

Report From the 2006 NTEP Tall Fescue Trial–2007-2008 Data

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Photo by Mike Richardson

Data collection using digital image analysis.

Summary. Tall fescue is a very popular grass for lawn areas in northern Arkansas and throughout the transition zone. Identifying adapted cultivars for the region remains a central 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 tall fescue cultivar trial, containing 113 entries, of which 45 are now commercially available cultivars, was planted in the fall of 2006 at Fayetteville, Arkansas. Cultivars were rated for turf color, overall turf quality, and incidence of brown patch. The cultivars that have rated highest for overall turfgrass

quality during the first two growing seasons included Toccoa, Fat Cat, Mustang 4, Rambler SRP, Plato, Rocket, Jamboree, Raptor II, Traverse SPR, Turbo, and Van Gogh. The cultivars with the worst overall quality throughout 2008 were Falcon IV, Cezanne RZ, Einstein, and Ky-31. There were significant differences among cultivars in brown patch severity during both 2007 and 2008. Cultivars with good tolerance of brown patch included Ky-31, Rambler SRP, Talladega, Speedway, and Mustang 4.

Abbreviations: NTEP, National Turfgrass Evaluation Program

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Tall fescue (*Festuca arundinacea*) is one of the most popular cool-season turfgrasses in the transition-zone regions of the United States and is widely used in lawns, sports fields, and on utility turf in the region. Tall fescue is known for its superior drought tolerance, good shade tolerance, and ability to grow on poor soils relative to other cool-season grasses. Breeding efforts in the past three decades have made tremendous strides in improving the overall quality of this species.

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 has conducted several tests on tall fescue cultivars over the past 20 years. This report summarizes the 2007 and 2008 performance data, including turfgrass color, turfgrass quality, and brown patch for the NTEP 2006 National Tall Fescue Test at Fayetteville, Arkansas.

Materials and Methods

This cultivar experiment is being conducted at the Arkansas Agricultural Research and Extension Center in Fayetteville. The plot size was 4 by 5 ft and there were three replications of each cultivar. Prior to seeding, the entire trial area was fumigated with methyl bromide and a pre-plant fertilizer (10-20-20) was applied at 10 lb/1000 ft² prior to seeding. One-hundred-thirteen tall fescue cultivars and experimental lines were broadcast planted on 2 October 2006 at a seeding rate of 6 lb/1000 ft². Plots were maintained under lawn conditions throughout the duration of the study. Mowing height was maintained at 1.5 inches throughout the season with clippings returned. Four nitrogen applications were made during each growing season with 2.0 lb N/1000 ft² applied in November and 1.0 lb N/1000 ft² applied in April, June, and September. All N applications were made as urea (46-0-0).

Irrigation was supplied as needed to promote establishment, maintain vigorous growth, and prevent drought stress.

Overall turf quality was evaluated monthly from March through November in 2007, but is presented as the seasonal average in this paper. 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. Turfgrass color was evaluated monthly from March through November and is presented as the seasonal average in this paper. Color was visually assessed on a 1 to 9 scale, with 9 representing ideal dark-green color and 1 representing chlorotic conditions. Brown patch (*Rhizoctonia solani*) was evaluated on 15 August 2007 and 9 July 2008 and was visually rated as both disease incidence (% of plot infected) and as disease intensity (1 to 9 scale, with 1 representing no damage to turf from disease and 9 representing completely dead turf in diseased areas). An overall rating of disease severity was calculated by multiplying disease incidence by disease intensity. For this report, the only data that will be presented and discussed are from those cultivars (45 total) that were commercially available at the time this paper was published.

Results and Discussion

The 2008 growing season was noteworthy in that Fayetteville experienced extremely wet and cool conditions both early in the summer and then again in the late summer and early fall (Richardson and Stiegler, 2009). Significant differences in turf quality were present among cultivars on every rating date in 2007 and 2008 (data not shown), but quality was also significantly different when averaged over the entire season and both seasons (Table 1). Some of the cultivars with the highest turf quality over the first two growing seasons included Toccoa, Fat Cat, Mustang 4, Rambler SRP, Plato, Rocket, Jamboree, Raptor II, Traverse SPR, Turbo, and Van Gogh, while the cultivars with the worst overall quality over the two seasons were Falcon IV, Cezanne RZ, Einstein, and Ky-31 (Table 1). Significant differ-

ences in turfgrass color have also been documented in this trial, with cultivars such as Toccia, Fat Cat, Hunter, and Darlington having the darkest green genetic color, while Ky-31 had the lightest color (Table 1).

