

Defining Optimum Seeding Date for Bermudagrass and Zoysiagrass Fairways

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Objective of project

The objective of this project is to identify optimum and acceptable seeding dates for seeded bermudagrass (*Cynodon dactylon*) and zoysiagrass (*Zoysia japonica*). Determining optimum and acceptable seeding dates, in this case, is based on rate of establishment, amount of weed pressure, and winter survival.

Rationale

Zoysia or bermudagrass fairways require less inputs than do most cool season fairway turfs, and thus are less expensive but more environmentally friendly to maintain. These grasses require less fungicide, insecticide, herbicide, fertilizer, and irrigation inputs than the cool season grasses currently used in the transition zone. However, bermudagrass and zoysiagrass are traditionally established vegetatively at costs up to \$15,000/A. The newly available seeded bermudagrass and zoysiagrass can be established for as little as \$1000/A. Seeded cultivars will allow many more golf courses, from high budget to low budget, to utilize warm season grasses for their fairways and/or tees. Before seeded bermudagrass and zoysiagrass can be used on golf courses, establishment and management strategies must be better understood. First and foremost is determining the optimum, as well as the range of acceptable seeding dates.

How It Was Done

The experiment was conducted at the W.H Daniel Turfgrass Research and Diagnostic Center, West Lafayette, IN. Additionally, Dr. David Williams from the University of Kentucky is collaborating on this project performing almost identical projects in Lexington. Soil type on the experimental area is a Chalmers silt loam. The experimental area was fumigated in Apr 2000 with methyl bromide to minimize competition from annual grasses and broadleaf weeds that would complicate data measurement. The area was then smoothed and leveled to prepare the seedbed. 'Mirage' bermudagrass at 0.5 lbs PLS/1000 ft² and 'Zenith' zoysiagrass at 1.0 lbs PLS/1000 ft² was seeded on 1 and 15 June, 1 and 15 July, and 1 and 15 Aug, and 1 Sep \pm 1 day. Seeded plots received 1.0 lb N/1000 ft² with urea every two weeks after germination. The experimental area was irrigated as needed to encourage germination and establishment, and mowed at 1.0 inch as needed. Percent cover of zoysia and bermudagrass was recorded every two weeks in 2000. Weed cover and winter survival will be recorded in spring 2001. The entire study will be repeated in 2001.

Preliminary Results

As expected, bermudagrass germinated and established much faster than zoysiagrass. By the final data recording in Oct, bermudagrass seeded between 1 June and 1 Aug provided greater than 90% cover by 2 Oct (Fig. 1). Only zoysiagrass seeded on 1 and 15 June produced greater than 90% cover by 2 Oct. Bermudagrass consistently required only 4 weeks to reach 90% cover, whereas zoysiagrass took 10 weeks or more to reach 90% cover. Slow germination of zoysiagrass may enhance weed populations compared to the faster-germinating bermudagrass, but fumigation virtually eliminated weed pressure on our site. Results of adjacent studies at Purdue are evaluating the safety of various herbicides on these grasses shortly after emergence can be found in the following

report. Though it appears that bermudagrass has a tremendous advantage in speed of establishment over zoysiagrass, zoysia is more winter tolerant and we expect significant winter damage to occur on the later-seeded bermudagrass. Winter survival data will be recorded June 2001 and the entire study will be repeated next year in 2001.

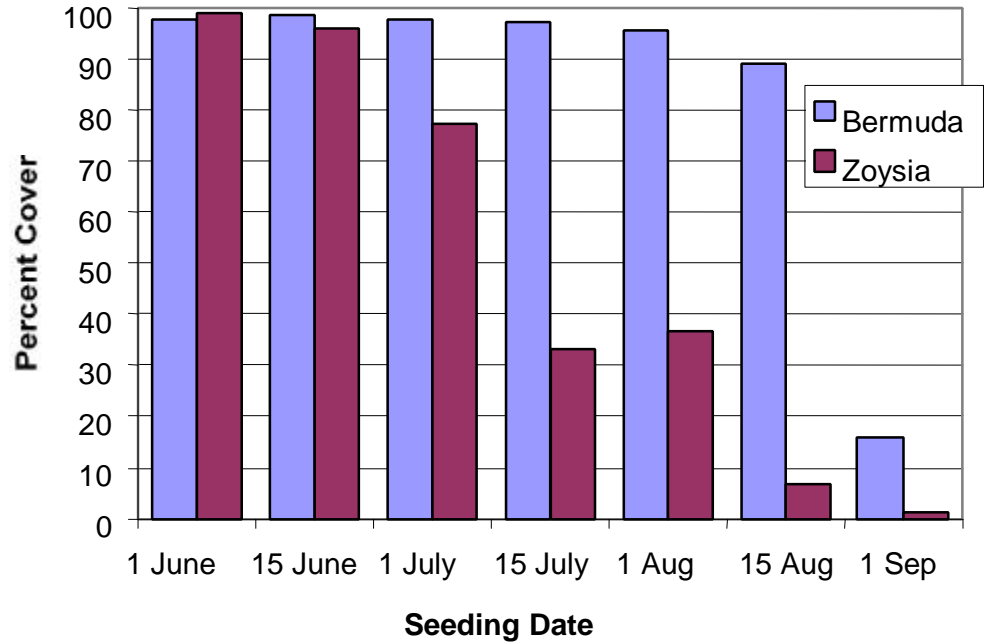


Figure 1. Oct 2000 cover of 'Mirage' bermudagrass and 'Zenith' zoysiagrass when seeded between 1 June and 1 Sep. 2000.