 to neutralize soil acidity.

A total of 4.5 lb nitrogen (N) per 1000 ft² was applied to the trial in 2020: 0.4, 0.5, 0.5, 0.4, 0.7, 0.7, 0.6, 0.1, 0.5, 0.1 lb N per 1000 ft² on 30 March, 23 April, 11 May, 15 June, 13 July, 14 August, 11 September, 6 November, 17 November, and 24 November 2020, respectively.

The test was mowed 2 to 3 times per week with a reel mower set at a height of 1.5-inch. Evapotranspiration data were used to determine irrigation quantity and avoid excessive wetness and severe drought stress symptoms on the Kentucky bluegrass.

Pest Management During 2020

Postemergence annual bluegrass (*Poa annua* L.) suppression was achieved using ethofumesate (Prograss EC; Bayer CropScience, Cary, NC) during late autumn 2019. Tank mixtures of amicarbazone (Xonerate 70WDG; FMC Corporation, Philadelphia, PA) and mesotrione (Tenacity; Syngenta Crop Protection, LLC, Greensboro, NC) were applied during spring 2020 to achieve further postemergence annual bluegrass suppression.

Dithiopyr (Dimension 2EW; Corteva Agriscience, Wilmington, DE) and chlorantraniliprole (Acelepryn; Syngenta Crop Protection, LLC, Greensboro, NC) were applied for preemergence crabgrass (*Digitaria* spp.) and preventative white grub were control, respectively, during 2020.

Dollar spot disease (caused by *Clariireedia jacksonii*) was treated curatively immediately prior to summer traffic using chlorothalonil (Daconil Ultrex;

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Syngenta Crop Protection, LLC, Greensboro, NC). Turfgrass diseases were subsequently controlled preventatively during the remainder of 2020 using azoxystrobin and propiconazole (Headway Fungicide; Syngenta Crop Protection, LLC, Greensboro, NC), fluazinam (Secure Fungicide; Syngenta Crop Protection, LLC, Greensboro, NC), or pyraclostrobin (Insignia SC Intrinsic Brand Fungicide; BASF Corporation, Research Triangle Park, NC).

Traffic Stress

Traffic was applied in a strip across approximately ½ of each Kentucky bluegrass plot; the other ½ of each plot did not receive traffic (no traffic). Traffic periods in previous years included autumn 2018 (Park and Murphy, 2019) and summer and autumn 2019 (Park and Murphy, 2020); traffic has been applied across the same strip during each season.

Both strip-plots (traffic and no traffic) on all Kentucky bluegrass entries were visually evaluated for dollar spot incidence on 25 June and 20 July 2020 prior to the initiation of traffic using a 1 to 9 scale where 9 equaled the least dollar spot.

Traffic during the summer of 2020 consisted of 16 total passes across the traffic strip-plot; four (4) passes wk⁻¹ with each machine (RWS and CTS) were made during a 2-wk period (27 July to 7 August 2020). A total of 32 passes were made across traffic strip-plots during autumn 2020; 4 passes wk⁻¹ with each machine over a 4-wk period (5 to 27 October). The RWS was operated at a ground speed of 2.5 miles per hour (mph) and 250 rpm for the paddles; the CTS was operated at a speed of 1.0 mph in the forward direction. Subsequent passes with each machine were made in the opposite direction.

Evaluation of Traffic Effects

Kentucky bluegrass traffic and no traffic strip-plots were evaluated at the conclusion of summer- and autumn-applied traffic in 2020. Plots were evaluated for uniformity of turf cover using a 1 to 9 scale where 9 equaled the most uniform turf cover. The fullness of turf canopy (FTC) of plots was rated on a 0 to 100% scale where 100% equaled a full canopy.

A Canon PowerShot G16 (Canon USA, Inc., Lake Success, NY) digital camera was positioned to capture images of plots within an enclosure equipped with artificial lighting. Individual digital image size was

3000 × 4000 pixels and camera settings included a shutter speed of 1/40 s, aperture of F2.8, ISO of 100 and a focal length of 8 mm.

SigmaScan Pro (v. 5.0, SPSS, Inc., Chicago, IL) was used to analyze digital images for green cover (0 to 100% scale; 100%=complete green cover). Green pixels were defined as a hue range of 50 to 107 and a saturation range of 0 to 100.

Data were analyzed using a 2 × 90 factorial of traffic and entries arranged in a strip-plot design with three blocks. Horizontal plot-strips were the level of traffic (no traffic and traffic). Vertical plots were the 90 Kentucky bluegrass entries. Data were subjected to analysis of variance and means were separated using the Fisher's protected least significant difference (LSD) test at $p \leq 0.05$.

Evaluation of No Traffic Plots

Visual turf quality in the absence of traffic (i.e., overall appearance, turf color, uniformity, density, mowing quality, reduced rate of vertical growth, leaf texture, and freedom from insect and/or disease damage) was rated from April through October 2020 using a 1 to 9 scale where 9 equaled the best turf quality.

Spring green-up was visually rated on 8 April 2020 and seedhead development was evaluated on 28 May 2020. A 1-9 scale was utilized for these ratings where 9 equaled the best spring green-up and least seedheads.

These data were analyzed as a single factor randomized complete block design and means were separated using the Fisher's protected least significant difference (LSD) test at $p \leq 0.05$.

RESULTS

Traffic Effects on Dollar Spot Incidence

Overall, greater dollar spot incidence was observed in no traffic strip-plots compared to trafficked strip-plots on 25 June and 20 July 2020 (Table 1). A significant traffic × entry interaction was detected on 25 June 2020 while entry susceptibility to dollar spot was independent of traffic on 20 July 2020.