Brown patch disease was active in the experimental area for only a couple of weeks in July of 2008 due to the unseasonably cool weather. Average rating values for disease incidence in 2008 ranged from 5% up to 23%, which is considerably lower than what was observed in 2007 (Table 1). In 2008, cultivars with the lowest brown patch severity ratings included Ky-31, Rhambler SRP, Talladega, Speedway, and Mustang 4, although there were numerous cultivars in the trial that were not statistically different from Ky-31 with regards to brown patch severity. The Ky-31 and Rhambler cultivars also demonstrated the best resistance to brown patch in the 2007 trials, as reported earlier (Richardson et al., 2008).

These data represent initial evaluations of tall fescue cultivars that will be marketed in this region in the coming years. Data will continue to be collected on these varieties through the 2010 growing season. Yearly summaries of the data from this site and all sites around the United States will be published by NTEP and be available at their website (www.ntep.org).

Literature Cited

- Richardson, M., J. McCalla, D. Karcher, and A. Patton. 2008. Report from the 2006 NTEP tall fescue trial—first year data. Arkansas Turfgrass Report 2007, Ark. Ag. Exp. Stn. Res. Ser. 557:66-70.
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Table 1. Turfgrass color and seasonal turfgrass quality at Fayetteville, Ark., for 45 commercially available tall fescue entries in the NTEP 2006 National Tall Fescue Test. Cultivars are arranged by average turf quality ratings across both the 2007 and 2008 season.

Cultivar	Turf color	----- Turf quality -----		
	2007-2008	2007	2008	Average
	----- 1-9, with 9 = best color or quality -----			
Toccoa	7.3	7.5	7.4	7.5
Fat Cat	7.3	7.4	7.2	7.3
Mustang 4	7.0	7.3	7.2	7.2
Rhambler SRP	6.6	7.2	7.1	7.2
Plato	6.3	7.2	7.1	7.2
Rocket	6.5	7.2	7.1	7.1
Jamboree	6.9	7.2	7.0	7.1
Raptor II	7.1	7.2	7.0	7.1
Traverse SPR	6.7	7.2	7.0	7.1
Turbo	7.0	7.2	7.0	7.1
Van Gogh	6.7	7.2	6.9	7.1
Aggressor	6.9	7.2	6.9	7.0
Biltmore	6.8	7.1	6.9	7.0
Aristotle	6.7	7.1	6.9	7.0
Hunter	7.2	7.1	6.9	7.0
Bullseye	6.9	7.1	6.8	7.0
Talladega	6.8	7.1	6.9	7.0
SR 8650	7.1	7.1	6.8	7.0
Firenza	6.8	7.1	6.8	7.0
Spyder LS	7.0	7.1	6.8	7.0
Darlington	7.5	7.0	6.9	7.0
Speedway	6.9	7.1	6.7	6.9
Titanium LS	6.6	7.0	6.8	6.9
Escalade	6.4	7.0	6.8	6.9
Lindbergh	6.6	7.0	6.7	6.9
Firecracker LS	6.6	7.0	6.7	6.9
Tulsa Time	6.9	7.0	6.7	6.9
Monet	6.6	7.0	6.7	6.9
Wolfpack II	6.8	7.0	6.7	6.8
Hemi	6.8	7.0	6.7	6.8
Tahoe II	7.0	6.9	6.7	6.8
Justice	6.5	6.9	6.7	6.8
Magellan	6.8	7.0	6.7	6.8
Essential	6.6	7.1	6.5	6.8
Turbo RZ	6.9	6.9	6.6	6.8
Silverado	5.8	6.8	6.8	6.8
Millennium SRP	6.7	7.0	6.5	6.8
Rembrandt	6.5	6.9	6.6	6.7
Padre	6.5	6.9	6.5	6.7
Rebel IV	6.6	6.9	6.5	6.7
Skyline	6.8	6.8	6.5	6.7
Falcon IV	6.6	6.9	6.4	6.6
Cezanne RZ	6.6	6.9	6.3	6.6
Einstein	6.5	6.9	6.3	6.6
Ky-31	4.9	6.4	6.1	6.3
LSD(0.05)	0.4	0.3	0.5	0.4

Table 2. Brown patch evaluations at Fayetteville, Ark., for 45 commercially available tall fescue entries in the NTEP 2006 National Tall Fescue Test. Cultivars are arranged by average brown patch severity ratings across both the 2007 and 2008 season.

