

## Defining Optimum Seeding Rate for Bermudagrass and Zoysiagrass

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### Objective

Define an acceptable range of seeding rates for bermudagrass and zoysiagrass based on rate of establishment and winter survival.

### Rationale

The use of seeded bermudagrass and zoysiagrass has risen due to the increased availability and improvement of seeded varieties. These seeded varieties are relatively new and little is known about their establishment and management. For example, recommended seeding rates for zoysiagrass widely range from 0.75 to 4.1 lbs pure live seed (PLS)/1000ft<sup>2</sup>. Bermudagrass recommended seeding rates also include a broad range from 0.25 to 2.0 lbs PLS/1000ft<sup>2</sup>. This experiment will enable us to define a range of optimum seeding rates for seeded bermudagrass and zoysiagrass varieties as well as determine their affects on winter survival.

### How It Was Done

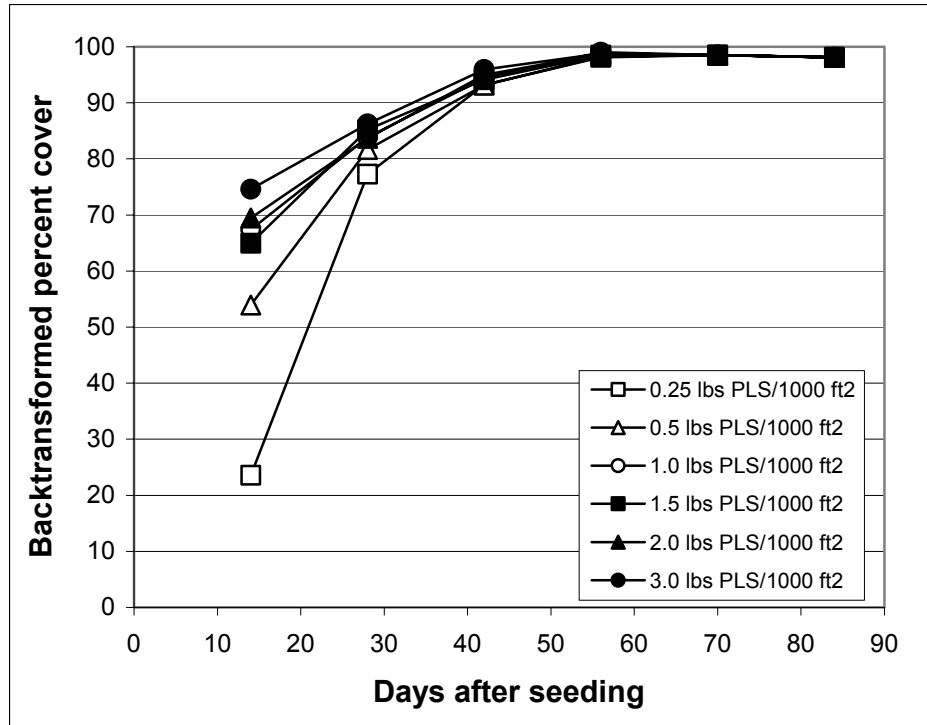
The experiment was conducted in 2001 and 2002 at the W.H. Daniel Turfgrass Research and Diagnostic Center, West Lafayette, IN. The experimental area was fumigated prior to establishment to minimize competition from annual grasses and broadleaf weeds. The area was then smoothed and leveled to prepare the seedbed. Hulled 'Mirage' bermudagrass was seeded on 6 July 2000 and 22 June 2001 at 0.25, 0.5, 1.0, 1.5, 2.0 and 3.0 lbs PLS/1000 ft<sup>2</sup> and 'Zenith' zoysiagrass was seeded on 22 June in both 2000 and 2001 at 0.5, 1.0, 2.0, 3.0, 4.0, and 6.0 lbs PLS/1000 ft<sup>2</sup>. Areas were covered with an AgroFabric germination blanket for two weeks after seeding to prevent seed movement. Seeded plots received 1.0 lb N/1000 ft<sup>2</sup> with urea every month after seeding until August. The experimental area was irrigated as needed to encourage germination and establishment, and mowed at 0.5 inches with a reel-type mower as needed with clippings collected. Data was collected biweekly as percent cover and tiller density. Tiller density was determined by counting the number of tillers in each of the 5.0 cm diameter plugs removed from the plots. Three subsamples were collected from each plot and samples were collected from the same area in each plot using a grid. Additional quality data and digital image analysis data were collected in 2002. Experimental design was a randomized complete block design with six treatments and three replications for each species.