The incidence of dollar spot was lower on the trafficked portion of 33 Kentucky bluegrass entries on 25 June 2020 compared to the no traffic strip-plots of these entries: Blue Knight, Yellowstone

(A12-7), DLFPS-340/3548, A11-38, Kenblue, Finish Line (NAI-14-178), PST-11-7, Syrah (LTP-11-41), A16-17, J-2726, BAR PP 71213, BAP PP 79366, Prosperity, Babe, KH3492, DLFPS-340/3494, Jersey (NAI-A16-3), RAD 553, Unknown, Shamrock, BAR PP 7236V, Selway, DLFPS-340/3444, DLFPS-340/3500, A16-2, PST-K11-118, Barvette HGT, Amaze (NAI-14-133), PST-T14-39, BAR PP 7K426, PPG-KB 1304, DLFPS-340/3553, and DLFPS-340/3549 (Table 2). Entries that exhibited the most severe dollar spot incidence on 25 June 2020 in the absence of traffic were DLFPS-340/3549, DLFPS-340/3548, Blue Knight, RAD 553, and A11-38.

Thirty-four entries had the least dollar spot on 20 July 2020 (Table 2). Entries exhibiting the greatest dollar spot incidence on this rating date were Kenblue, Finish Line (NAI-14-178), A16-17, Blue Knight, Yellowstone (A12-7), DLFPS-340/3548, DLFPS-340/3549, RAD 553, A11-38. Other entries exhibiting elevated dollar spot susceptibility (< 4.0) on 20 July 2020 were Barvette HGT, DLFPS-340/3500, Selway, DLFPS-340/3494, A11-26, J-2726, and BAR PP 71213.

Kentucky Bluegrass Cover Responses to Traffic

Generally, Kentucky bluegrass had poorer uniformity of turf cover, lower fullness of turf canopy (FTC) and reduced green cover under traffic compared to no traffic during summer and autumn 2020 (Table 3). However, the performance of entries for each parameter depended on the level of traffic during both seasons.

Response to Traffic During Summer 2020 Traffic did not significantly affect the uniformity of turf cover of A11-38, Yellowstone (A12-7), BAR PP 7K426, PST-11-7, Amaze (NAI-14-133), J-2726, PST-K15-167, DLFPS-340/3552, NuRush (J-3510), Barvette HGT, and BAR PP 71213 (Table 4). Moreover, traffic did not reduce the FTC of A16-17, BAR PP 7K426, Barvette HGT, PST-11-7, and J-2726 nor the green cover of PST-11-7, Yellowstone (A12-7), and Amaze (NAI-14-133).

Entries with the best uniformity of turf cover and greatest FTC and green cover after summer traffic were BAR PP 7K426, DLFPS-340/3552, NuRush (J-3510), PST-K15-167, PST-11-7, PPG-KB 1131, Blue Devil, BAR PP 79494, After Midnight, United (NAI-13-14), DLFPS-340/3550, Twilight (NAI-13-132), and Midnight (Table 4).

Entries with the poorest uniformity of turf cover and least FTC and green cover after summer traffic were Heartland (NAI-14-187), NAI-14-122, Yellowstone (A12-7), Orion (PST-K13-143), Paloma (PST-K13-139), NAI-14-132, A16-1, NAI-15-80, RAD 553, PST-T14-39, Blue Knight, and A11-38 (Table 4).

Response to Traffic During Autumn 2020 The uniformity of turf cover and green cover of Barvette HGT were not statistically affected by traffic during autumn 2020 (Table 5). Similarly, traffic during autumn 2020 did not statistically reduce the green cover of After Midnight, BAR PP 7309V, PPG-KB 1131, Blue Devil, Prosperity, NuRush (J-3510), BAR PP 7K426, BAR PP 79494, and J-1138.

Entries with the best uniformity of turf cover and greatest FTC and green cover after autumn traffic during 2020 were Barvette HGT and BAR PP 7K426 (Table 5). Entries with the poorest uniformity of turf cover and least FTC and green cover after autumn traffic were DLFPS-340/3553, PPG-KB 1320, Heartland (NAI-14-187), A11-38, NK-1, NAI-14-132, NAI-15-80, RAD-1776, PST-K15-157, Amaze (NAI-14-133), and Orion (PST-K13-143).

Performance of Kentucky Bluegrass Without Traffic Stress

Kentucky bluegrass entries with the best average turf quality during 2020 were Bombay (GO-22B23), Starr (GO-2628), Skye, A11-40, After Midnight, AKB3179, Cloud (GO-2425), PPG-KB 1131, Blue Devil, Blue Gem (NAI-13-9), PST-K15-172, Midnight, A16-2, and NuRush (J-3510) (Table 6). Entries with the poorest average turf quality during 2020 were A16-1, NAI-14-128, Comanche (NAI-14-176), Kenblue, PST-T14-39, A16-17, Paloma (PST-K13-139), DLFPS-340/3548, NAI-14-122, Heartland (NAI-14-187), DLFPS-340/3364, Yellowstone (A12-7), Amaze (NAI-14-133), PST-K15-157, NAI-15-80, RAD 553, NAI-14-132, NK-1, A11-38, and Blue Knight.

Kentucky bluegrass entries with the best multi-year average turf quality during 2018-2020 were Bombay (GO-22B23), Starr (GO-2628), After Midnight, Jersey (NAI-A16-3), and Cloud (GO-2425) (Table 6). Other entries with very good multi-year average turf quality (≥ 7.0) during 2018-2020 were PST-K15-172, PPG-KB 1131, Skye, A11-26, Blue Devil.

