

Divot Recovery Among Bermudagrass and Zoysiagrass Cultivars – Year 2

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Additional index words: fairway, tee, golf course, digital image analysis, *Zoysia japonica*, *Zoysia matrella*, *Cynodon dactylon*, *C. dactylon* x *C. transvaalensis*

Trappe, J., A. Patton, D. Karcher, and M. Richardson. 2010. Divot recovery among bermudagrass and zoysiagrass cultivars—year 2. Arkansas Turfgrass Report 2009, Ark. Ag. Exp. Stn. Res. Ser. 579:119-122.



Photo by Jon Trappe

Divot recovery is a key factor in the performance of turf on golf courses.

Summary. Divots created by a golf stroke are a regular occurrence on golf course fairways and tees. Divot recovery is an important factor that should be considered when selecting a species or cultivar for use on golf course tees or fairways. There are few reports comparing divot recovery of bermudagrass and zoysiagrass cultivars. Therefore, the objectives of this experiment were to quantify the divot recovery for various bermudagrass and zoysiagrass cultivars in a field experiment. Divot recovery was evaluated on three collection dates in 2009 on five cultivars of bermudagrass and seven

cultivars of zoysiagrass. Princess 77 and Riviera bermudagrass were typically the cultivars with the fastest time to 50% recovery, whereas Meyer and Zenith zoysiagrass were typically the slowest. Additionally, Tifway bermudagrass had similar divot recovery to El Toro zoysiagrass. These results demonstrate that differences and similarities exist among bermudagrass and zoysiagrass cultivars for divot recovery and will allow golf course superintendents to better select cultivars and species that will improve playing conditions while decreasing inputs.

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A swing by a golfer while attempting to strike a golf ball commonly displaces an area of turf and soil that is referred to as a divot. It has been estimated that approximately 0.5 acres of turf are removed by divoting from a bermudagrass golf course fairway each year (Patton et al., 2010). The amount, size, and length of time divots exist on a tee or fairway can be dependent on species and cultivar (Beard, 1973). The rate of recovery of a turfgrass from divoting is an important factor that should be considered when selecting a species or cultivar for use on golf course tees or fairways, especially for facilities that have a high volume of play.

Karcher et al. (2005a, 2005b) examined the divot recovery of numerous bermudagrass (*Cynodon* spp.) and zoysiagrass (*Zoysia* spp.) cultivars in separate field studies. Although these species were in separate experimental areas, their data suggest that the recuperative capacity of these two species may not be as different as previously thought and reported in popular texts (Beard, 1973; Turgeon, 1996). For example, in 2004, Karcher et al. (2005a) reported that Riviera bermudagrass required 4.6 days to reach 50% recovery, while Karcher et al. (2005b) reported that Palisades zoysiagrass required 4.2 days to reach 50% recovery.

Therefore, the objectives of this experiment were to quantify and directly compare the divot recovery for various bermudagrass and zoysiagrass cultivars in a single field experiment.

Materials and Methods

Five cultivars of bermudagrass and seven cultivars of zoysiagrass were established in the summer of 2007. Plots were maintained under golf course fairway conditions, with a mowing height of 0.5 inch and monthly applications of 1.0 lb N/1000 ft² for bermudagrass and 0.5 lb N/1000 ft² for zoysiagrass during the growing season. Plots were divoted on 21 May and 29 June in 2009. 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 semiweekly, beginning on the day of injury and continuing until full re-

covery 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

Differences among cultivars in time to reach 50% recovery occurred for each of the three divoting periods. When divoted 21 May 2009, the cultivars having the fastest time to 50% recovery were Princess 77, Riviera, Tifsport, and Tifway bermudagrass, as well as Palisades, Cavalier, and Zorro zoysiagrass (Fig. 1). The cultivars having the slowest time to 50% recovery and slower than Princess 77 and Riviera were Zenith, Diamond, El Toro, and Meyer zoysiagrass and Patriot bermudagrass.

The cultivars with the fastest time to 50% recovery from injury for plots divoted 29 June 2009 were Princess 77, Patriot, and Riviera bermudagrass (Fig. 2). The cultivars Tifway and Tifsport bermudagrass had slower divot recovery than Princess 77, Patriot, and Riviera bermudagrass, but faster than Meyer, Zenith, Diamond, and Cavalier zoysiagrass.

In summary, the cultivars generally with the fastest time to 50% recovery were Princess 77 and Riviera bermudagrass. The cultivars generally with the slowest time to 50% recovery were Meyer and Zenith zoysiagrass. Additionally, Tifway bermudagrass and El Toro zoysiagrass were similar in divot recovery. *Cynodon dactylon* consistently had the fastest recovery, while other species tended to have similar recovery rates across all cultivars. These results demonstrate that differences and similarities exist among bermudagrass and zoysiagrass cultivars for divot recovery. These results also suggest that differences in divot recovery between bermudagrass and zoysiagrass may be less than previously expected. Golf course superintendents should select a species or cultivar having a fast divot recovery for use on fairways or tees anticipating heavy amounts of divoting, especially driving range and par 3 tees.