Cultivar	2007			2008			Average		
	Incidence ^z %	Intensity ^y 1-9	Severity ^x	Incidence %	Intensity 1-9	Severity	Incidence %	Intensity 1-9	Severity
Ky-31	6.7	1.0	6.7	6.7	1.0	6.7	6.7	1.0	6.7
Rhambler SRP	6.7	1.0	6.7	5.0	1.3	6.7	5.8	1.2	6.7
Talladega	10.0	1.0	10.0	5.0	1.7	8.3	7.5	1.3	9.3
Speedway	5.0	1.7	11.7	5.0	1.3	6.7	5.0	1.5	9.3
Mustang 4	8.3	1.3	11.7	5.0	1.3	6.7	6.7	1.3	9.7
Jamboree	10.0	1.3	15.0	5.0	1.7	8.3	7.5	1.5	11.7
Titanium LS	10.0	1.3	13.3	6.7	1.7	10.0	8.3	1.5	11.7
Aggressor	8.3	1.3	11.7	6.7	2.0	13.3	7.5	1.7	12.7
Plato	11.7	1.3	18.3	8.3	1.7	15.0	10.0	1.5	16.7
Bullseye	11.7	1.3	15.0	8.3	1.7	18.3	10.0	1.5	17.0
Spyder LS	11.7	1.7	21.7	6.7	2.0	13.3	9.2	1.8	17.7
Justice	6.7	2.3	20.0	6.7	2.3	15.0	6.7	2.3	17.7
Wolfpack II	8.3	1.7	18.3	10.0	1.3	16.7	9.2	1.5	18.0
Toccoa	11.7	2.0	23.3	5.0	2.7	13.3	8.3	2.3	18.7
Tahoe II	11.7	2.0	26.7	5.0	2.3	11.7	8.3	2.2	19.3
Rembrandt	15.0	1.3	25.0	8.3	2.0	16.7	11.7	1.7	21.0
Magellan	18.3	1.7	33.3	5.0	2.0	10.0	11.7	1.8	22.0
Raptor II	16.7	1.7	30.0	11.7	1.7	15.0	14.2	1.7	22.7
Hemi	15.0	1.7	26.7	8.3	2.3	20.0	11.7	2.0	23.3
Turbo	16.7	2.0	33.3	5.0	2.7	13.3	10.8	2.3	23.7
Turbo RZ	15.0	1.7	35.0	8.3	2.3	21.7	11.7	2.0	28.7
Cezanne RZ	13.3	1.7	33.3	13.3	1.7	25.0	13.3	1.7	29.3
SR 8650	16.7	2.0	43.3	6.7	2.7	20.0	11.7	2.3	32.0
Biltmore	20.0	2.7	53.3	6.7	2.0	11.7	13.3	2.3	32.7
Millennium SRP	21.7	1.7	41.7	10.0	2.3	25.0	15.8	2.0	33.7
Firenza	20.0	2.0	46.7	6.7	2.7	20.0	13.3	2.3	33.7
Van Gogh	21.7	2.0	48.3	8.3	2.7	25.0	15.0	2.3	36.7
Traverse SPR	21.7	3.0	66.7	6.7	2.3	16.7	14.2	2.7	41.7
Falcon IV	26.7	2.3	73.3	5.0	2.7	13.3	15.8	2.5	43.7
Lindbergh	20.0	2.3	56.7	11.7	2.7	33.3	15.8	2.5	45.3
Monet	30.0	2.0	63.3	15.0	2.0	30.0	22.5	2.0	47.0
Darlington	23.3	2.3	71.7	8.3	3.0	23.3	15.8	2.7	47.7
Essential	30.0	2.7	83.3	6.7	2.3	15.0	18.3	2.5	49.3
Padre	35.0	2.3	83.3	8.3	2.0	16.7	21.7	2.2	50.3
Aristotle	31.7	2.0	76.7	11.7	3.0	36.7	21.7	2.5	56.7
Rocket	38.3	2.0	80.0	16.7	2.7	36.7	27.5	2.3	58.3
Einstein	36.7	2.7	100.0	10.0	2.3	21.7	23.3	2.5	61.0
Rebel IV	33.3	2.7	93.3	10.0	3.0	28.3	21.7	2.8	61.0
Escalade	36.7	2.7	103.3	8.3	2.7	20.0	22.5	2.7	62.0
Firecracker LS	26.7	3.0	95.0	10.0	2.7	28.3	18.3	2.8	62.0
Fat Cat	28.3	3.0	116.7	5.0	3.0	15.0	16.7	3.0	66.0
Skyline	38.3	3.3	120.0	13.3	3.3	41.7	25.8	3.3	81.0
Tulsa Time	36.7	3.3	140.0	11.7	3.7	43.3	24.2	3.5	91.7
Hunter	45.0	3.3	180.0	20.0	3.0	68.3	32.5	3.2	124.3
Silverado	60.0	3.3	205.0	23.3	3.3	83.3	41.7	3.3	144.3
LSD (0.05)	25.6	1.5	95.1	9.7	1.4	31.5	15.9	1.4	58.0

^z Disease incidence was visually rated on a scale of 0-100% of the plot area infected.

^y Disease intensity was rated on a 1-9 scale, with 1=no damage and 9=severe damage.

^x Disease severity was calculated as disease incidence (%) x disease intensity (1-9).