

TURFGRASS RESEARCH 2014



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Winter Survival of 2013 National Turfgrass Evaluation Program Zoysiagrass and Bermudagrass Entries at Kansas Locations¹

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Summary. Only a few entries in the zoysiagrass and bermudagrass National Turfgrass Evaluation Program (NTEP) trials exhibited good survival following the 2013–2014 winter and will be suitable for use in Kansas.

Rationale. Low-temperature stress can limit the use of warm-season turfgrasses in Kansas. National Turfgrass Evaluation Program studies are located nationwide to evaluate characteristics of turfgrass species. Kansas currently provides a location for both zoysiagrass and bermudagrass NTEP studies.

Objective. Summarize winter injury of zoysiagrass and bermudagrass NTEP entries the spring after studies were initiated in the summer of 2013.

Study Description. The Kansas location of the zoysiagrass NTEP study is at the Rocky Ford Turfgrass Research Center in Manhattan, KS. The bermudagrass NTEP study is located at the John C. Pair Horticulture Center in Haysville, KS. In Manhattan, the temperature dropped to a low of -12°F on January 6, 2014, and below-zero temperatures were also recorded in December (-6°F); February (-9°F), and March (-3°F). The low temperature in Haysville was -6°F on January 7, 2014; below-zero temperatures also occurred in March (-1°F). Entries in each study were established in June 2013. All zoysiagrass entries were established vegetatively; some of the bermudagrass entries are seeded

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types. Percentage zoysiagrass survival was visually estimated on May 6 and 21, 2014. The bermudagrass study was evaluated on May 20, 2014. All data were subjected to analysis of variance, and Fisher's protected LSD ($P \leq 0.05$) was used to detect treatment differences.

Results. Eleven of 36 zoysiagrass entries did not survive the winter in Manhattan, and an additional 10 entries had $\leq 50\%$ winter survival (Table 1 and Figure 1). 'Meyer' zoysiagrass had no injury emerging from winter, and KSUZ 1201 and KSUZ 0802, experimental progeny jointly developed by K-State and Texas A&M AgriLife Research – Dallas, were the only grasses with winter survival comparable to 'Meyer' (Table 1). In the bermudagrass NTEP study in Haysville (Figure 2), two of 35 entries did not survive winter, and an additional eight entries had $\leq 50\%$ winter survival. 'Latitude 36,' 'Yukon,' and five experimental bermudagrass progeny had no injury emerging from winter, and 'Astro,' 'Patriot,' 'Riviera,' and five other experimental progeny were statistically equivalent to the aforementioned grasses in winter survival (Table 2).



Figure 1. Several National Turfgrass Evaluation Program zoysiagrass entries in Manhattan, KS, on May 22, 2014.



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Figure 2. Several National Turfgrass Evaluation Program bermudagrass entries in Haysville, KS, on May 6, 2014.

Table 1. Survival of NTEP zoysiagrass entries in Manhattan, KS

Cultivar or progeny	Percentage survival ¹	
	May 6	May 21
Meyer	100.0 a ²	100.0 a
KSUZ 0802	98.3 a	99.3 a
KSUZ 1201	96.7 ab	98.3 a
FAES 1319	83.3 bcd	86.7 b
DALZ 1301	93.3 abc	82.0 b
Empire	83.3 cd	78.3 bc
11-TZ-4321	51.7 efg	75.0 bc
FAES 1305	70.0 cde	71.7 bc
Zeon	48.3 fg	71.7 bc
10-TZ-1254	86.7 bcd	65.0 cde
10-TZ-35	78.3 cde	65.0 cde
A-1	35.0 gh	65.0 cde
DALZ 1302	78.3 cdef	63.3 cde

Table 2. Survival of NTEP bermudagrass entries in Haysville, KS

Cultivar or progeny	Percentage survival ¹
	May 20
Latitude 36	100.0 a ²
JSC 2-21-1-v	100.0 a
JSC 2-21-18-v	100.0 a
JSC 2009-6-s ³	100.0 a
Yukon ³	100.0 a
OKC 1131	100.0 a
OKC 1163	100.0 a
OKC 1302	98.3 ab
Astro	97.3 ab
JSC 2007-8-s ³	96.7 ab
JSC 2007-13-s ³	96.7 ab
JSC 2009-2-s ³	95.3 abc
Patriot	93.3 abc





Table 1. Survival of NTEP zoysiagrass entries in Manhattan, KS

Cultivar or progeny	Percentage survival ¹	
	May 6	May 21
FAES 1304	68.3 def	55.0 def
FAES 1312	50.0 efg	50.0 ef
FAES 1318	5.0 h	31.7 fg
FAES 1317	13.3 h	19.3 gh
09-TZ-54-9	5.0 h	15.0 gh
FAES 1328	3.7 h	10.0 gh
FAES 1307	5.0 h	9.3 gh
GGZ 504	0.3 h	6.0 gh
FAES 1313	0.0 h	4.3 h
FAES 1329	0.7 h	2.7 h
CSZ 1105	0.0 h	2.7 h
FAES 1315	0.0 h	1.7 h
DALZ 1303	0.0 h	0.7 h
FAES 1316	0.3 h	0.0 h
09-TZ-53-20	0.0 h	0.0 h
CSZ 1109	0.0 h	0.0 h
FAES 1303	0.0 h	0.0 h
FAES 1306	0.0 h	0.0 h
FAES 1308	0.0 h	0.0 h
FAES 1309	0.0 h	0.0 h
FAES 1310	0.0 h	0.0 h
FAES 1314	0.0 h	0.0 h
FAES 1322	0.0 h	0.0 h

¹Percentage survival was determined by visually estimating the amount of the total ground cover in each plot that had green leaf tissue.

²Within columns, means followed by the same letter are not significantly different according to Fisher's Protected LSD ($P \leq 0.05$).

Table 2. Survival of NTEP bermudagrass entries in Haysville, KS

Cultivar or progeny	Percentage survival ¹
	May 20
DT-1	93.3 abc
Riviera ³	91.7 abc
OKS 2011-1 ³	86.7 bcd
11-T-510	81.7 cde
OKS 2011-4 ³	76.7 def
PST-R6P0 ³	73.3 efg
11-T-251	71.7 efgh
BAR C291 ³	68.3 efghi
OKS 2009-3 ³	61.7 fghij
MBG 002 ³	60.0 fghij
MSB 281	60.0 fghij
FAES 1326	51.7 ghijk
North Shore SLT ³	48.3 hijk
PST-R6CT ³	48.3 hijk
PST-R6T9S ³	46.7 ijk
Tifway	40.0 jkl
Celebration	25.0 klm
FAES 1327	25.0 klm
NuMex- Sahara ³	11.7 lm
FAES 1325	10.0 m
Princess 77 ³	0.0 m
12-TSB-1 ³	0.0 m

¹Percentage survival was determined by visually estimating the amount of the total ground cover in each plot that had green leaf tissue.

²Within columns, means with followed by the same letter are not significantly different according to Fisher's Protected LSD ($P \leq 0.05$).

³Seeded entry.



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