Kentucky bluegrass entries that exhibited moderate to poor (< 5.0) multi-year turf quality during 2018-2020 were A15-6, DLFPS-340/3438, RAD-1776, A99-2897, PST-K13-141, MVS-130, DLFPS-340/3446, A12-34, NAI-14-128, A16-7, A13-1, A10-280, RAD 553, Aviator II (NAI-15-84), NAI-14-122, Heartland (NAI-14-187), Comanche (NAI-14-176), Kenblue, Blue Knight, PST-K15-157, Amaze (NAI-14-133) and NAI-14-132 (Table 6). Entries with the poorest multi-year average turf quality during 2018-2020 were DLFPS-340/3364, NK-1, and NAI-15-80.

Entries with the best spring green-up on 8 April 2020 were Kenblue, PPG-KB 1304, Barserati (BAR PP 110358), Barvette HGT, Selway, BAR PP 7236V, BAR PP 71213, DLFPS-340/3553, PST-T14-39, A16-17, RAD-1776, PST-K11-118, and Finish Line (NAI-14-178) (Table 6). Kentucky bluegrass entries with the poorest spring green-up were PST-K15-167, NAI-14-128, Blue Knight, Amaze (NAI-14-133), Nu-Rush (J-3510), Prosperity, J-1319, DLFPS-340/3500, Blue Devil, Twilight (NAI-13-132), Blue Gem (NAI-13-9), J-2726, DLFPS-340/3556, BAP PP 79366, PPG-KB 1131, J-1138, Midnight, BAR PP 79494, United (NAI-13-14), and DLFPS-340/3494.

Sixty-four Kentucky bluegrass varieties and experimental selections expressed the fewest seedheads on 28 May 2020 (Table 6). Entries with the most seedheads on this rating date were A12-34, DLFPS-340/3552, and AKB3128. Other entries exhibiting moderately high seedhead production (< 6.0) were A99-2897, A16-7, DLFPS-340/3551, NK-1, DLFPS-340/3364, and A15-6.

DISCUSSION

National Turfgrass Evaluation Program tests are an excellent resource for non-biased data concerning the performance of commercially available turfgrass cultivars and experimental selections. Traffic tolerance and turfgrass quality are important selection criteria for high traffic sports fields, general grounds and lawns, and sod production fields.

This research on traffic tolerance and turfgrass quality is also important for the turfgrass seed industry. Thirty-one entries of the 2017 NTEP Kentucky Bluegrass Test (89 total entries) are commercially available as of the printing of these Proceedings in July 2021. Seed company decision-makers can continue to use these data to determine whether to commercialize experimental selections.

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Table 1. Dollar spot incidence on Kentucky bluegrass entries during summer 2020 as affected by traffic during 2019.

	25 June 2020	20 July 2020
	1 to 9 scale ¹	
Level of Traffic ²		
No Traffic	7.6	5.1
Traffic	8.6	6.6
Source of Variation		
Traffic	***	*
Entry	***	***
Traffic x Entry	***	NS
CV (%)	9.8	17.6

¹9 = least dollar spot disease

²Thirty-two machine passes were applied during summer 2019 and twenty-eight passes were made during autumn 2019 using the Rutgers Wear Simulator (RWS) and Cady Traffic Simulator (CTS).

*, ***, NS Significant at the 0.05 and 0.001 probability level and not significant

Table 2. Dollar spot incidence as affected by the interaction of traffic and Kentucky bluegrass entry on 25 June 2020 and Kentucky bluegrass entry on 20 July 2020.

Kentucky bluegrass entry	-----25 June 2020-----		20 July 2020
	No Traffic	Traffic ¹	
	1 to 9 scale ²		
1 AKB3241	9.0	9.0	9.0
2 NK-1	9.0	9.0	8.7
3 NAI-15-80	9.0	9.0	8.7
4 Blue Gem (NAI-13-9)	9.0	9.0	8.7
5 DLFPS-340/3552	9.0	9.0	8.7
6 PST-K15-157	9.0	9.0	8.7
7 Pivot	9.0	9.0	8.5
8 DLFPS-340/3551	9.0	9.0	8.5
9 RAD-1776	9.0	9.0	8.3
10 Midnight	9.0	9.0	8.3
11 Twilight (NAI-13-132)	9.0	9.0	8.0
12 Skye	9.0	9.0	7.8
13 DLFPS-340/3364	9.0	9.0	7.8
14 A11-40	8.7	9.0	7.8
15 United (NAI-13-14)	8.7	9.0	7.8
16 NAI-14-132	9.0	9.0	7.7
17 DLFPS-340/3438	9.0	9.0	7.7
18 A12-34	9.0	9.0	7.7
19 Heartland (NAI-14-187)	8.7	9.0	7.7
20 Amaze (NAI-14-133)	7.7	9.0	7.7
21 MVS-130	8.7	8.7	7.5
22 Aviator II (NAI-15-84)	8.0	9.0	7.5
23 NAI-14-128	9.0	9.0	7.3
24 Comanche (NAI-14-176)	9.0	9.0	7.3
25 NAI-14-122	9.0	9.0	7.2
26 PPG-KB 1131	9.0	9.0	7.2
27 Blue Devil	8.7	9.0	7.2
28 A15-6	8.7	9.0	7.2
29 PST-K15-167	8.0	9.0	7.2
30 J-1319	9.0	9.0	7.0
31 NuRush (J-3510)	9.0	9.0	7.0
32 DLFPS-340/3446	9.0	9.0	7.0
33 BAR PP 79494	8.7	9.0	7.0
34 Cloud (GO-2425)	8.7	9.0	7.0
35 A99-2897	9.0	9.0	6.8

(Continued)

Table 2. Dollar spot incidence as affected by the interaction of traffic and Kentucky bluegrass entry on 25 June 2020 and Kentucky bluegrass entry on 20 July 2020.

