

2002 NTEP Bermudagrass Trial – Summary

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Photo by Aaron Patton

Bermudagrass cultivar trial at Fayetteville, Ark.

Summary. Bermudagrass (*Cynodon* spp.) continues to be the prevailing turfgrass species used in Arkansas for golf courses, sports fields, home lawns and utility turf situations. Identifying adapted cultivars for the region remains a central focus of the University of Arkansas turfgrass research program. The National Turfgrass Evaluation Program (NTEP) is the predominant means by which cultivars are tested throughout North America. A bermudagrass cultivar trial was planted in the summer of 2002 at Fayetteville, Ark. This trial has been maintained under golf course fairway conditions and data on spring green-up, overall quality, leaf color, leaf texture, and seedhead formation were collected from 2003 to 2006. Across rating dates and years, Tifsport had the highest average qual-

ity rating of 7.1, although Aussie Green, OKC 70-18, Patriot, Premier, Tifway, Midlawn, Celebration, GN-1, and Tifton No. 4, statistically, were rated equal to Tifsport. Tifsport and Celebration are two new varieties being grown in Arkansas that have similar quality to Tifway, which is considered the industry standard for bermudagrass. Results from this study are intended to help residents of Arkansas make informed decisions when selecting turfgrass varieties. Planting well-adapted cultivars will improve turfgrass quality, reduce reestablishment costs from winterkill or drought, and ultimately increase sustainability.

Abbreviations: NTEP, National Turfgrass Evaluation Program.

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Bermudagrass (*Cynodon* spp.) remains the most commonly used turfgrass for golf, sports, lawns and other activities in Arkansas and throughout southern U.S. and transition zone environments. Bermudagrass has many positive attributes that have made it a successful turfgrass species, including good heat and drought tolerance, pest resistance, traffic tolerance, and tolerance to a wide range of soil types and water quality.

The National Turfgrass Evaluation Program (NTEP) is an organization within the US Dept. of Agriculture that annually oversees turfgrass cultivar evaluation experiments at various sites throughout the US 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 has conducted several tests on bermudagrass cultivars over the past 15 years. This report summarizes the data collected at Fayetteville, Arkansas, from 2003 to 2006 for the 2002 NTEP Bermudagrass Trial.

Materials and Methods

The cultivar experiment was planted on 2 July 2002 at the University of Arkansas Research and Extension Center in Fayetteville. The plot size was 8 by 8 ft. and there were three replications of each cultivar. Vegetative cultivars were planted as 2 inch diameter plugs on 12 inch spacings within the plots, while seeded cultivars were broadcast planted at a seeding rate of 1.0 lb / 1000 ft². Plots were maintained under golf course fairway or sports field conditions, with a mowing height of 0.5 inch and monthly applications of 1.0 lb N / 1000ft² during the growing season. Irrigation was applied as needed to promote germination and establishment and to prevent stress.

Overall turf quality was evaluated monthly from May through October in each year of the trial (2003-2006). Quality was visually assessed on a 1 to 9 scale, with 9 representing ideal dark green, uniform, fine-textured turf and 1 representing dead turf. Turf genetic color was visually evaluated on a scale of 1 to 9, with 9 representing ideal, dark green turf and 1 representing tan or brown

turf. Leaf texture was visually evaluated on a scale of 1 to 9, with 9 representing extremely fine turf texture and 1 representing extremely coarse texture. Cultivars were visually evaluated for spring green-up using a scale of 1 to 9, with 9 representing complete green color and 1 representing a completely dormant turf stand

Cultivars were visually assessed for frost damage each fall using a 1 to 9 scale, with 9 representing no frost damage and 1 representing complete leaf kill. Divot recovery was evaluated in two years of the trial using digital image analysis after artificially divoting 3 subsamples per plot (9 per cultivar). Seedheads were rated using a 1 to 9 scale, with 9 representing maximum presence of seedheads and 1 representing no seedheads present. An analysis of variance was computed for each evaluation and cultivar means were separated using Fisher's protected least significant difference test ($\alpha = 0.05$).

Results and Discussion

There were significant differences in turf quality among cultivars across the entire 4-yr study (Table 1). Across the four years of the trial, TifSport had the highest average quality rating of 7.1, although Aussie Green, OKC 70-18, Patriot, Premier, Tifway, Midlawn, Celebration, GN-1, and Tifton No. 4 were statistically equal to TifSport. The cultivars, CIS-CD5, LaPaloma, SR 9554, SWI-1014, Panama, Transcontinental, Mohawk, Southern Star, Arizona Common, Numex Sahara, Sundevil II, and B-14 were all consistently rated low in quality throughout the trial.

