



### Report from the 2002 NTEP Zoysiagrass Trial – 2nd Year Data

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**Summary.** *Zoysiagrass* (*Zoysia* spp.) continues to increase in popularity in transition-zone environments due to its excellent turfgrass quality, persistence under adverse conditions, and low maintenance requirements. The National Turfgrass Evaluation Program (NTEP) is the predominant means by which cultivars are tested throughout North America. A zoysiagrass 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 turf quality, leaf color, leaf texture, and frost damage were collected during the 2003 growing season. ‘Cavalier’ and ‘Emerald’ had the most spring green-up on 3 March, ‘Zorro’ and ‘Emerald’ had the best average overall quality throughout the growing season, ‘Zorro’, ‘El Toro’, and ‘Emerald’ had the darkest color on 6 June, ‘Cavalier’, ‘Zorro’, and ‘Emerald’ had the finest leaf texture on 28 July, and ‘Emerald’, ‘Zorro’, and ‘Cavalier’ had the least frost damage on 6 November.

Zoysiagrass has become an increasingly popular turfgrass for golf courses and home lawns in the transition zone. The popularity of the species is due to its enhanced cold tolerance, slow growth rate, and competitiveness against weeds. Until recently, most of the zoysiagrass used in the United States has been the cultivar Meyer. However, in the past twenty years, new germ plasm has been collected and released and is starting to be used more frequently in the turfgrass industry. An integral part of the turfgrass research program at the University of Arkansas is the testing of new and improved cultivars of turfgrass for adaptation to this geographic region. The following report summarizes a zoysiagrass

cultivar evaluation trial sponsored by the National Turfgrass Evaluation Program.

### Materials and methods

The cultivar experiment was established on 2 July 2002 at the University of Arkansas Research and Extension Center in Fayetteville on a silt-loam soil. The plot size was 2.4 x 2.4 m (8 x 8 ft) and there were three replications of each cultivar. The vegetative cultivars were planted as 5 cm (2 in.) diameter plugs on 30 cm (12 in.) spacings within the plots, while the seeded cultivars were broadcast planted at a seeding rate of 48 kg•ha<sup>-1</sup> (1.0 lb / 1000 ft<sup>2</sup>). Plots were maintained under golf course fairway or sports field conditions, with a mowing height of 12 mm (0.5 in.), and monthly applications of 24 kg•ha<sup>-1</sup> (0.5 lb N / 1000 ft<sup>2</sup>) during the growing season. Irrigation was applied as needed to promote germination and establishment and to prevent stress.

Cultivars were visually evaluated for spring green-up on 25 March 2003 using a scale of 1 to 9, with 9 representing complete green color and 1 representing a completely dormant turf stand. Overall turf quality was evaluated monthly from May through October in 2003. 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 color was visually evaluated on 25 June 2003 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 28 July 2003 on a scale of 1 to 9, with 9 representing extremely fine turf texture and 1 representing extremely coarse texture. On 6 Nov. 2003, cultivars were visually assessed for frost damage using a 1 to 9 scale, with 9 representing no frost damage and 1 representing complete leaf kill.

An analysis of variance was computed for each evaluation and cultivar effects were considered to be significant if  $P < 0.05$ . Cultivar means were separated using Fisher’s protected least significant difference test ( $\alpha = 0.05$ ).

### Results and discussion

There were significant differences in spring green-up among cultivars on 25 March 2003 (Table 1). ‘Emerald’ and ‘Cavalier’ had the most green turf cover with average ratings of 4.7 and 4.0, respectively. ‘Himeno’ and ‘Chinese Common’ had the least green-up with average ratings of 1.0 and 1.3, respectively.

There were significant differences in turf quality among cultivars on each rating date in 2003 (Table 1). ‘Zorro’ and ‘Emerald’ had the best average turf quality throughout the growing season with average rating values of 8.2 and 7.6, respectively. On 20 May 2003, ‘GN-2’, ‘Himeno’, and ‘Zenith’ were among the best cultivars with regard to turf quality and on 28 July 2003, ‘Cavalier’ was among the best cultivars with regard to overall quality. ‘Chinese Common’, ‘Palisades’, and ‘Companion’ were consistently rated lowest for turf quality with average values of 4.6, 5.1, and 5.2, respectively.

There were significant color differences among cultivars on 25 June 2003 (Table 1). ‘Zorro’, ‘El Toro’, and ‘Emerald’ were rated highest, with average rating values of 8.0, 7.7, and 7.7, respectively. All cultivars had acceptable turf color as the lowest average rating value was 6.0, belonging to both ‘Chinese Common’ and ‘Companion’.