Kentucky bluegrass entry	-----25 June 2020-----		20 July 2020
	No Traffic	Traffic ¹	
	1 to 9 scale ²		
36 BAR PP 7309V	8.7	9.0	6.8
37 Barserati (BAR PP 110358)	8.7	9.0	6.8
38 Starr (GO-2628)	8.7	9.0	6.8
39 AKB3128	9.0	9.0	6.7
40 AKB3179	8.7	9.0	6.7
41 Bombay (GO-22B23)	8.7	9.0	6.5
42 Orion (PST-K13-143)	9.0	9.0	6.3
43 PST-K15-172	8.7	9.0	6.3
44 PST-T14-39	7.7	9.0	6.3
45 J-1138	9.0	9.0	6.2
46 A16-7	9.0	9.0	6.2
47 A13-1	8.3	9.0	6.2
48 BAR PP 7K426	7.7	9.0	6.2
49 DLFPS-340/3550	9.0	9.0	6.0
50 A06-8	8.3	9.0	6.0
51 DLFPS-340/3455	8.0	8.0	6.0
52 After Midnight	8.0	9.0	5.8
53 New Moon (PST-K15-177)	7.7	8.7	5.7
54 DLFPS-340/3444	7.0	8.7	5.7
55 PPG-KB 1320	8.7	9.0	5.5
56 PPG-KB 1304	7.7	9.0	5.5
57 Shamrock	7.0	9.0	5.5
58 DLFPS-340/3556	8.3	8.7	5.2
59 DLFPS-340/3553	7.7	9.0	5.2
60 A16-2	7.3	8.7	5.2
61 BAR PP 7236V	7.0	9.0	5.2
62 A16-1	7.7	8.7	4.8
63 PST-11-7	6.0	9.0	4.8
64 A10-280	8.3	8.7	4.7
65 Paloma (PST-K13-139)	7.7	8.3	4.5
66 Unknown	6.3	8.3	4.5
67 Syrah (LTP-11-41)	5.0	8.0	4.5
68 BAP PP 79366	6.3	8.7	4.2
69 Prosperity	6.3	8.7	4.2
70 PST-K13-141	8.0	8.3	4.0

(Continued)

Table 2. Dollar spot incidence as affected by the interaction of traffic and Kentucky bluegrass entry on 25 June 2020 and Kentucky bluegrass entry on 20 July 2020.

Kentucky bluegrass entry	-----25 June 2020-----		20 July 2020
	No Traffic	Traffic ¹	
	1 to 9 scale ²		
71 PST-K11-118	7.3	8.7	4.0
72 Babe	6.3	8.7	4.0
73 KH3492	6.3	8.7	4.0
74 Jersey (NAI-A16-3)	6.0	8.3	4.0
75 Barvette HGT	7.0	8.3	3.7
76 DLFPS-340/3500	6.7	8.3	3.7
77 Selway	6.7	8.7	3.5
78 DLFPS-340/3494	6.3	8.7	3.3
79 A11-26	6.0	7.0	3.3
80 J-2726	5.0	7.7	3.3
81 BAR PP 71213	5.7	8.3	3.2
82 Kenblue	5.0	8.7	3.0
83 Finish Line (NAI-14-178)	5.3	8.3	2.8
84 A16-17	4.7	7.7	2.7
85 Blue Knight	2.3	6.7	2.5
86 Yellowstone (A12-7)	3.7	7.7	2.2
87 DLFPS-340/3548	2.7	6.7	2.0
88 DLFPS-340/3549	2.7	4.0	1.5
89 RAD 553	2.0	4.3	1.5
90 A11-38	1.3	5.0	1.0
LSD (down; columns) at 5% =	1.6		2.1
LSD (across; rows) at 5% =	1.3		n/a

¹Thirty-two machine passes were applied during summer 2019 and twenty-eight passes were made during autumn 2019 using the Rutgers Wear Simulator (RWS) and Cady Traffic Simulator (CTS).

²9 = least disease

Table 3. Uniformity of cover, fullness of turf canopy, and green cover as affected by traffic and Kentucky bluegrass entry during summer and autumn 2020.

	-----Summer Traffic ¹ -----			-----Autumn Traffic ² -----		
	Uniformity of Turf Cover ³	Fullness of Turfgrass Canopy ⁴	Green Cover ⁵	Uniformity of Turf Cover	Fullness of Turfgrass Canopy	Green Cover
	1 to 9 Scale	-----0 to 100% Scale-----		1 to 9 Scale	-----0 to 100% Scale-----	
Level of Traffic						
No Traffic	7.4	75	73	8.3	89	97
Traffic	4.1	42	42	3.4	37	60
Source of Variation						
Traffic	**	***	***	***	***	**
Entry	***	***	***	***	***	***
Traffic x Entry	***	***	***	***	***	***
CV (%)	16.8	15	14	14.7	15	12

¹Sixteen machine passes were applied using the Rutgers Wear Simulator (RWS; 8 passes) and Cady Traffic Simulator (CTS; 8 passes) during 27 July to 7 August 2020.

²Thirty-two machine passes were applied using the RWS (16 passes) and CTS (16 passes) during 5 to 27 October 2020.