### Results

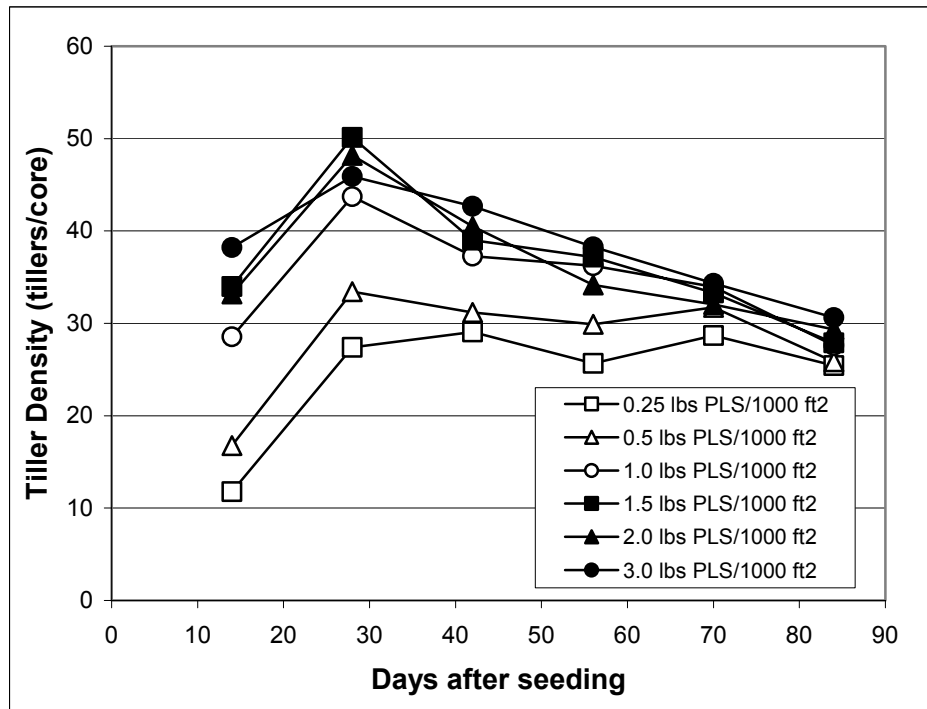
- Though 2002 was a better growing year for warm-season grasses in Indiana than 2001, statistical analysis shows that *F*- values for the test of homogeneity of variance between years were not significant. Therefore, data from 2001 and 2002 were combined and analyzed.
- Seeded bermudagrass has strong stoloniferous growth during establishment. After only 42 days after seeding (DAS) treatment effects were not significant and all seeding rates produced equivalent cover(Fig. 1). Equilibrium among the seeding rates for tillering occurred later at 70 DAS (Fig. 2).
- Zoysiagrass has both stoloniferous and rhizomatous growth similar to bermudagrass, but has a slower germination and growth rate. Similarities in

cover among seeding rates did not appear until later in the study due to the slower growth (Fig. 3). *F*-tests showed that all seeding rates produced similar turf cover at 84 DAS and tillers/area at 70 DAS (Figs. 4 and 5).

- Bermudagrass can be seeded at very low rates, and there is no advantage to seeding more than 1.0 lbs PLS/1000ft<sup>2</sup>. Zoysiagrass should be seeded between 1.0 and 2.0 lbs PLS/1000ft<sup>2</sup>. The low rate of zoysiagrass (0.5 lbs PLS/1000ft<sup>2</sup>) was significantly different than other treatments for the majority of the studies and is not recommended for areas that require more rapid establishment.



