

# Report from the 2006 NTEP Tall Fescue Trial – First Year Data

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Photo by Mike Richardson

Cool-season turfgrass trials at the University of Arkansas in Fayetteville

**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 30 were commercially available cultivars, was planted in the fall of 2006 at Fayetteville, Arkansas. During establishment in the fall of 2006 and across the 2007 growing season, cultivars were rated for

establishment vigor, overall turf quality, and incidence of brown patch and Pythium blight. The cultivars that consistently rated high for turfgrass quality included Bullseye, Z-2000, Plato, Aristotle, Van Gogh, Turbo, Biltmore, Tulsa III, Speedway, and RK-1, while the cultivars with the worst overall quality throughout 2007 were Silverado and Ky-31. There were significant differences among cultivars in brown patch severity during a disease outbreak in early August 2007.

**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 US 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 will describe the first year performance data, including establishment rate, turfgrass quality, and disease resistance, for the 2006 NTEP tall fescue trial at Fayetteville, Arkansas.

## Materials and Methods

This cultivar experiment is being conducted at the University of Arkansas 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 10.0 lb. / 1000 ft<sup>2</sup>. One-hundred and thirteen tall fescue cultivars and experimental lines were broadcast planted on 2 Oct 2006 at a seeding rate of 6 lb. / 1000 ft<sup>2</sup>. Plots were maintained under lawn conditions throughout the duration of the study. Mowing height was maintained at 1.5 inch throughout the season with clippings returned. Four nitrogen applications were made during the 1<sup>st</sup> season with 2.0 lb N / 1000 ft<sup>2</sup> applied in November 2006 and 1.0 lb N / 1000 ft<sup>2</sup> applied in April, June, and September, 2007. 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.

Turfgrass establishment was measured using digital image analysis at 4 weeks after seeding. 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. An outbreak of Pythium blight (*Pythium ultimum*) occurred in early July and was visually evaluated as percent disease on 12 July 2007. After data collection of the Pythium damage, the entire trial was treated with Subdue Maxx (mefenoxam) at 43 oz / A. Brown patch (*Rhizoctonia solani*) was evaluated on 15 Aug 2007 and was visually rated as both disease incidence (% of plot infected) and as disease intensity (1 to 9 scale, with 1 = 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 (30 total) that were commercially available at the time this paper was published. A full report of the data, including all experimental cultivars, will be available through the NTEP program at [www.ntep.org](http://www.ntep.org).

## Results and Discussion

All of the commercially available cultivars had good seedling vigor and adequate establishment at 4 weeks after seeding. The range in turfgrass cover at 4 weeks after seeding went from 50% (Rembrandt) up to 83% (Lindbergh) (Table 1). There were no cultivars that appeared to be exceptionally strong or weak with regards to establishment and all plots had 100% cover by the end of the fall season.

A significant outbreak of Pythium blight occurred in the plots in early June (Fig. 1), but was not completely uniform across the trial (Fig. 2). As a result, there was a significant amount of variability in the data among replicate plots within cultivars, making it difficult to statistically sep-

arate cultivars. Commercially available cultivars with the highest incidence of blight included Tulsa III and Hemi, while cultivars such as Silverado, Ky-31, Falcon IV, and Skyline exhibited the least amount of Pythium damage (Table 1).

Brown patch disease was active in the experimental area for several weeks in late summer and, on 28 August 2007, average rating values for disease incidence for cultivars ranged from 7% up to 60.0% and disease intensity ranged from 1.3 to 4.7 (Table 1). Cultivars with the lowest brown patch severity ratings included Ky-31 and Rhambler. However, it should be cautioned that these are first-year trials and data on brown patch resistance will be more dependable as these plots mature and they are evaluated over several seasons.