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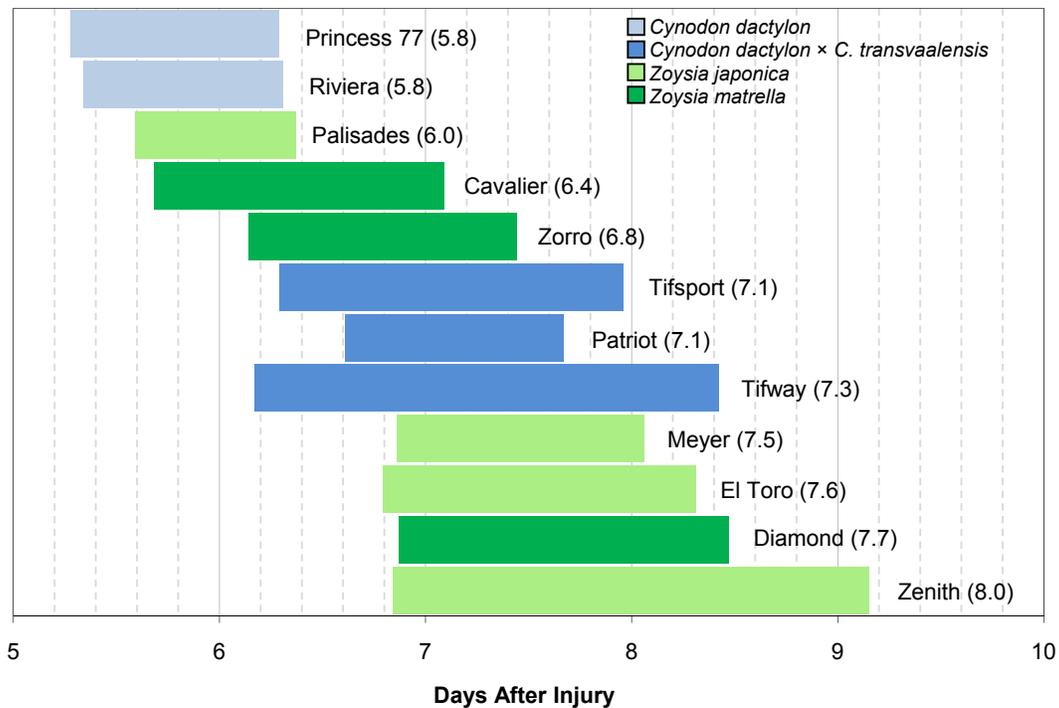


Fig. 1. Confidence intervals (95%) for mean number of days to 50% recovery from divoting on 21 May 2009. Cultivars are not significantly different ($\alpha = 0.05$) if their confidence interval bars overlap. Cultivar name and number of days to 50% recovery (in parentheses) are located to the right of their corresponding bar.

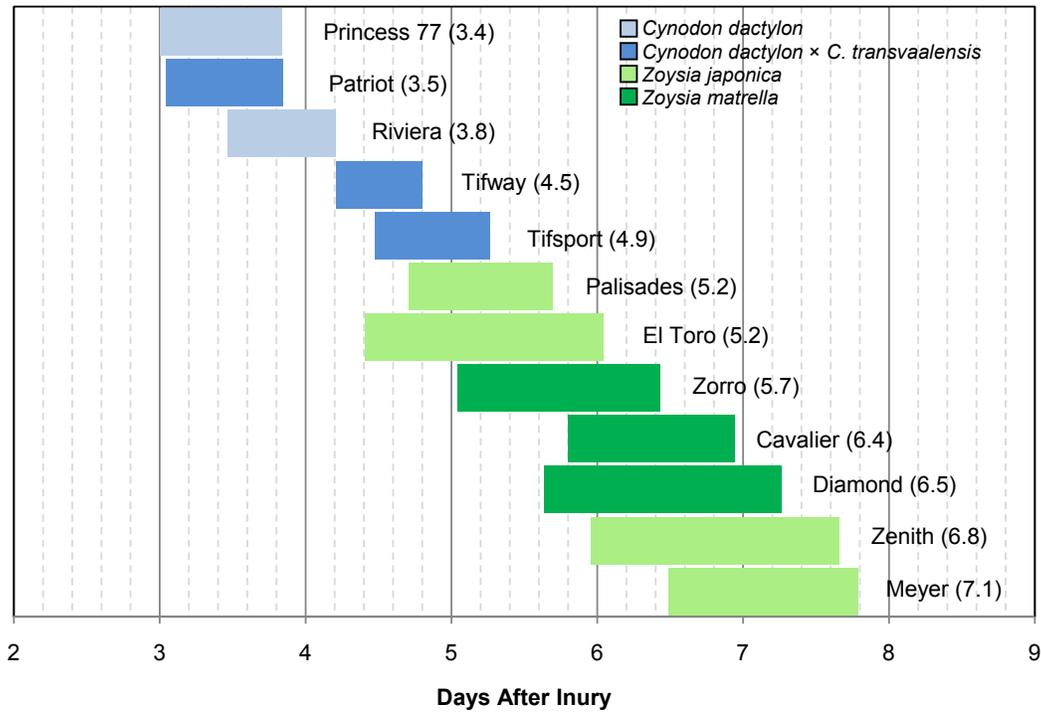


Fig. 2. Confidence intervals (95%) for mean number of days to 50% recovery from divoting on 29 June 2009. Cultivars are not significantly different ($\alpha = 0.05$) if their confidence interval bars overlap. Cultivar name and number of days to 50% recovery (in parentheses) are located to the right of their corresponding bar.