

Summary of the 2008 NTEP Bentgrass Fairway/Tee Trial- Establishment



Photo by Josh Summerford

Establishment of the 2008 NTEP tee and fairway trial

Josh Summerford¹, Doug Karcher¹,
Mike Richardson¹, and Aaron Patton²

Additional index words: *Agrostis stolonifera*, *Agrostis capillaris*, colonial bentgrass, creeping bentgrass, turfgrass, cultivars, fairway, digital image analysis.

Summerford, J., D. Karcher, M. Richardson, and A. Patton. 2009. Summary of 2008 NTEP bentgrass fairway/tee trial-establishment. Arkansas Turfgrass Report 2008, Ark. Ag. Exp. Stn. Res. Ser. 568:127-131.

Summary. Creeping bentgrass is a commonly used turfgrass species for golf course fairways throughout the northern and central United States. Improvements in heat tolerance and disease resistance have resulted in attempts to use this species as a fairway or tee grass in more southern environments. Identifying cultivars that are well-adapted to the region is a focus of the University of Arkansas turfgrass research program. The National Turfgrass Evaluation Program is the predominant means by which cultivars are tested throughout North America. A bentgrass cultivar trial, including selections of creeping and colonial

bentgrass was planted in the fall of 2008 at the Arkansas Agricultural Research and Extension Center in Fayetteville, Ark. The trial was maintained at a 1.0 inch mowing height during establishment, and data on turfgrass establishment were collected. Overall the creeping bentgrass cultivars generally had higher establishment vigor than colonial bentgrass. There were significant differences among cultivars with regard to green turfgrass coverage during establishment.

Abbreviations: NTEP, National Turfgrass Evaluation Program

¹ University of Arkansas, Department of Horticulture, Fayetteville, Ark. 72701

² University of Arkansas, Cooperative Extension Service, Department of Horticulture, Fayetteville, Ark. 72701

Creeping bentgrass (*Agrostis stolonifera*) is the predominate turfgrass species used for golf course putting greens in northern and central Arkansas; however, its use on other golf course areas, such as fairways or tees, has not been evaluated. Over the past several decades, improvements in heat tolerance and disease resistance have warranted the evaluation of this species for golf course fairways in the transition zone.

The National Turfgrass Evaluation Program (NTEP) is an organization within the U.S. Department of Agriculture that annually oversees turfgrass cultivar evaluation experiments at various sites throughout the U.S. and Canada. Each turfgrass species is tested on a four to five year cycle at sites throughout the growing region for that particular species. The University of Arkansas has been an active participant in the NTEP and was awarded a site for the 2008 NTEP Bentgrass Fairway/Tee Trial which included both creeping bentgrass and colonial bentgrass (*Agrostis capillaris*) cultivars. This is the first time that this particular study has been conducted at the University of Arkansas. When seeding a new fairway, rapid establishment is important to make the area playable as quickly as possible. Rapid establishment can also reduce weed pressure, which enhances turf quality and reduces costs associated with weed control. The objective of this study was to evaluate the establishment rate of 27 creeping and colonial bentgrasses included in the 2008 NTEP Bentgrass Trial at Fayetteville, Ark.

Materials and Methods

This cultivar trial was planted on 1 October 2008 at the Arkansas Agricultural Research and Extension Center in Fayetteville on a silt loam, native soil rootzone with an average pH of 6.2. Twenty-three cultivars (Table 1) were officially included in the 2008 NTEP Bentgrass Fairway/Tee Trial, and an additional four cultivars were included at the Arkansas site (Alister, Tyee, SR-1020, and Pennlinks II/Penneagle II blend) due to their common use in this region as putting green turf or superior performance in past

putting green trials. Each entry was broadcast seeded into four replicate 6 by 6 ft plots at a seeding rate of 1.1 lb/1000 ft². Milorganite fertilizer (6-2-0) was applied with the seed at a rate of 1 lb N/1000 ft² to provide adequate nutrition for germination. Following seeding, each plot was individually raked to ensure even distribution of the seed as well as to increase seed-to-soil contact. The trial area was covered with a germination blanket to help maintain soil moisture and buffer surface temperatures. Following germination, the cover was removed and data collection initiated. Plots were maintained at a mowing height of 1" using a walk mower, beginning at six weeks after planting, and plots were fertilized at 0.5 lb N/1000 ft² per month of active growth. Irrigation was applied once daily during establishment to promote germination and as needed thereafter to avoid drought stress.