Significant differences in turf quality were present among cultivars on every rating date in 2007 (data not shown), but were also significantly different when averaged over the entire season (Table 1). Some of the cultivars with the highest turf quality over the growing season included Bullseye, Z-2000, Plato, Aristotle, Van Gogh, Turbo, Biltmore, Tulsa III, Speedway, and RK-1. The cultivars with the worst overall quality throughout 2007 were Silverado and Ky-31.

These data represent an initial evaluation of tall fescue cultivars that will begin to appear in the market 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](http://www.ntep.org)).





**Fig. 1. Mycelium of Pythium blight evident on plots in early morning (photo taken 7/11/2007)**



**Fig. 2. Damage from Pythium blight on the 2006 NTEP Tall fescue trial (photo taken 7/12/2007)**



**Table 1. Turfgrass establishment, pythium blight, brown patch and seasonal turfgrass quality at Fayetteville, Ark. for 30 commercially available tall fescue entries in the 2006 National Turfgrass Evaluation Program tall fescue test. Cultivars are arranged by average turf quality ratings across the season.**

Entry	Establishment (% cover)	Pythium blight (12 July 2007) (% infected)	Brown patch (15 August 2007)			Turf quality <sup>x</sup> (1-9)
			disease incidence (% infected)	disease <sup>z</sup> intensity (1-9)	disease <sup>y</sup> severity (incidence x intensity)	
Bullseye	77.2	25.0	11.7	1.3	15.0	7.5
Z-2000	75.8	10.0	11.7	1.7	22.0	7.4
Plato	76.7	23.3	11.7	1.3	18.0	7.4
Aristotle	59.9	8.3	31.7	2.0	77.0	7.4
Van Gogh	73.2	11.7	21.7	2.0	48.0	7.4
Turbo	63.0	10.0	16.7	2.0	33.0	7.4
Biltmore	80.7	16.7	20.0	2.7	53.0	7.4
Tulsa III	70.5	35.0	36.7	3.3	140.0	7.4
Speedway	72.3	15.0	5.0	1.7	12.0	7.4
RK-1	68.0	8.3	21.7	3.0	67.0	7.4
Lindbergh	82.7	11.7	20.0	2.3	57.0	7.3
Einstein	77.7	5.0	36.7	2.7	100.0	7.3
Monet	63.7	13.3	30.0	2.0	63.0	7.3
Cezanne RZ	64.9	25.0	13.3	1.7	33.0	7.3
Skyline	78.1	3.3	38.3	3.3	120.0	7.3
Hunter	52.0	11.7	45.0	3.3	180.0	7.3
Padre	68.0	8.3	35.0	2.3	83.0	7.3
Magellan	73.3	13.3	18.3	1.7	33.0	7.3
Escalade	72.0	5.0	36.7	2.7	103.0	7.3
Rembrandt	50.0	16.7	15.0	1.3	25.0	7.3
Justice	75.8	13.3	6.7	2.3	20.0	7.3
Rebel IV	78.5	8.3	33.3	2.7	93.0	7.3
Millennium SRP	69.0	13.3	21.7	1.7	42.0	7.3
Rhambler	66.1	15.0	6.7	1.0	7.0	7.3
Firenza	73.3	18.3	20.0	2.0	47.0	7.3
Falcon IV	78.9	3.3	26.7	2.3	73.0	7.3
Hemi	73.8	26.7	15.0	1.7	27.0	7.2
Tahoe II	71.3	20.0	11.7	2.0	27.0	7.2
Silverado	80.1	3.3	60.0	3.3	205.0	7.0
Ky-31	71.3	3.3	6.7	1.0	7.0	6.8
LSD (0.05)	19.4	27.5	27.6	1.6	100.3	0.2

<sup>z</sup> Disease intensity was rated on a 1-9 scale, with 1=no damage and 9=severe damage

<sup>y</sup> Disease severity was calculated as disease incidence (%) x disease intensity (1-9)

<sup>x</sup> Turfgrass quality was rated on a scale of 1-9 with 9 = ideal quality