³9 = most dense, uniform canopy

⁴100% = full canopy

⁵100% = complete green cover; measured by digital image analysis

** , *** Significant at the 0.01 and 0.001 probability level

Table 4. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during summer 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
1 BAR PP 7K426	8.3	7.3	85	73	83	68	
2 DLFPS-340/3552	9.0	7.3	93	72	92	65	
3 NuRush (J-3510)	9.0	7.3	93	67	91	70	
4 PST-K15-167	8.7	7.0	93	73	87	65	
5 PST-11-7	8.3	7.0	83	70	82	75	
6 PPG-KB 1131	9.0	7.0	88	67	91	75	
7 Blue Devil	9.0	7.0	92	67	91	70	
8 PST-K15-172	9.0	6.7	95	67	80	54	
9 BAR PP 79494	9.0	6.7	92	65	89	69	
10 After Midnight	8.7	6.7	87	63	86	61	
11 United (NAI-13-14)	8.7	6.3	83	58	93	67	
12 DLFPS-340/3494	8.3	6.3	80	58	73	57	
13 BAR PP 7309V	8.3	6.3	82	57	83	56	
14 DLFPS-340/3550	9.0	6.0	85	60	94	67	
15 Cloud (GO-2425)	8.7	6.0	92	60	80	52	
16 Barvette HGT	7.7	6.0	72	60	65	50	
17 Bombay (GO-22B23)	9.0	6.0	92	58	82	53	
18 J-1138	8.3	6.0	83	53	83	57	
19 Twilight (NAI-13-132)	9.0	5.7	90	62	93	70	
20 Midnight	9.0	5.7	93	62	93	61	

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(Continued)

Table 4. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during summer 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
21	Skye	9.0	5.7	97	60	80	50
22	PST-K13-141	8.3	5.7	87	60	71	45
23	A11-40	9.0	5.7	98	58	86	48
24	Blue Gem (NAI-13-9)	8.7	5.7	88	52	94	65
25	DLFPS-340/3438	8.7	5.7	87	50	79	41
26	Starr (GO-2628)	8.7	5.3	90	58	77	51
27	Prosperity	8.3	5.3	80	55	78	56
28	AKB3179	9.0	5.3	92	53	79	45
29	Selway	8.3	5.3	85	52	72	46
30	J-1319	9.0	5.3	82	45	91	61
31	New Moon (PST-K15-177)	8.3	5.0	83	53	90	60
32	A13-1	8.3	5.0	90	52	89	52
33	PPG-KB 1304	9.0	5.0	88	50	90	60
34	Jersey (NAI-A16-3)	7.0	4.7	70	45	63	38
35	J-2726	6.3	4.7	57	43	59	41
36	A15-6	8.3	4.7	83	42	84	48
37	Syrah (LTP-11-41)	9.0	4.3	93	50	83	41
38	DLFPS-340/3556	7.7	4.3	78	48	85	46
39	DLFPS-340/3500	8.0	4.3	82	43	84	46
40	Unknown	7.7	4.3	80	42	74	48

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(Continued)

Table 4. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during summer 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
41	A12-34	8.7	4.3	85	38	90	51
42	A06-8	8.3	4.0	80	45	83	50
43	BAR PP 7236V	7.0	4.0	73	45	74	48
44	PST-K11-118	7.3	4.0	67	45	74	46
45	A99-2897	8.0	4.0	82	43	89	51
46	Kenblue	7.7	4.0	72	42	62	41
47	A11-26	6.3	4.0	65	42	56	39
48	DLFPS-340/3551	8.3	4.0	85	38	93	49
49	DLFPS-340/3364	8.0	4.0	78	37	86	40
50	Pivot	9.0	3.7	97	43	81	42
51	AKB3241	9.0	3.7	93	42	90	45
52	A10-280	8.7	3.7	88	40	79	42
53	Barserati (BAR PP 110358)	8.3	3.7	85	38	91	47
54	BAP PP 79366	7.0	3.7	73	37	81	38
55	A16-7	8.7	3.7	80	35	88	38
56	A16-2	8.7	3.7	88	33	77	36
57	Babe	7.3	3.7	73	32	63	24
58	DLFPS-340/3446	7.7	3.3	73	32	75	33
59	Amaze (NAI-14-133)	4.7	3.3	48	30	37	24
60	KH3492	7.3	3.3	68	28	61	31

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(Continued)

Table 4. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during summer 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
61	DLFPS-340/3455	8.3	3.0	85	35	85	35
62	NAI-14-128	5.0	3.0	58	35	43	24
63	DLFPS-340/3553	8.7	3.0	90	30	85	34
64	Shamrock	8.0	2.7	77	35	65	27
65	AKB3128	8.0	2.7	85	33	82	22
66	NK-1	8.0	2.7	73	30	87	32
67	Finish Line (NAI-14-178)	5.7	2.7	58	27	60	29
68	PST-K15-157	6.7	2.7	68	25	64	23
69	DLFPS-340/3548	4.7	2.3	50	35	46	30
70	A16-17	4.7	2.3	43	33	54	34
71	Aviator II (NAI-15-84)	8.3	2.3	85	28	85	41
72	MVS-130	5.3	2.3	55	28	42	21
73	Comanche (NAI-14-176)	5.0	2.3	55	23	43	22
74	BAR PP 71213	3.7	2.0	47	27	39	14
75	DLFPS-340/3549	6.0	2.0	57	25	63	25
76	PPG-KB 1320	6.7	2.0	75	23	63	25
77	Heartland (NAI-14-187)	4.3	2.0	48	20	38	14
78	DLFPS-340/3444	7.0	1.7	68	23	69	30
79	RAD-1776	7.3	1.7	70	23	64	26
80	NAI-14-122	4.7	1.7	53	23	41	19

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(Continued)

Table 4. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during summer 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
81	Yellowstone (A12-7)	2.7	1.7	33	17	27	17
82	Orion (PST-K13-143)	7.7	1.3	72	20	62	17
83	Paloma (PST-K13-139)	3.7	1.3	35	17	39	11
84	NAI-14-132	4.3	1.3	47	15	41	15
85	A16-1	5.0	1.3	43	15	45	14
86	NAI-15-80	7.3	1.3	75	13	76	19
87	RAD 553	5.3	1.3	43	13	52	17
88	PST-T14-39	5.7	1.0	53	13	55	18
89	Blue Knight	3.0	1.0	40	12	33	16
90	A11-38	1.0	1.0	23	5	24	5
	LSD (down; columns) at 5% =	2.0		19		16	
	LSD (across; rows) at 5% =	1.7		14		13	

¹9 = most complete turf cover

²100% = full canopy

³100% = complete green cover; measured by digital image analysis

⁴Sixteen machine passes were applied using the Rutgers Wear Simulator (RWS; 8 passes) and Cady Traffic Simulator (CTS; 8 passes) during 27 July to 7 August 2020.