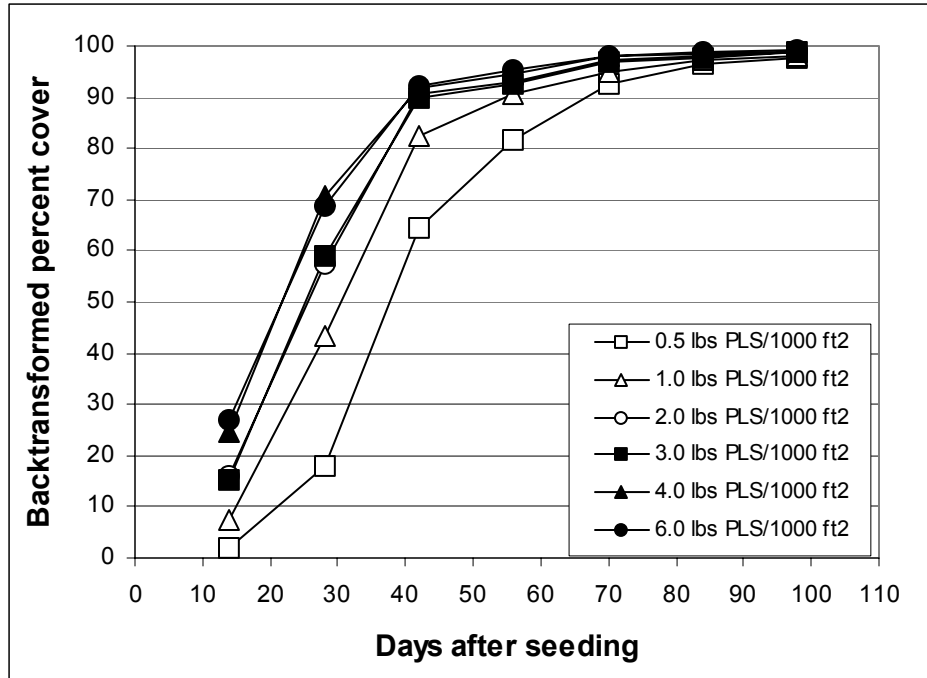
**Figure 1.** Effects of seeding rate on bermudagrass backtransformed percent cover ratings combined over two years.



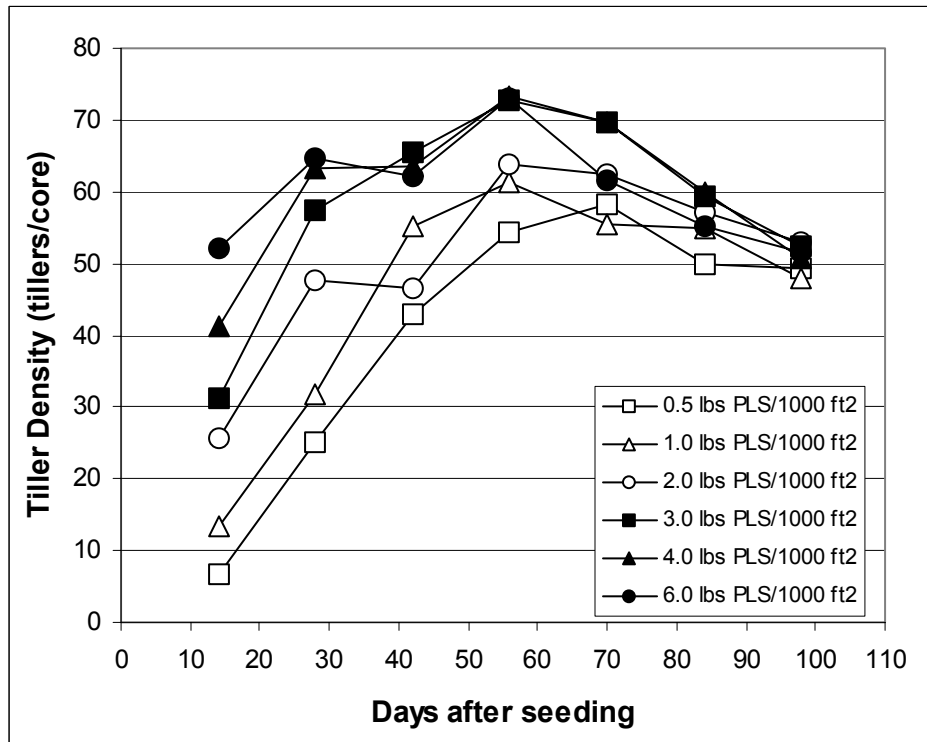
**Figure 2.** Effects of seeding rates on bermudagrass tiller density combined over two years.



**Figure 3.** Time and seeding rate effects on zoysiagrass cover.



**Figure 4.** Effects of seeding rate on zoysiagrass backtransformed percent cover ratings combined over two years.



**Figure 5.** Effects of seeding rates on zoysiagrass tiller density combined over two years.