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2021 Creeping Bentgrass Putting Green National Turfgrass Evaluation Program Trial

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Abstract

Creeping bentgrass (*Agrostis stolonifera* L.) is the most common cool-season grass used for putting surfaces in Kansas and other temperate regions of the world. Fine-textured and high-density cultivars ('Penn A-1', 'Penn A-2', and 'Penn A-4') released in the late 1990s are widely accepted throughout the transition zone. However, new cultivars with attractive characteristics continue to be selected, evaluated, and introduced to determine their long-term suitability for Kansas.

Keywords

bentgrass, putting green, National Turfgrass Evaluation Program, NTEP

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TURFGRASS RESEARCH 2022



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2021 Creeping Bentgrass Putting Green National Turfgrass Evaluation Program Trial

Dani McFadden and Jack D. Fry

Summary

Creeping bentgrass (*Agrostis stolonifera* L.) is the most common cool-season grass used for putting surfaces in Kansas and other temperate regions of the world. Fine-textured and high-density cultivars ('Penn A-1', 'Penn A-2', and 'Penn A-4') released in the late 1990s are widely accepted throughout the transition zone. However, new cultivars with attractive characteristics continue to be selected, evaluated, and introduced to determine their long-term suitability for Kansas.

Rationale

The National Turfgrass Evaluation Program (NTEP) coordinates evaluation trials of turfgrass species nationwide. These trials evaluate cultivars for their adaptation to local areas and level of turf maintenance. Milburn Country Club in Overland Park, KS, was selected as an ancillary trial site for the 2020 National Bentgrass (Putting Green) Test.

Objective

The objective of this study was to evaluate seeded bentgrass cultivars under golf course putting green conditions in northeast Kansas and submit data to the National Turfgrass Evaluation Program.

Study Description

On September 24, 2020, bentgrass cultivars and experimental accessions were planted in 4 × 4-ft experimental plots in a randomized complete block design with three replications at Milburn Country club in Overland Park, KS (Figure 1). Seed was mixed with 65 g of organic fertilizer (Milorganite, 6-2-0) per experimental plot

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and distributed across each plot with a shaker bottle in multiple directions. Irrigation ran daily during establishment then when necessary to prevent stress thereafter. After establishment, bentgrass cultivars were maintained at .110 to .125 in. Core cultivation, grooming, and topdressing occurred throughout the 2020 season to minimize thatch development. Regular fertilizer and fungicide applications were made throughout the 2020-2022 growing season (Tables 3, 4). Data collection in 2021 consisted of: spring green-up, quality, and density rated visually on a scale of 1 to 9 (1 = poorest; 9 = best).

Results

At 7, 10, 12, and 13 months after planting, visual quality data were recorded as a measure of cultivar quality. Experimental accessions DLFPS-AP-3084, LNS 19, PPG-AP-MTV1, PPG-AP-MTV2, PVF-PV-1, and S1 had similar or higher turfgrass quality when compared to commercially available bentgrass cultivars (Table 1). On April 27, 2021 many of the cultivars had significant spring green-up; only Penncross, CY-4, PSU-CBG3, PFV-PV-2, and PST-OH12 were significantly lower in green color (Table 2). Bentgrass density rated on April 27, 2021 revealed CY-4, S1, DLFPS-AP-3084, PPG-AP-MTV1, and PPG-AP-MTV2 were similar or higher in density compared to the commercially available cultivars Penncross, Penn A-1, Piranha, and Barracuda. During the heat of summer in July 2021 many bentgrass cultivars maintained acceptable density; 007XL, Barracuda, and PST-OH12 had an average density of ≤ 7 . In October 2021 cultivars with a density rating of ≤ 7 included DLFPS-AP-3084, PVF-PV-1, PVF-PV-2, LNS 19, PPG-AP-MTV1, PPG-AP-MTV2, PST-OH12, and L-93 XD (Figure 2).

The 2021 National Bentgrass Test progress report is available online at: <http://www.ntep.org/>.