Table 5. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during autumn 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³	
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic
	-----1 to 9 Scale-----			-----0 to 100% Scale-----		
1 BAR PP 7K426	9.0	7.0	95	73	96	82
2 DLFPS-340/3552	9.0	6.3	98	65	96	71
3 NuRush (J-3510)	9.0	5.7	98	57	97	84
4 PST-K15-167	9.0	4.7	98	52	96	76
5 PST-11-7	8.7	4.0	97	43	97	77
6 PPG-KB 1131	9.0	5.3	100	60	98	86
7 Blue Devil	9.0	5.3	95	53	98	85
8 PST-K15-172	9.0	5.3	98	53	97	74
9 BAR PP 79494	9.0	5.3	97	57	98	83
10 After Midnight	9.0	5.3	100	53	98	86
11 United (NAI-13-14)	8.7	5.3	95	57	98	80
12 DLFPS-340/3494	9.0	4.7	93	50	98	74
13 BAR PP 7309V	9.0	5.7	95	62	97	85
14 DLFPS-340/3550	9.0	4.3	97	48	97	66
15 Cloud (GO-2425)	8.7	3.7	97	37	98	68
16 Barvette HGT	9.0	7.7	100	82	97	85
17 Bombay (GO-22B23)	9.0	4.3	100	43	98	70
18 J-1138	9.0	5.7	97	62	98	83
19 Twilight (NAI-13-132)	9.0	4.0	95	48	98	77
20 Midnight	9.0	3.7	98	45	98	70

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(Continued)

Table 5. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during autumn 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
21	Skye	9.0	3.0	98	37	98	56
22	PST-K13-141	9.0	4.7	97	47	98	68
23	A11-40	9.0	3.7	100	48	98	62
24	Blue Gem (NAI-13-9)	9.0	4.3	100	55	98	78
25	DLFPS-340/3438	8.3	2.0	92	37	93	40
26	Starr (GO-2628)	9.0	2.7	98	30	98	58
27	Prosperity	8.7	6.0	93	57	98	84
28	AKB3179	9.0	3.3	100	42	97	50
29	Selway	8.7	2.3	95	42	98	65
30	J-1319	9.0	3.0	98	33	98	61
31	New Moon (PST-K15-177)	9.0	4.3	100	47	97	75
32	A13-1	9.0	4.7	93	45	97	74
33	PPG-KB 1304	9.0	4.0	95	42	97	61
34	Jersey (NAI-A16-3)	8.7	3.7	95	43	98	65
35	J-2726	8.3	3.7	85	40	97	68
36	A15-6	8.7	3.7	90	38	98	58
37	Syrah (LTP-11-41)	9.0	4.7	100	53	98	76
38	DLFPS-340/3556	7.7	4.3	87	45	97	70
39	DLFPS-340/3500	9.0	4.0	97	40	97	71
40	Unknown	8.7	4.0	95	43	97	68

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(Continued)

Table 5. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during autumn 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³	
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic
	-----1 to 9 Scale-----			-----0 to 100% Scale-----		
41 A12-34	8.7	2.3	93	30	96	53
42 A06-8	8.3	3.7	90	35	98	57
43 BAR PP 7236V	9.0	4.3	95	40	98	65
44 PST-K11-118	8.3	3.0	92	30	98	49
45 A99-2897	8.3	3.3	92	38	97	59
46 Kenblue	8.0	2.7	87	32	96	47
47 A11-26	8.3	4.3	90	45	97	70
48 DLFPS-340/3551	9.0	3.7	98	37	97	55
49 DLFPS-340/3364	8.0	2.3	87	23	97	49
50 Pivot	9.0	2.7	93	27	97	56
51 AKB3241	9.0	2.7	95	37	95	38
52 A10-280	8.7	2.7	88	32	97	50
53 Barserati (BAR PP 110358)	9.0	3.3	98	32	98	53
54 BAP PP 79366	8.3	3.7	90	38	98	72
55 A16-7	8.3	2.7	92	32	98	50
56 A16-2	9.0	3.7	98	40	98	56
57 Babe	8.0	3.7	82	35	98	64
58 DLFPS-340/3446	7.7	2.7	82	23	95	46
59 Amaze (NAI-14-133)	6.3	1.7	68	20	95	42
60 KH3492	8.7	2.7	85	32	98	58

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(Continued)

Table 5. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during autumn 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
61	DLFPS-340/3455	8.0	4.3	88	38	97	72
62	NAI-14-128	7.7	2.7	77	23	94	54
63	DLFPS-340/3553	8.7	2.0	97	23	98	38
64	Shamrock	8.3	3.7	90	32	97	56
65	AKB3128	9.0	2.7	97	35	97	44
66	NK-1	8.0	1.3	88	15	90	29
67	Finish Line (NAI-14-178)	7.3	3.3	73	33	98	77
68	PST-K15-157	7.3	1.3	82	15	97	39
69	DLFPS-340/3548	7.3	3.3	82	28	97	67
70	A16-17	6.3	3.3	68	38	97	73
71	Aviator II (NAI-15-84)	8.3	2.3	88	27	98	50
72	MVS-130	7.0	2.0	83	30	96	53
73	Comanche (NAI-14-176)	7.0	2.0	77	27	95	49
74	BAR PP 71213	7.0	2.7	72	33	96	57
75	DLFPS-340/3549	8.3	2.3	85	32	97	55
76	PPG-KB 1320	8.0	1.3	90	15	97	37
77	Heartland (NAI-14-187)	7.0	1.3	70	15	93	34
78	DLFPS-340/3444	8.0	2.3	87	23	97	60
79	RAD-1776	8.7	2.0	92	18	96	39
80	NAI-14-122	7.0	1.3	75	15	95	45

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(Continued)

Table 5. Uniformity of turf cover, fullness of turf canopy, and green cover as affected by the interaction of traffic and Kentucky bluegrass entry during autumn 2020.

