

Developing Best Management Practices for Bermudagrass Control in Zoysiagrass Fairways

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Objectives:

1. Evaluate the best-integrated practices for fairway conversion of bermudagrass (*Cynodon dactylon*) to 'Zorro' zoysiagrass (*Zoysia matrella*) turf through various cultural and chemical methods.
2. Evaluate the influence of various cultural practices on zoysiagrass competitiveness with bermudagrass.
3. Evaluate the competitive effects of various weed species on seeded 'Zenith' zoysiagrass (*Z. japonica*).
4. Evaluate new aryloxyphenoxypropionate (AOPP) herbicides for control of bermudagrass in zoysiagrass turf.

Start Date: 2007

Project Duration: two years

Total Funding: \$20,000

Turf renovation is increasingly popular where golf course superintendents wish to convert from older bermudagrass fairways to more desirable zoysiagrass. A successful renovation requires that the existing grass species be effectively controlled to permit the establishment of a monoculture of the preferred species. The efficacy of nonselective herbicide applications for bermudagrass control prior to establishment has been reported to vary. Regrowth of undesirable bermudagrass is a major problem with turf renovations, especially when converting to a different grass species. Severe contamination often leads to a poor turfgrass stand due to differences in color, texture, and growth-habit. Research is being conducted to evaluate integrated practices using herbicides and soil sterilants to convert a 'Tifway' bermudagrass fairway to 'Zorro' zoysiagrass.

The fairway conversion study was initiated in May 2009. Plots measured 5' X 10' and were arranged in a randomized complete block design with four replications. 'Zorro' zoysiagrass was sprigged at a rate of 10 bushels/1000 ft². At 15 weeks after establishment, EPTC and dazomet treatments applied in combination with glyphosate or siduron controlled bermudagrass well, yielding less than 15% bermudagrass cover. Zoysiagrass cover was greater than 80% at this rating using these treatments. Conversely, siduron and glyphosate controlled bermudagrass poorly (70% cover) and resulted in less than 30% zoysiagrass cover.

To evaluate the influence of cultural practices on zoysiagrass competitiveness with bermudagrass, a standard cup cutter was used to transplant common and



Research has been conducted at Auburn University to evaluate new aryloxyphenoxypropionate (AOPP) herbicides for their efficacy on bermudagrass control.

'Tifway' bermudagrass plugs into 'Zorro' zoysiagrass plots. Treatments included increasing rates of nitrogen with and without trinexapac-ethyl. Plugs were rated monthly for maximum diameter spread.

At one month after the initial treatment, there were no significant differences among treatments. At two months after the initial treatment, trinexapac-ethyl resulted in the smallest diameter spread of 'Tifway' bermudagrass. Trinexapac-ethyl + 1.0 lb/1000 ft² nitrogen applied to common bermudagrass significantly increased diameter spread compared to other treatments.

Greenhouse studies were initiated in October 2009 to evaluate the competitive effects of crabgrass (*Digitaria spp.*) and goosegrass (*Eleusine indica*) on seeded 'Zenith' zoysiagrass (*Zoysia japonica*) establishment. The experiments are an additive design where 'Zenith' zoysiagrass seeding rate is held constant while weeds per unit area were increased. Plant counts and developmental stage will be observed weekly until 8 weeks after seeding. A final harvest and analysis of zoysiagrass dry weights among treatments will also be taken.

The evaluation of new AOPP herbicides for bermudagrass control study

was initiated in June 2009. Three sequential applications of clodinafop, fenoxaprop, and metamifop applied alone and in combination with triclopyr were made at 3-week intervals. Plots were visually rated weekly for bermudagrass control and zoysiagrass injury using a 0-100% scale.

Three weeks after the final application, clodinafop, fenoxaprop, and metamifop applied alone controlled bermudagrass poorly (less than 60%). Additionally, clodinafop and fenoxaprop caused unacceptable injury to zoysiagrass (greater than 30%). All treatments tank-mixed with triclopyr significantly reduced injury to zoysiagrass and increased bermudagrass control.

Summary Points

- EPTC and dazomet applied with glyphosate or siduron were the most effective practices for converting bermudagrass to zoysiagrass.
- Greenhouse studies have been initiated to assess the competitive effects of crabgrass and goosegrass on seeded zoysiagrass establishment.
- Fenoxaprop, and unlabeled clodinafop and metamifop, tank-mixed with triclopyr are safe to apply to zoysiagrass and effectively control bermudagrass.