Weed Efficacy of SEP 100: Rate, Tillage and Tarp Effects

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Production of high quality warm-season turfgrass sod requires that noxious weeds be eliminated. In Alabama, noxious species that are most troublesome include common and hybrid bermudagrass (*Cynodon* spp.), torpedograss (*Panicum repens*), and various perennial sedges (*Cyperus* spp). Traditionally methyl bromide has been the fumigant of choice to eliminate noxious weeds prior to establishing turf. Metam sodium applied preplant soil incorporated and sealed with a polyethylene tarp has provide acceptable control where bermudagrass is the major problem. However, research continues to look for other methyl bromide replacement chemicals. Eliminating the polyethylene tarp is also of major interest to sod producers. Research at Auburn University by R. Rodriguez-Kabana has shown that SEP 100 (sodium azide) has shown good potential to control noxious weeds and because it is not a true fumigant, potential may exists to use it without a tarp.

Common procedures. Three experiments were conducted summer 2003 at the Auburn University Turfgrass Research Unit on the above noxious weed species. The soil at this location is a sandy loam with 1 to 1.5% organic matter. Each of the tiers is equipped with an automatic irrigation system. All treatments were applied with a CO_2 back-pack sprayer and SEP 100 was not mixed with any spray diluent. Individual sprayed plot width was always 1.8 m and length ranged from 5 to 10 m. Treatments were replicated either 3 or 4 times. Visual ratings were taken over time for each weed species in question. All sites received 1 cm irrigation daily.

Tarp and tillage effects. This site was infested with torpedograss, hybrid bermudagrass, and yellow nutsedge (*Cyperus esculentus*). SEP 100 rate was 112 kg a.i. $ha^{-1.}$ Experimental design was a split plot with tarps as whole plot and tillage as sub-plots. Tarps were: 1) none; 2) clear plastic; 3) black plastic; 4) row-crop cover (woven, porous fabric). Tillage and applications were: 1) no-till surface applied; 2) tilled and surface applied; 3) tilled, surfaced applied and re-tilled. SEP 100 provided unacceptable control of torpedograss with any treatment.

Tillage effects. This site was infested with torpedograss, hybrid bermudagrass and yellow nutsedge. SEP 100 rate was 224 kg a.i. ha^{-1} in all treatments except the non-treated control. Treatments were: 1) glyphosate at 3.36 kg a.e. ha^{-1} 7 days prior, notill, no tarp; 2) notill, no tarp; 3) notill, clear plastic tarp; 4) tilled, surface applied; 5) tilled, surface applied, re-tilled; 6) tilled, half SEP 100 tilled into soil and remaining half surface applied. Preliminary results show that glyphosate pre-treatment plus SEP 100 is the only treatment void of weeds after 10 days.

Tillage and glyphosate pre-treatment. This site was infested with hybrid bermudagrass. The sod was harvested and the site received nitrogen fertilization and irrigation to stimulate re-growth. When re-growth averaged 40% groundcover, half of the area received glyphosate at 3.36 kg ha^{-1}. Seven days later, both the glyphosate and non-glyphosate areas were tilled with a horizontal-action tiller. This was done on 3

separate days in order to achieve a good seedbed. SEP 100 rates were 112 and 168 kg ha^{-1}. Tillage treatments were: 1) surface applied; 2) surface applied and re-tilled; 3) half rate tilled into soil and remaining half surface applied; 4) surface applied and clear plastic tarp. Preliminary results suggest that glyphosate pre-treatment can substitute for the clear plastic tarp.