

# Differences Exist in the Divot Recovery Among Bermudagrass and Zoysiagrass Cultivars

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Photo by Antonio Pompeiano

University of Arkansas divoting tool

**Summary.** Bermudagrass and zoysiagrass are the most popular species for golf course tees and fairways in Arkansas. Utilizing species and cultivars that have faster divot recovery will improve playing conditions on golf courses. Five of the most common cultivars of bermudagrass and seven of the most common cultivars of zoysiagrass grown in Arkansas were divoted to evaluate the time necessary for 50% recovery. Riviera, Princess-77, Palisades, El Toro and Diamond had the fastest divot recoveries while Zorro, Tifway, Patriot, Meyer, Tif-

sport, Cavalier, and Zenith had the slowest recoveries. These results, which are that some zoysiagrass cultivars have divot recovery similar to bermudagrass, are consistent with the findings of previous research of divot recoveries of bermudagrass or zoysiagrass in separate field studies. The findings of this research will ultimately help golf course superintendents reduce the costs associated with maintaining golf course fairways or tees as well as improve the playability of the golf course.

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Bermudagrass (*Cynodon* spp.) growth is typically considered more aggressive than zoysiagrass (*Zoysia* spp.) during establishment; however, newer cultivars of zoysiagrass have improved establishment rates and divot recovery (Karcher et al., 2005b; Patton et al., 2007). Karcher et al. (2005a, 2005b) recently examined the divot recovery of numerous bermudagrass and zoysiagrass cultivars in separate field studies. Although these species were in separate studies, data suggests that the recuperative capacity of these two species may not be as different as previously thought. The objective of this study is to quantify the divot recovery of bermudagrass and zoysiagrass cultivars when planted and managed in the same study.

### Materials and Methods

Five cultivars of bermudagrass and seven cultivars of zoysiagrass were established in the summer of 2007 (Fig. 1). Plots were maintained under golf course fairway or sports field conditions, with a mowing height of 0.5 inch and monthly applications of 1.0 lb N/1000ft<sup>2</sup> for bermudagrass and 0.5 lb N/1000ft<sup>2</sup> for zoysiagrass during the growing season. Plots were divoted on 25 August 2008. Standardized divots (2.0 by 4.0 inch) were cut from each plot using a modified edger (Fry et al., 2008) and then backfilled with topdressing sand. Recovery was monitored for each divot by collecting digital images semi-weekly, beginning on the day of injury and continuing until full recovery was reached. Each image was analyzed for percent green turf cover using SigmaScan Pro software (Richardson et al., 2001). Three images (subsamples) were collected and averaged for each plot. A full description of this technique and data analysis is presented elsewhere (Karcher et al., 2005a).

### Results and Discussion

Diamond, El Toro, and Palisades zoysiagrass in addition to Princess-77 and Riviera bermudagrass had the fastest times to reach 50% divot recovery (Fig. 1). Those cultivars with relatively slower recoveries included Zorro, Tifway,

Patriot, Meyer, TifSport, Cavalier, and Zenith.

Previous divot studies with bermudagrass and zoysiagrass divot recovery were performed by Karcher et al. (2005a, 2005b) and were conducted simultaneously at the same location; however, cultivars between species were not evaluated within the same trial. As a result, comparisons across the two species of the trials could not be performed. These results, which are that some zoysiagrass cultivars have divot recovery similar to bermudagrass, are consistent with the findings of previous research of divot recoveries of bermudagrass or zoysiagrass in separate field studies.

There were some similarities in trends that existed between this research and that of Karcher et al. (2005a, 2005b). Riviera and Princess-77 were among those cultivars with the fastest time to reach 50% recovery in our trial and that of Karcher et al. (2005a). TifSport also had a similar performance in both studies, as it had a relatively longer time to reach 50% recovery. One additional similarity is the superior performance of Palisades in both this research and that of Karcher et al. (2005b).