Kentucky bluegrass entry	Uniformity of Turf Cover ¹		Fullness of Turfgrass Canopy ²		Green Cover ³		
	No Traffic	Traffic ⁴	No Traffic	Traffic	No Traffic	Traffic	
	-----1 to 9 Scale-----			-----0 to 100% Scale-----			
81	Yellowstone (A12-7)	5.7	2.7	63	37	96	62
82	Orion (PST-K13-143)	8.7	1.7	88	25	97	41
83	Paloma (PST-K13-139)	6.7	1.7	72	17	97	48
84	NAI-14-132	6.3	1.0	72	12	94	28
85	A16-1	6.7	2.0	73	25	97	50
86	NAI-15-80	7.7	1.3	83	10	98	28
87	RAD 553	7.7	2.0	77	23	97	49
88	PST-T14-39	7.7	2.3	82	25	97	57
89	Blue Knight	6.7	1.7	75	23	95	45
90	A11-38	5.3	1.3	55	18	92	32
LSD (down; columns) at 5% =		1.5		16		15	
LSD (across; rows) at 5% =		1.4		15		16	

¹9 = most complete turf cover

²100% = full canopy

³100% = complete green cover; measured by digital image analysis

⁴Thirty-two machine passes were applied using the Rutgers Wear Simulator (RWS; 16 passes) and Cady Traffic Simulator (CTS; 16 passes) during 5 to 27 October 2020.

Table 6. Performance of Kentucky bluegrass entries without traffic; includes all entries of the 2017 NTEP Kentucky Bluegrass Test.

Kentucky bluegrass entry	-----Turf Quality ¹ -----				Spring Green-up ² 8-Apr-20	Seed- heads ³ 28-May-20	
	2018-20 Avg.	2018 Avg.	2019 Avg.	2020 Avg.			
	-----1 to 9 scale-----						
1	Bombay (GO-22B23)	8.2	8.6	8.1	7.8	6.0	8.7
2	Starr (GO-2628)	7.8	8.3	7.8	7.5	6.3	9.0
3	After Midnight	7.6	7.8	8.0	7.0	2.7	9.0
4	Jersey (NAI-A16-3)	7.6	8.6	8.1	6.0	6.3	9.0
5	Cloud (GO-2425)	7.5	8.1	7.5	6.9	5.3	8.7
6	PST-K15-172	7.2	7.6	7.2	6.7	4.7	8.7
7	PPG-KB 1131	7.1	7.6	6.8	6.8	1.0	8.7
8	Skye	7.0	7.1	6.7	7.3	5.7	8.0
9	A11-26	7.0	8.4	7.4	5.1	5.3	9.0
10	Blue Devil	7.0	7.3	6.7	6.8	1.3	8.0
11	NuRush (J-3510)	6.8	7.6	6.4	6.5	2.0	9.0
12	J-1138	6.8	8.1	6.0	6.2	1.0	9.0
13	A11-40	6.7	6.6	6.4	7.2	6.7	9.0
14	Twilight (NAI-13-132)	6.7	7.5	6.1	6.4	1.3	8.3
15	A16-2	6.7	6.8	6.6	6.5	7.0	9.0
16	PST-K11-118	6.7	7.5	7.2	5.2	7.7	9.0
17	Prosperity	6.6	7.8	7.0	5.1	1.7	8.7
18	New Moon (PST-K15-177)	6.6	6.9	6.7	6.3	3.3	7.7
19	Blue Gem (NAI-13-9)	6.6	6.8	6.2	6.8	1.3	9.0
20	Barserati (BAR PP 110358)	6.6	7.2	6.5	6.2	8.0	7.7
21	PST-K15-167	6.6	7.7	6.6	5.4	2.3	6.0
22	KH3492	6.6	7.7	7.3	4.7	7.0	9.0
23	AKB3179	6.6	6.6	6.0	7.0	4.0	7.3
24	Midnight	6.6	6.9	6.2	6.6	1.0	8.3
25	J-2726	6.5	7.9	7.1	4.6	1.3	8.3
26	PST-11-7	6.4	7.4	6.4	5.5	3.7	7.7
27	BAR PP 79494	6.4	7.5	5.8	5.8	1.0	8.7
28	Barvette HGT	6.4	7.1	6.1	5.9	8.0	9.0
29	Orion (PST-K13-143)	6.2	7.6	5.9	5.0	7.0	8.7
30	Syrah (LTP-11-41)	6.2	6.8	5.6	6.0	4.7	9.0
31	United (NAI-13-14)	6.1	7.3	5.4	5.6	1.0	8.7
32	DLFPS-340/3550	6.1	6.7	5.7	5.9	6.0	6.3
33	Babe	6.1	7.1	6.3	4.9	6.3	9.0
34	Selway	6.0	6.6	6.1	5.4	8.0	9.0
35	BAR PP 7236V	6.0	7.1	5.7	5.3	8.0	9.0

(Continued)

Table 6. Performance of Kentucky bluegrass entries without traffic; includes all entries of the 2017 NTEP Kentucky Bluegrass Test.