Plots were visually rated for seedling vigor on a 1 to 9 scale (1 = no germination, 9 = excellent germination) on 21 October 2008 (3 wks after seeding). Cultivars were evaluated weekly using digital image analysis to determine percent turfgrass cover. Two digital images were taken per plot using a light box to ensure uniform lighting conditions throughout all evaluations.

Results and Discussion

Establishment vigor. There were significant differences in establishment vigor among bentgrass cultivars at three weeks after seeding (Table 1). Eleven bentgrass cultivars ranked the highest in establishment vigor for this trial, including ten creeping bentgrass cultivars and one colonial bentgrass cultivar. The ten creeping bentgrass cultivars were Penncross, 007, CY-2, LTP-FEC, Pennlinks II/Penneagle II, Princeville, A08-TDN2, Authority, L-93, and Memorial. The colonial bentgrass cultivar that ranked in the top group was A08-EBM. Two colonial bentgrass cultivars, Alister and Greentime, ranked significantly lower than the highest group.

Green turfgrass coverage. There were significant differences in green turfgrass coverage among bentgrass cultivars in the trial only on

the first two evaluations dates (Table 2). Overall, twenty-three cultivars ranked in the top statistical group; however, only four were significantly different from the bottom three performing cultivars. The highest four ranking cultivars on 27 October 2008, were all creeping bentgrass cultivars and included Penncross, Crystal Bluelinks, Princeville, and Declaration. Of the lowest three ranking entries, there was one creeping bentgrass, PST-OJD, and two colonial bentgrasses, Greentime and Alister. The bottom two ranking entries, both colonial bentgrasses, were also the two lowest ranking entries in establishment vigor (Table

1). Establishment will continue to be monitored throughout the winter and spring until complete turfgrass coverage is obtained.

Overall, the creeping bentgrass species was the better performing species of the two in this study, indicating that creeping bentgrass would be a better choice when speed of establishment is an important factor in cultivar selection. Data on turf quality, cover, color, abiotic stress tolerance, and biotic pest resistance will be collected from 2009 – 2012 for this study and reported in future issues of the Arkansas Turfgrass Report.

Table 1. Turf establishment vigor ratings for creeping and colonial bentgrass cultivars in the 2008 NTEP Bentgrass fairway/tee trial. Cultivars are listed by rank, from best to worst establishment vigor, for the 21 October 2008 evaluation date (3 weeks after seeding).

Entry	Species	Establishment vigor	
		21 Oct.	
		-----	1.9 -----
Penncross	Creeping		8.0
007	Creeping		7.3
CY-2	Creeping		7.3
LTP-FEC	Creeping		7.3
PennlinksII/Penneagle II ^y	Creeping		7.3
Princeville	Creeping		7.3
A08-EBM ^z	Colonial		7.0
A08-TDN2 ^z	Creeping		7.0
Authority	Creeping		7.0
L-93	Creeping		7.0
Memorial	Creeping		7.0
Crystal Bluelinks	Creeping		6.7
PST-OJD ^z	Creeping		6.7
SR-1020 ^y	Creeping		6.7
SRP-1WM ^z	Creeping		6.7
T-1	Creeping		6.7
BCD	Colonial		6.3
Benchmark DSR	Creeping		6.3
Declaration	Creeping		6.3
MVS-Ap-101 ^z	Creeping		6.3
Tyee ^y	Creeping		6.3
A08-FT12 ^z	Colonial		6.0
HTM	Creeping		6.0
PST-R9D7 ^z	Colonial		6.0
Tiger II	Colonial		6.0
Alister ^y	Colonial		5.7
Greentime	Colonial		5.3
<i>LSD</i> _(0.05)			1.3

^y Not an official entry of the 2008 NTEP bentgrass trial and was included as an Arkansas standard.