There were significant color differences among cultivars during the trial (Table 1). Patriot had the darkest green color with an average rating value of 8.0. GN-1, Aussie Green, Celebration, MS-Choice, TifSport, Tifton No. 4, Sovereign, Tifton No. 1, Premier, Barbados, Yukon, Riviera, and Midlawn were also rated high for color and were statistically equal to Patriot. Conversely, LaPaloma, Numex Sahara, Panama, CIS-CD6, Arizona Common, Mohawk, B-14, and Ashmore were rated lowest for turf color.

There were significant leaf texture differences among cultivars (Table 1). Ashmore, Tifway, Premier, Midlawn, OKC 70-18, Tifsport, Tift No. 4, Patriot, Aussie Green, and SWI-1046 had the finest leaf texture, with average rating values ranging from 6.8-7.8. B-14 had the coarsest leaf texture with a rating of 4.2 and several other cultivars had similar leaf texture ratings.

There were significant differences in spring green-up among cultivars (Table 1). OKC 70-18, Midlawn, and Premier exhibited the earliest spring green-up, with an average rating value of 6.3, 5.5, and 5.3, respectively. Sunsport, Veracruz, GN-1, MS-Choice, SWI-1046, Celebration, Princess 77, SWI-1003, Tifton No. 2, and Tifton No. 1 were the slowest to green-up in spring.

There were significant differences among cultivars in frost tolerance (Table 1). Tifsport, Ashmore, Midlawn, MS-Choice, Premier, Tifway, Sovereign, Celebration, Contessa, Patriot, SWI-1046, Tifton No. 1, Tifton No. 4, and Yukon had the least frost damage.

OKC 70-18, Tifton No. 3, Barbados, Contessa, Patriot, SWI-1014, Aussie Green, Celebration, Tifton No. 2, MS-Choice, Sovereign, Veracruz, Riviera, Tifton No. 1, Tifton No. 4, SWI-1003, Princess 77, Midlawn, and Premier were among the group of cultivars with the quickest recovery from divot injury. Mohawk, Ashmore, Sundevil II, and CIS-CD5 were among the cultivars with the slowest recovery from divot injury.

There were significant differences among cultivars with regard to the presence of seedheads (Table 1). No seedheads were present among Ashmore, Aussie Green, Patriot, and Premier and similar levels of seedheads were observed with

SWI-1003, SWI-1046, Celebration, Barbados, Tifway, Yukon, Midlawn, OKC 70-18, Tifsport, and Tifton No. 4. Arizona Common, Numex Sahara, Sunbird, SWI-1014, B-14, LaPaloma, Transcontinental, Mohawk, Sovereign, and Sunstar were the most prolific seedhead producing cultivars.

Since its release in 1960, Tifway has been a popular choice for Arkansas lawns and golf courses. Because of its popularity and steady performance in current trials, there are few new varieties being used in Arkansas and Tifway is still produced at 28 sod farms in Arkansas (Patton et al., 2008). Tifsport and Celebration are two new varieties being grown in Arkansas that have similar quality to Tifway. Another new cultivar with improved cold tolerance and quality similar to Tifway is Patriot bermudagrass. Patriot is not currently grown in Arkansas, but is produced in Oklahoma and Missouri and will likely be produced in Arkansas in the future due to its strong performance in this region of the country.

Results from this study are intended to help residents of Arkansas make informed decisions when selecting turfgrass varieties. Planting well-adapted cultivars will improve turfgrass quality, reduce reestablishment costs from winterkill or drought, and ultimately increase sustainability.

Literature Cited

Patton, A.J., J.M. Trappe, and J. Boyd. 2008. 2008 Arkansas turfgrass sod source directory. Univ. of Arkansas Cooperative Extension Publication FSA-6136.

Table 1. Bermudagrass turfgrass quality, genetic color, texture, spring green-up, frost tolerance, divot recovery, and seedhead abundance evaluations for various cultivars in Fayetteville, Ark. Data are averaged across 4 seasons (2003-2006).