There were significant leaf texture differences among cultivars on 28 July 2003 (Table 1). ‘Cavalier’, ‘Zorro’, and ‘Emerald’ had the finest

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leaf texture, averaging rating values of 9.0, 9.0, and 8.7, respectively. 'Crowne', 'Palisades', 'Chinese Common', and 'El Toro' had the coarsest leaf texture with average rating values of 5.0, 5.3, 6.0, and 6.0, respectively.

On 6 Nov. 2003, there were significant differences among cultivars in frost damage (Table 1). 'Emerald', 'Zorro', and 'Cavalier' had the least frost damage with average rating values of 6.3, 6.3, and 6.0, respectively. 'Chinese Common', 'Himeno', 'Meyer', and 'Palisades' had the most visible frost damage as all these cultivars averaged rating values below 4.0.

### Conclusions

There have been significant differences among zoysiagrass cultivars with regard to spring green-up, overall turf quality, turf color, leaf texture, and susceptibility to frost damage through the 2003 growing season. Data will continue to be collected on these cultivars throughout the 2005 growing season and will be published by NTEP.

**Table 1. Spring green-up, turf quality, color, leaf texture, and frost damage ratings for the commercially available cultivars from the 2003 growing season of the 2002 NTEP Zoysiagrass Trial.**

Cultivar	Spring green-up <sup>z</sup>	Turf Quality <sup>y</sup>							Turf Color <sup>x</sup>	Leaf Texture <sup>w</sup>	Frost Damage <sup>v</sup>	
	3/25	Evaluation date							Avg.	Evaluation date		
		5/20	6/25	7/28	8/21	9/16	10/04	6/25		7/28	11/06	
	rating value											
Cavalier	4.0	4.7	7.0	8.3	7.0	7.7	7.7	7.1	7.0	9.0	6.0	
Chinese Common	1.3	4.3	4.7	5.0	5.0	4.7	4.0	4.6	6.0	6.0	3.0	
Companion	3.0	4.7	5.3	5.7	5.3	5.0	5.0	5.2	6.0	6.3	4.3	
Crowne	2.7	4.0	5.3	5.7	5.7	6.3	6.3	5.6	7.0	5.0	4.7	
El Toro	3.0	4.3	6.0	6.0	6.0	6.7	7.0	6.0	7.7	6.0	5.0	
Emerald	4.7	6.0	8.0	8.7	7.7	7.7	7.3	7.6	7.7	8.7	6.3	
GN-2	3.3	5.3	6.0	7.7	7.0	7.0	7.3	6.7	7.0	7.7	5.3	
Himeno	1.0	5.3	6.0	6.7	6.3	5.7	5.0	5.8	6.7	7.0	3.0	
Meyer	2.3	5.0	6.3	6.3	6.0	5.3	4.3	5.6	7.0	6.7	3.7	
Palisades	3.3	4.7	5.3	6.0	5.7	5.0	4.0	5.1	6.7	5.3	3.7	
Zenith	2.3	6.0	6.0	6.7	6.3	5.7	4.7	5.9	6.0	7.3	3.7	
Zorro	3.3	6.0	8.0	9.0	8.7	8.7	9.0	8.2	8.0	9.0	6.3	
LSD <sub>0.05</sub> <sup>u</sup>	0.76	0.99	0.99	0.99	0.99	0.99	0.99	0.69	0.90	1.07	0.74	
Significance <sup>t</sup>	***	***	***	***	***	***	***	***	**	***	***	

<sup>z</sup> Spring green-up rated on a scale of 1 to 9 (9 = complete green turf, 1 = complete dormant turf).

<sup>y</sup> Quality rated on a scale of 1 to 9 (9 = ideal dark green, uniform, dense, fine-textured turf, 1 = dead turf).

<sup>x</sup> Color rated on a scale of 1 to 9 (9 = ideal dark green turf, 1 = brown/tan turf).

<sup>w</sup> Texture rated on a scale of 1 to 9 (9 = very fine texture, 1 = very coarse texture).

<sup>v</sup> Frost damage rated on a scale of 1 to 9 (9 = no frost damage, 1 = complete leaf kill).

<sup>u</sup> Fisher's protected least significant difference values at  $P = 0.05$ .

<sup>t</sup> \*\*\*, \*\* significant at the 0.001 and 0.01 probability level, respectively.