^z Entry is experimental and at this time not commercially available.

Table 2. Green turfgrass coverage ratings for creeping and colonial bentgrass cultivars in the 2008 NTEP Bentgrass fairway/tee trial. Cultivars are listed by rank, from highest to lowest average percent coverage.

Entry	Species	Green turfgrass coverage						Average
		17-Oct	27-Oct	3-Nov	17-Nov	24-Nov	2-Dec	
		------(%)-----						
Penncross	Creeping	98.0	97.4	99.1	98.8	98.4	97.6	98.2
Crystal Bluelinks	Creeping	98.0	96.2	97.6	99.2	99.2	97.9	98.0
Princeville	Creeping	97.6	96.2	97.7	98.8	98.1	97.5	97.6
Declaration	Creeping	96.5	95.0	97.7	98.9	98.9	97.8	97.5
PennlinksII/Penneagle II ^y	Creeping	96.6	92.6	98.0	99.1	98.9	98.0	97.2
007	Creeping	96.9	91.1	98.2	99.2	99.0	97.8	97.1
A08-EBM ^z	Colonial	95.3	92.6	97.6	99.3	99.1	98.3	97.0
A08-TDN2 ^z	Creeping	94.2	93.5	98.4	98.9	98.8	97.7	96.9
SR-1020 ^y	Creeping	95.7	92.0	96.9	98.8	98.7	97.9	96.7
MVS-Ap-101 ^z	Creeping	95.2	90.9	95.8	98.6	98.8	97.2	96.1
Memorial	Creeping	92.9	89.7	96.4	98.8	98.6	97.7	95.7
L-93	Creeping	94.3	89.6	92.8	99.2	99.1	98.0	95.5
PST-R9D7 ^z	Colonial	94.0	87.5	96.8	98.4	97.8	96.9	95.2
SRP-1WM ^z	Creeping	94.7	87.9	96.0	98.8	97.3	96.6	95.2
LTP-FEC ^z	Creeping	95.8	90.4	94.6	97.5	97.0	95.1	95.1
Tiger II	Colonial	91.2	86.2	94.8	99.1	98.6	97.9	94.7
Authority	Creeping	92.4	85.8	94.3	99.0	98.6	97.8	94.6
HTM	Creeping	91.4	86.1	95.3	98.6	98.6	97.5	94.6
BCD	Colonial	90.9	84.8	95.5	99.0	98.9	98.1	94.5
CY-2	Creeping	92.3	86.3	95.5	98.1	98.6	96.5	94.5
A08-FT12 ^z	Colonial	91.5	86.2	94.8	98.7	98.1	97.2	94.4
Tyee ^y	Creeping	89.3	80.3	93.1	97.9	96.3	95.7	92.1
Benchmark DSR	Creeping	93.2	79.9	88.4	96.2	96.3	95.5	91.6
T-1	Creeping	90.4	74.7	91.4	97.2	96.9	94.4	90.8
PST-OJD ^z	Creeping	84.1	78.4	90.8	96.7	97.9	94.6	90.4
Greentime	Colonial	85.1	75.0	91.3	97.9	96.9	94.7	90.2
Alister ^y	Colonial	81.9	67.6	86.5	96.1	94.1	89.8	86.0
<i>LSD</i> _(0.05)		9.0	9.0	NS	NS	NS	NS	NS

^y Not an official entry of the 2008 NTEP bentgrass trial and was included as an Arkansas standard.

^z Entry is experimental and at this time not commercially available.