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Table 1. Quality of creeping bentgrass cultivars at Milburn Country Club in Overland Park, KS, in 2021

Cultivar/accession number	Quality ^{a,b}			
	April	July	September	October
Penncross*	5.3b ^c	5.7a-c	5.7b-d	4.7d
Penn A-1*	5.3b	6.7a	6.7ab	6.7ab
007XL	5.3b	6.7a	6.0a-d	6.3a-c
CY-4	5.7ab	5.7a-c	6.0a-d	6.0bc
S1	6.0ab	6.3ab	6.0a-d	6.7ab
Piranha*	5.7ab	6.0a-c	6.7ab	6.3a-c
Barracuda*	6.7a	7.0a	7.0a	7.0ab
PSU-CBG1	4.0c	4.7cd	5.7b-d	5.3cd
PSU-CBG2	4.0c	4.7cd	5.0d	6.0bc
PSU-CBG3	3.7c	4.0d	5.0d	4.7d
DLFPS-AP-3084	5.7ab	7.0a	7.0a	7.3a
PVF-PV-1	5.7ab	6.0a-c	6.3a-c	7.0ab
PVF-PV-2	5.3b	6.7a	6.0a-d	6.0bc
Declaration*	5.7ab	5.7a-c	6.0a-d	6.0bc
LNS 19	5.7ab	5.7a-c	7.0a	6.7ab
PPG-AP-MTV1	6.3ab	6.3ab	7.0a	7.0ab
PPG-AP-MTV2	6.0ab	6.3ab	6.7ab	7.3a
PST-0DSF	5.3b	5.0b-d	5.3cd	4.3d
PST-OH12	5.3b	6.3ab	7.0a	6.7ab
L-93 XD*	5.3b	6.0a-c	6.3a-c	7.0ab

^a Quality was rated visually based on a scale of 1 to 9 (1 = poorest quality; 6 = acceptable quality; 9 = optimum color, texture, density, uniformity).

^b Bentgrass quality was rated on April 27, July 26, September 13, and October 25, 2021.

^c Means followed by the same lowercase letters in a row are not statistically different according to Tukey's HSD ($P \leq 0.05$).

* Commercially available in the U.S. or any other country.

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Table 2. 2021 spring green-up and density of creeping bentgrass cultivars at Milburn Country Club in Overland Park, KS

Cultivar/accession number	Spring green-up ^a		Density ^b	
	April	April	July	October
Penncross*	6.3b ^c	6.0a-c	5.7cd	5.3e
Penn A-1*	7.0a	6.0a-c	6.3a-c	6.3b-e
007XL	7.0a	5.3b-d	7.0ab	6.7a-d
CY-4	6.3b	6.3ab	5.7cd	6.3b-e
S1	7.0a	6.3ab	6.0bc	6.0c-e
Piranha*	7.0a	6.3ab	6.0bc	6.0c-e
Barracuda*	7.0a	7.3a	7.3a	6.7a-d
PSU-CBG1	7.0a	4.7cd	6.0bc	7.0a-c
PSU-CBG2	6.7ab	4.3d	5.7cd	6.3b-e
PSU-CBG3	6.3b	4.3d	4.7d	6.3b-e
DLFPS-AP-3084	7.0a	6.0a-c	6.7a-c	7.7a
PVF-PV-1	6.7ab	5.7b-d	6.0bc	7.7a
PVF-PV-2	6.3b	5.3b-d	6.7a-c	7.3ab
Declaration*	7.0a	5.7b-d	6.0bc	6.0c-e
LNS 19	7.0a	5.7b-d	5.7cd	7.3ab
PPG-AP-MTV1	7.0a	6.7ab	6.0bc	7.0a-c
PPG-AP-MTV2	6.7ab	6.0a-c	6.7a-c	7.3ab
PST-0DSF	7.0a	5.3b-d	5.7cd	5.7de
PST-OH12	6.3b	5.3b-d	7.0ab	7.0a-c
L-93 XD*	7.0a	5.7b-d	6.7a-c	7.0a-c

^a Spring green-up rated on April 27, 2021, was rated visually based on a scale of 1 to 9 (1 = brown turf, 6 = acceptable color, and 9 = optimum green color).

