

RESPONSE OF ANNUAL WEEDS AND SELECT TURFGRASSES TO YELLOW MUSTARD SEED MEAL. Daniel T. Earlywine, Reid J. Smeda, Travis C. Teuton and Carl E. Sams, Graduate Research Assistant, Associate Professor, Former Assistant Professor, Division of Plant Sciences University of Missouri, Columbia, MO 65211 and Professor, Department of Plant Sciences University of Tennessee, Knoxville, TN 37996-4561.

Soil fumigants control many soil-borne pests, and professionals in the turfgrass industry often use soil fumigants prior to turfgrass establishment or replacement of existing turf. Yellow mustard (*Sinapis alba* L.) seed meal (MSM) is an organic fumigant that controls many weeds in cropping systems, but few studies have been conducted in turfgrass. Field experiments were conducted at the University of Missouri during 2007 and 2008 to evaluate the response of annual weeds and select turfgrasses to MSM. Treatments consisted of soil applied MSM at 1120, 1680, 2240, 2800, and 3360 kg/ha and sealed with polyethylene plastic sheets (tarp) for 7 days or left uncovered (untarped). All treatments were compared to dazomet at 390 kg/ha with plant densities, heights, and biomass recorded to elucidate effects. Annual bluegrass (*Poa annua*), tall fescue (*Lolium arundinacea*), perennial ryegrass (*Lolium perenne*), common bermudagrass (*Cynodon dactylon* L.) large crabgrass (*Digitaria sanguinalis*), buckhorn plantain (*Plantago major*), and white clover (*Trifolium repens*) were established in treated areas.

In general, deleterious effects on the weeds in this study (annual bluegrass, large crabgrass, buckhorn plantain, and white clover) were noted in 2007 and 2008. For large crabgrass and buckhorn plantain, plant densities in 2007 and 2008 were reduced 10 to 75% and 17 to 69 % respectively, although height and biomass of emerged plants was not impacted. For white clover in 2008, plant density and biomass were reduced 67 and 66%, respectively for the high rates of MSM compared to the untreated control. Annual bluegrass was most sensitive to MSM residues, with plant density and biomass reduced up to 73 and 48% in 2007 and 2008, respectively. MSM residues at the rates used in this study had no negative impact on tall fescue, perennial ryegrass, and bermudagrass. Rather, available nitrogen from MSM residues often increased plant biomass as rates increased. During both years, dazomet resulted in complete suppression of all species tested, except large crabgrass at 75% compared the untreated control during 2007. For both years, the process of tarping improved weed suppression up to 70% over untarped treatments, except annual bluegrass where no differences among tarping for 2008 were evident. Collectively, results indicate MSM selectively suppresses the emergence of several problem weeds in common turfgrass species.