Kentucky bluegrass entry	-----Turf Quality ¹ -----				Spring Green-up ² 8-Apr-20	Seed- heads ³ 28-May-20
	2018-20 Avg.	2018 Avg.	2019 Avg.	2020 Avg.		
	-----1 to 9 scale-----					
36 PPG-KB 1304	6.0	6.9	5.9	5.2	8.3	9.0
37 J-1319	6.0	7.0	5.5	5.5	1.7	6.3
38 DLFPS-340/3500	6.0	6.6	6.0	5.4	1.7	7.7
39 Finish Line (NAI-14-178)	6.0	7.0	7.0	3.9	7.7	9.0
40 BAR PP 71213	5.9	7.6	6.7	3.6	8.0	9.0
41 DLFPS-340/3549	5.9	7.3	6.7	3.8	5.0	9.0
42 DLFPS-340/3552	5.9	6.6	5.1	6.0	5.0	3.0
43 AKB3128	5.9	6.9	5.2	5.6	7.3	2.7
44 PPG-KB 1320	5.9	6.4	6.2	4.9	4.0	9.0
45 Shamrock	5.8	6.6	6.0	4.8	6.7	9.0
46 DLFPS-340/3553	5.8	6.8	4.9	5.6	8.0	9.0
47 Pivot	5.8	6.4	4.8	6.1	6.0	9.0
48 AKB3241	5.7	6.1	5.0	6.0	6.7	7.3
49 BAR PP 7K426	5.6	6.3	5.2	5.3	4.7	7.7
50 PST-T14-39	5.6	6.8	6.6	3.3	8.0	8.7
51 DLFPS-340/3556	5.6	6.8	5.4	4.5	1.3	7.0
52 DLFPS-340/3444	5.5	6.1	5.7	4.8	7.0	9.0
53 Yellowstone (A12-7)	5.5	6.4	6.9	3.1	6.3	9.0
54 Paloma (PST-K13-139)	5.4	7.2	5.9	3.2	6.3	8.7
55 BAP PP 79366	5.4	7.0	5.2	4.0	1.3	6.3
56 A11-38	5.4	7.2	6.7	2.4	5.3	9.0
57 DLFPS-340/3494	5.4	7.0	5.2	3.9	1.0	8.3
58 DLFPS-340/3455	5.3	5.4	5.6	5.0	7.3	9.0
59 BAR PP 7309V	5.3	5.6	4.8	5.4	5.0	7.7
60 DLFPS-340/3551	5.2	6.1	4.6	5.0	5.3	5.3
61 DLFPS-340/3548	5.2	6.7	5.8	3.2	5.3	9.0
62 A16-17	5.2	6.2	6.2	3.2	8.0	9.0
63 A06-8	5.2	5.7	5.2	4.6	4.7	7.3
64 A16-1	5.0	6.1	5.5	3.5	7.0	9.0
65 Unknown	5.0	5.4	5.1	4.4	6.7	8.7
66 A15-6	4.9	5.7	4.6	4.4	6.0	4.7
67 DLFPS-340/3438	4.8	5.7	4.4	4.4	6.0	7.7
68 RAD-1776	4.8	5.6	4.6	4.1	8.0	9.0
69 A99-2897	4.7	5.9	3.8	4.3	5.3	5.7
70 PST-K13-141	4.6	4.9	4.2	4.8	6.0	7.3

(Continued)

Table 6. Performance of Kentucky bluegrass entries without traffic; includes all entries of the 2017 NTEP Kentucky Bluegrass Test.

Kentucky bluegrass entry	-----Turf Quality ¹ -----				Spring Green-up ² 8-Apr-20	Seed- heads ³ 28-May-20
	2018-20 Avg.	2018 Avg.	2019 Avg.	2020 Avg.		
	-----1 to 9 scale-----					
71 MVS-130	4.6	4.8	5.0	3.9	2.7	9.0
72 DLFPS-340/3446	4.6	5.4	4.3	4.0	6.0	8.0
73 A12-34	4.6	5.2	4.2	4.2	5.7	3.7
74 NAI-14-128	4.5	5.1	5.0	3.5	2.3	8.7
75 A16-7	4.5	4.7	4.2	4.7	2.7	5.7
76 A13-1	4.5	5.7	3.8	4.0	4.0	9.0
77 A10-280	4.4	4.9	4.1	4.1	4.3	8.7
78 RAD 553	4.3	6.0	4.3	2.6	5.3	9.0
79 Aviator II (NAI-15-84)	4.3	4.7	4.2	4.0	3.0	9.0
80 NAI-14-122	4.3	4.6	5.0	3.2	4.7	8.7
81 Heartland (NAI-14-187)	4.2	4.6	4.9	3.2	3.0	8.7
82 Comanche (NAI-14-176)	4.2	4.6	4.6	3.4	2.7	8.0
83 Kenblue	3.9	4.0	4.3	3.4	9.0	9.0
84 Blue Knight	3.9	5.2	4.1	2.2	2.3	8.3
85 PST-K15-157	3.8	4.7	3.8	3.0	6.7	8.3
86 Amaze (NAI-14-133)	3.8	4.1	4.0	3.1	2.3	8.3
87 NAI-14-132	3.7	4.6	3.9	2.6	2.7	8.7
88 DLFPS-340/3364	3.0	3.1	2.7	3.2	3.0	5.3
89 NK-1	2.9	4.1	2.0	2.6	5.3	5.3
90 NAI-15-80	2.6	3.1	2.0	2.7	6.3	7.7
LSD at 5% =	0.9	0.9	1.2	1.3	1.5	1.0
CV	9.5	9.1	13.1	17.0	19.6	7.9

¹9 = best quality

²9 = earliest spring green-up

³9 = least seedheads