^b Density rated on April 27, July 26, and October 10, 2021, was rated visually based on a scale of 1 to 9 (1 = void of turf, 6 = acceptable density, and 9 = maximum density).

^c Means followed by the same lowercase letters in a row are not statistically different according to Tukey's HSD ($P \leq 0.05$).

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Table 3. Fertilizer applications on creeping bentgrass cultivars at Milburn Country Club in Overland Park, KS

Date of application	Product (and N-P ₂ O ₅ -K ₂ O analysis)	Rate (lbs of product/1,000ft ²)
11/23/2020	EC Grow Prolinks 10-18-20	6
3/31/2021	Andersons Genesis 5-7-5	7.5
3/31/2021	ATS 13-2-13 100% Ammonium Sulfate	3.75
9/21/2021	Andersons Genesis 5-7-5	5.36
9/21/2021	17-0-17	4.6
11/8/2021	Leb 18-0-18 64% Meth-Ex GG	4.6
3/24/2022	Andersons Genesis 5-7-5	7.5
3/24/2022	ATS 13-2-13 100% Ammonium Sulfate	5
11/8/2021	Leb 18-0-18 64% Meth-Ex GG	4.6

Table 4. Fungicide applications on creeping bentgrass cultivars at Milburn Country Club in Overland Park, KS

Date of application	Product	Rate of product (oz/1,000ft ²)
12/21/2020	Instrata	5
4/15/2021	Exterris Stressguard	5
4/19/2021	Maxtima Fungicide	0.60
5/10/2021	Insignia SC	0.7
5/14/2021	Medallion	0.8
5/25/2021	Segway	0.4
6/1/2021	Exterris Stressguard	5
6/3/2021	Daconil Action	3.26
6/3/2021	Signature Xtra	3.6
6/17/2021	Insignia SC	0.7
6/21/2021	Segway	0.4
7/1/2021	Daconil Action	3.26
7/1/2021	Signature Xtra	3.6
7/16/2021	Insignia SC	0.7
7/22/2021	Azoxy 2SC	0.39
7/27/2021	Segway	0.4
7/27/2021	Daconil Action	3.26
7/27/2021	Signature Xtra	2.7

continued



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Table 4. Fungicide applications on creeping bentgrass cultivars at Milburn Country Club in Overland Park, KS

Date of application	Product	Rate of product (oz/1,000ft²)
8/5/2021	Insignia SC	0.7
8/12/2021	Daconil Action	3.26
8/12/2021	Signature Xtra	2.7
8/29/2021	Insignia SC	0.7
8/26/2021	Daconil Action	3.26
8/26/2021	Signature Xtra	2.7
9/2/2021	Briskway	0.5
9/14/2021	Maxtima Fungicide	1.1
9/30/2021	Xzemplar	0.17
12/28/2021	Instrata	3.2
4/14/2022	Exterris Stressguard	5
5/2/2022	Insignia SC	0.7
5/6/2022	Maxtima	0.6
5/20/2022	Fluazinam 40SC	0.49
5/20/2022	Signature Xtra	2.7
6/1/2022	Segway	0.45
6/2/2022	Lexicon	0.42
6/14/2022	Exterris Stressguard	5
6/16/2022	Daconil Action	3.26
6/16/2022	Signature Xtra	3.6
6/23/2022	Insignia SC	0.4
6/30/2022	Daconil Action	3.6
6/30/2022	Azoxy 2SC	0.39
7/6/2022	Segway	0.45
7/7/2022	Fluazinam 40SC	0.49
7/7/2022	Signature Xtra	3.6
7/14/2022	Insignia SC	0.4
7/21/2022	Daconil Action	3.6
7/21/2022	Signature Xtra	2.7

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Figure 1. Bentgrass cultivars and experimental accessions being planted on September 24, 2020, at Milburn Country Club in Overland Park, KS.



Figure 2. National Turfgrass Evaluation Program trial area in October of 2021, 13 months after seeding.



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