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Abstract

Kansas State University has been cooperating with Texas A&M AgriLife Research – Dallas to identify zoysiagrasses that are superior in quality to 'Meyer,' the industry standard, and that have equivalent or better freeze tolerance. Six of eight experimental crosses between select *Zoysia* cultivars were established in Wichita, Kansas, in 2009 and since that time have had consistently superior ratings in three or more measures.

Keywords

Turfgrass, zoysiagrass, 'Meyer' zoysiagrass, Zoysia japonica, Z. matrella, 'Emerald' zoysiagrass

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Evaluation of Experimental Zoysiagrasses in Southern Kansas

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Summary. Kansas State University has been cooperating with Texas A&M AgriLife Research – Dallas to identify zoysiagrasses that are superior in quality to 'Meyer,' the industry standard, and that have equivalent or better freeze tolerance. Six of eight experimental crosses between select *Zoysia* cultivars were established in Wichita, Kansas, in 2009 and since that time have had consistently superior ratings in three or more measures.

Rationale. Zoysiagrass is a warm-season turfgrass suitable for use in home lawns and golf course fairways within the transition zone. Currently, the cultivar of choice for these purposes is *Zoysia japonica* 'Meyer.' Cultivars of *Z. matrella* and the cultivar *Z. japonica* × *pacifica* 'Emerald' are recognized for their high quality, but they lack freeze tolerance. Cultivars of *Z. japonica* have better freeze tolerance but are generally coarser in texture and lack the quality of *Z. matrella* cultivars and 'Emerald.' Researchers evaluated zoysiagrass progeny associated with reciprocal crosses between *Z. japonica* and *Z. matrella* or *Z. japonica* and 'Emerald' to identify those hybrids that demonstrated qualities superior to those of 'Meyer' under southern Kansas environmental conditions.

Objective. Evaluate experimental zoysiagrass hybrids for their performance in Wichita, Kansas.

Study Description. During the summer of 2009, 'Meyer' and eight experimental hybrids of zoysiagrass were established in 27 study plots, each measuring 5 ft × 5 ft, in a randomized complete block design at the John C. Pair Horticultural Center in Haysville, Kansas. The experimental zoysiagrasses are progeny from crosses between

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Z. japonica and *Z. matrella* cultivars or *Zoysia japonica* x (*Z. japonica* × *pacifica*). From 2009 through 2014, researchers collected information on spring greenup, quality, genetic color, leaf texture, fall color retention, and percent cover. Spring greenup, quality, genetic color, leaf texture, and fall color retention were rated visually on a scale 1 to 9 (1 = poorest, 6 = acceptable, and 9 = optimum measure). Percent cover was rated visually on a scale of 0% to 100%.

Results. Data collection began at the end of the 2009 growing season with a review of percent cover as a measure of cultivar establishment. 'Chisholm,'[2] KSUZ 0803, KSUZ 0804, and KSUZ 0807 were the best established (Table 1). Starting at the end of April 2010, and then every spring through 2014, plots were rated for greenup, with KSUZ 0802[2] and KSUZ 0806 rated as earliest. During the course of the growing season, generally May through September, the turf quality was rated monthly, with ratings influenced by degree of cover, weed infestation, and disease resistance, as well as turf color, texture, and density. The overall best performers in the study were KSUZ 0802,[2] 'Chisholm,'[2] KSUZ 0805, KSUZ 0806, and KSUZ 0804. Every full year of the study, ratings for turf genetic color and texture showed that KSUZ 0805,[2] KSUZ 0803, and KSUZ 0806 were the darkest green and KSUZ 0802,[2] KSUZ 0804,[2] KSUZ 0807,[2] and KSUZ 0806[2] had the finest texture. The zoysia plots usually started to lose color and go dormant near the beginning of October. Color retention ratings in middle to late October showed that KSUZ 0803,[2] 'Chisolm,' and KSUZ 0807 stayed green the longest. Based on these evaluations and results from locations in other areas of the transition zone, release of KSUZ 0802 is in progress, and it should be available as a commercial cultivar in the near future.

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2 Significantly better than 'Meyer' for that measure.

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Table 1. 2009–2014 performance of zoysia cultivars at Wichita, Kansas.[1]

Cultivar/ Experimental Number	2009 % Cover[2]	Spring Greenup	Genetic Color	Leaf Texture	Fall Color	Quality
KSUZ 0802	48.3	5.5	5.9	7.3	4.0	5.5
'Chisolm'	91.0	5.0	5.0	4.7	5.1	5.3
KSUZ 0805	58.3	4.8	7.0	6.5	4.4	5.2
KSUZ 0806	31.7	5.3	6.7	6.6	4.9	5.1
KSUZ 0804	63.3	4.5	6.5	6.8	4.4	5.0
KSUZ 0803	70.0	4.6	6.9	6.1	6.5	4.9
KSUZ 0807	63.3	4.7	6.6	6.7	5.1	4.7
'Meyer'	58.3	5.0	6.6	5.7	4.9	4.6
KSUZ 0801	36.7	4.7	5.5	6.2	4.9	4.5
LSD[3]	23.3	0.5	1.0	0.8	0.6	0.7

[1] Visual ratings were based on a scale of 1 to 9 (1 = poorest, 6 = acceptable, and 9 = optimum measure).
[2] Percent cover was rated visually on a scale of 0% to 100%.
[3] To determine statistical differences among entries, subtract one entry's mean from another's. If the result is larger than the corresponding Least Significant Difference (LSD) value, the two are statistically different.

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