	Turf quality ^z	Genetic color ^y	Leaf texture ^x	Spring green-up ^w	Frost tolerance ^v	Divot recovery ^u	Seedheads ^t
	-----visually rated on a 1-9 scale-----					%	Rating (1-9)
Tifsport	7.1	7.5	7.2	3.6	6.2	70.0	1.3
Aussie Green	6.9	7.8	6.9	3.0	4.0	92.3	1.0
OKC 70-18	6.9	6.4	7.2	6.3	3.7	97.0	1.3
Patriot	6.9	8.0	7.0	3.8	5.2	94.0	1.0
Premier (OR 2002)	6.9	7.0	7.4	5.3	5.7	81.7	1.0
Tifway	6.9	7.2	7.6	4.5	5.7	75.7	1.7
Midlawn	6.8	6.7	7.2	5.5	5.7	82.7	1.3
Celebration	6.6	7.8	6.3	2.1	5.2	91.7	1.7
GN-1	6.5	7.9	6.4	2.4	2.8	77.0	2.3
TIFT NO. 4	6.5	7.4	7.1	2.9	4.7	88.3	1.3
Contessa (SWI-1045) ^s	6.2	6.6	5.6	3.1	5.2	95.3	2.3
Barbados (SWI-1044) ^s	6.2	7.0	6.1	2.8	3.8	96.0	1.7
TIFT NO. 3	6.2	6.6	6.0	2.9	4.5	96.7	2.7
Yukon ^s	6.2	6.9	6.1	4.7	4.7	76.7	1.7
MS-Choice	6.1	7.7	5.9	2.3	5.7	91.0	2.3
Riviera ^s	6.1	6.8	5.8	4.7	3.8	90.0	2.7
Sovereign (SWI-1012) ^s	6.0	7.3	5.7	3.0	5.3	90.3	4.0
Veracruz (SWI-1041) ^s	6.0	6.3	6.4	2.5	4.0	90.3	2.3
SWI-1046 ^s	5.9	7.2	6.8	2.2	4.8	76.7	2.0
Princess 77 ^s	5.8	6.4	6.3	1.8	4.5	85.7	2.3
TIFT NO. 1 ^s	5.8	7.3	6.3	1.6	4.7	89.7	3.3
SWI-1003 ^s	5.7	6.1	6.4	1.8	3.7	87.3	2.0
Ashmore	5.5	4.2	7.8	4.3	5.8	61.3	1.0
TIFT NO. 2 ^s	5.5	6.6	6.2	1.7	4.5	91.7	3.7
CIS-CD6 ^s	5.4	5.3	4.9	4.0	3.7	79.0	3.0
Sultan (FMC-6) ^s	5.4	6.1	5.3	3.2	3.2	68.7	3.3
Sunspport (SWI-1001) ^s	5.4	6.2	5.3	2.7	3.7	75.0	2.7
CIS-CD7 ^s	5.3	5.6	5.0	3.8	3.7	75.3	2.3
Sunbird (PST-R68A) ^s	5.2	6.0	5.4	3.5	3.2	79.0	4.7
CIS-CD5	5.1	5.7	4.9	3.9	3.5	67.3	2.7
LaPaloma (SRX 9500) ^s	5.1	5.5	5.2	3.9	4.0	77.7	4.3
SR 9554 ^s	5.1	5.7	4.9	3.5	3.3	78.7	3.0
SWI-1014 ^s	5.1	6.1	4.8	3.7	3.8	93.3	4.7
Panama ^s	5.0	5.4	4.8	3.4	3.7	68.7	2.3
Transcontinental ^s	5.0	5.8	5.2	3.8	3.7	73.7	4.3
Mohawk ^s	4.9	5.1	4.8	3.2	3.2	52.0	4.0
Sothern Star ^s	4.9	5.8	4.9	3.3	3.7	74.0	3.7
Sunstar ^s	4.9	5.6	4.9	3.4	3.0	67.7	4.0
Arizona Common ^{sr}	4.8	5.1	4.7	3.4	3.5	71.3	5.0
Numex Sahara ^s	4.8	5.5	4.9	3.8	3.3	71.3	4.7
Sundevil II ^s	4.8	5.7	5.0	3.4	3.5	64.7	3.7
B-14 ^s	4.5	5.0	4.2	3.5	3.7	73.0	4.3
LSD (P=0.05)	0.6	1.3	1.1	1.1	1.5	15.6	1.2

^z Turf quality rated on a scale of 1 to 9 (9= ideal dark green, uniform, dense, fine-textured turf, 1=dead).^y Genetic color rated on a scale of 1 to 9 (9= ideal dark green turf, 1= brown/tan turf).^x Texture rated on a scale of 1 to 9 (9=very fine texture, 1 = very coarse texture).^w Spring green-up rated on a scale of 1 to 9 (9= complete green turf, 1 = complete dormant turf).^v Frost tolerance was rated on a scale of 1 to 9 (9 = fully green turf, with no damage from frost, 1 = brown turf).^u Divot recovery was evaluated with digital image analysis after artificially devoting 3 subsamples per plot (9 per cultivar)^t Seedheads were rated on a scale of 1 to 9 (9 = maximum presence of seedheads, 1 = no seedheads).^s Seeded bermudagrass cultivar.^r Cultivars are sorted in descending order by turfgrass quality.