One difference that existed between this work and that of Karcher et al. (2005a, 2005b) is the overall length of time for divots to reach 50% recovery. In Karcher et al. (2005a, 2005b), plots were divoted on 1 August, and in this current study, plots were divoted on 25 August. This delay in the growing season may have been one reason for the difference in days to reach 50% recovery for these studies. Another potential explanation for this difference in recovery time is the summer of 2008 was unseasonably cool and wet, which would have reduced growth rates of bermudagrass and zoysiagrass (Richardson and Stiegler, 2009). Additionally, Cavalier and Zenith had relatively longer recovery times than what was found in previous research. To better understand these differences, this study will be repeated using these same species and cultivars in 2009.

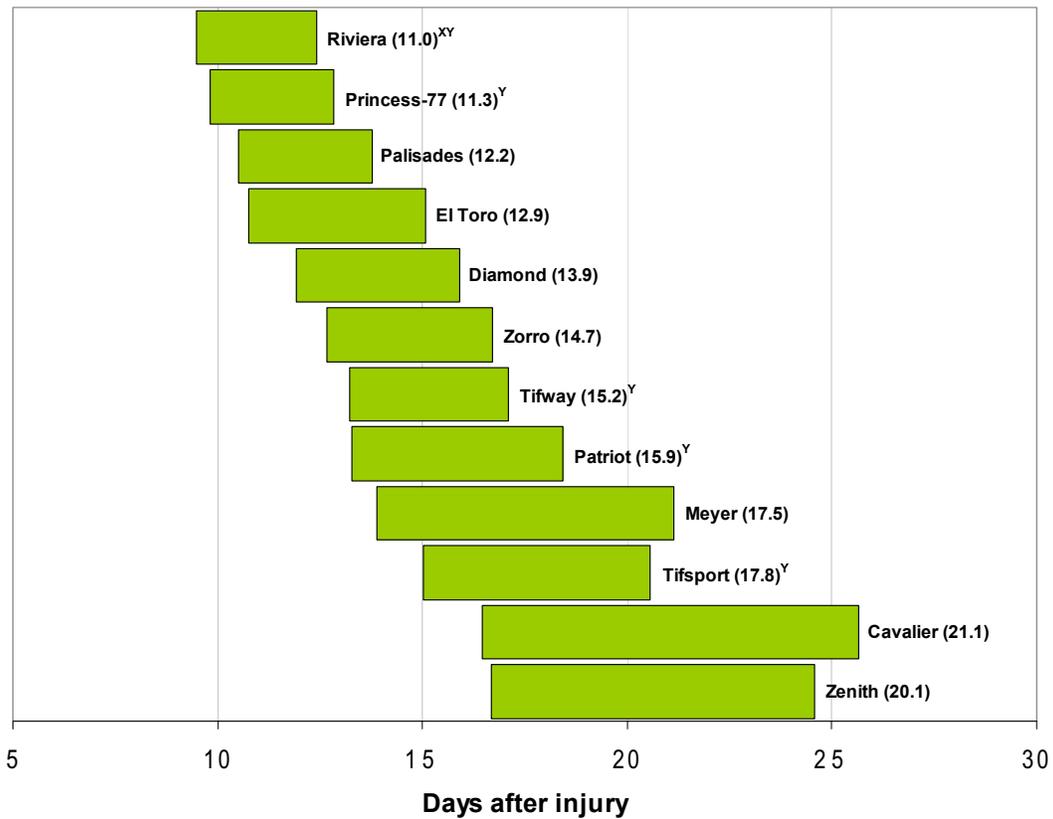
This research will better equip golf course superintendents with the knowledge of which cultivars of bermudagrass and zoysiagrass have the fastest recovery time from divoting by providing

them with more information on species and cultivar selection. Through better cultivar/species selection, costs associated with maintaining golf course fairways and tees could be reduced while improving the playability of the golf course. This study will be conducted again in 2009 to enhance our understanding of the divot recovery of these species and cultivars.

#### Literature Cited

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## Days to 50% Recovery<sup>z</sup>



<sup>z</sup> Recovery was calculated as described by Karcher et al. 2005a.

<sup>x</sup> Confidence interval (95%) box displaying number of days to reach 50% recovery; the estimated number of days for each cultivar is in parentheses. Pairs of means are significantly different ( $P=0.05$ ) if their confidence interval bars do not overlap.

<sup>y</sup> Indicates a bermudagrass cultivar.

**Fig. 1. Estimated number of days for divots to reach 50% recovery for various bermudagrass and zoysiagrass cultivars.**