

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

Zoysiagrasses (*Zoysia spp.*) are becoming a popular choice of turf for golf courses in the transition zone. Their relatively slow growth rate, high density, and tolerance to shaded areas make them a good choice for a golf course setting. However, one of the most difficult weeds to control in zoysiagrass is bermudagrass (*Cynodon dactylon*). Using herbicides to control bermudagrass in zoysiagrass has traditionally been ineffective due to their physiological similarities as C₄, warm-season grasses. Therefore, zoysiagrass is typically susceptible to the same herbicides used to control bermudagrass.

Recent research has been conducted to evaluate new aryloxyphenoxypropionate (AOPP) herbicides for their efficacy on bermudagrass control. Favorable results have been observed for bermudagrass control and zoysiagrass safety when AOPP herbicides are tank-mixed with triclopyr. Additional research is now being conducted to evaluate other AOPP herbicides for bermudagrass control.

The fairway conversion study was initiated in May 2008. Plots measured 5' X 10' and were arranged in a randomized complete block design. 'Zorro' zoysiagrass was sprigged at a rate of 10 bushels/1000 ft². Siduron applied at establishment provided the poorest bermudagrass control. Treatments with EPTC and dazomet applied before zoysiagrass establishment yielded the lowest bermudagrass groundcover. Treatments with good bermudagrass control yielded higher zoysiagrass cover than those with poor control.

To evaluate the influence of cul-



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

tural practices on zoysiagrass competitiveness with bermudagrass, a standard cup cutter was used to transplant 'Common' and 'Tifway' bermudagrass plugs into 'Zorro' zoysiagrass plots. Treatments included increasing rates of nitrogen with and without trinexpac-ethyl. Plugs were rated monthly for maximum diameter spread.

At one and two months after initial treatment, there was no significant difference among treatments. This is designed as a long-term study and it is reasonable to assume that greater separation in treatments will be observed in time. We will be initiating this study in a japonica and matrella type next year to evaluate this effect.

A greenhouse study was initiated in October 2008 to evaluate the competitive effects of various weed species on seeded 'Zenith' zoysiagrass (*Zoysia japonica*). It has been our observation that *Digitaria spp.* are the most detrimental to zoysiagrass development, while goosegrass and sedge species are not as competitive. The study involves an additive design in which zoysiagrass seeding rate is held constant while weed seeding rate is increased. Ratings of percent weed and turf

cover will be measured over an 8-week period.

The evaluation of new AOPP herbicides for bermudagrass control study was initiated in June 2008. Plots were visually rated for bermudagrass control and zoysiagrass injury. Digital images utilizing a light box were also taken and analyzed for percent green cover using Sigma Scan Pro.

When applied at 3-week intervals, clodinafop and fenoxaprop are not safe to apply to zoysiagrass turf and do not effectively control bermudagrass. Metamifop tank-mixed with triclopyr is safe to apply to zoysiagrass and effectively controls bermudagrass.

Summary Points

- EPTC and dazomet in mixtures provided the best management strategy for fairway conversion of bermudagrass to zoysiagrass.
- Studies have been initiated to evaluate the competitive effects of weed species on 'Zenith' zoysiagrass.
- Metamifop tank-mixed with triclopyr is safe to apply to zoysiagrass and effectively controls bermudagrass.