EVALUATION OF GARLIC MUSTARD (ALLIARIA PETIOLATA) CONTROL WITH SPRING AND FALL HERBICIDE APPLICATION. Vijaikumar Pandian and Mark J. Renz, Brown County Horticulture Extension Educator, Department of Agriculture & Natural Resources Extension and Assistant Professor, Department of Agronomy, University of Wisconsin, Madison, WI 53706.

Studies were conducted in Green Bay, Sparta and Postville, Wisconsin in 2007 to evaluate the effectiveness of herbicide treatments in reducing both garlic mustard cover and seed production when applied at various timings. Studies were randomized complete block designs with three to five blocks applied with a CO2 backpack sprayer at 168-224 liters per hectare. At each site, distinct phenological stages of garlic mustard were present, with rosettes present in the spring Green Bay site, plants just beginning to produce a stem (early bolting) at the Sparta site, plants with visible stems expanding (late bolting) at the Postville site, and only fall rosettes present at the fall Green Bay site.

All spring applications in Green Bay reduced the cover of 2^{nd} year plants compared to untreated areas at 89 days after application (DAT), but seedling control varied among treatments with imazapic, imazapic + glyphosate, sulfometuron, and metsulfuron treatments reducing seedling cover greater than flumioxazin and glyphosate treatments. Spring application at the early bolting stage at the Sparta site reduced 2^{nd} year cover of garlic mustard compared to untreated plots with imazapic, imazapic + glyphosate, metsulfuron, flumioxazin, kjm44 and sulfosulfuron reducing the cover of 2^{nd} year plants to 0% at 83 DAT. However, the seed mass/m^2 and seedling cover was reduced in all treatments compared to untreated areas with imazapic, imazapic + glyphosate, sulfometuron , flumioxazin, kjm44 and sulfosulfuron eliminating the seedling cover at 83 DAT. Spring application at late bolting stage in the Postville site also resulted in a reduction of 2^{nd} year cover with glyphosate, metsulfuron, sulfometuron, imazapic, imazapic + glyphosate, flumioxazin, kjm44 and sulfosulfuron providing greater than 95 % reduction at 68 DAT. However, seedling control varied among treatments and only imazapic, imazapic + glyphosate, sulfometuron, metsulfuron and sulfosulfuron treatments reduced the seedling cover to 0%. Late fall application of all treatments except flumioxazin at the Green Bay site showed the reductions in cover of 2^{nd} year plants compared to untreated plots with metsulfuron eliminating the 2^{nd} year cover of garlic mustard at 219 DAT. No treatments reduced the seedling cover compared to the untreated control at the fall application. Results across four sites demonstrate that a range of herbicides can effectively reduce the cover of 2^{nd} year plants applied at late fall and spring season with imazapic, imazapic + glyphosate, sulfometuron and metsulfuron showing to be the most consistent results across sites. Control of seedlings proved to also be accomplishable at all three sites when treatments are applied after emergence in the spring with imazapic, imazapic + glyphosate, sulfometuron and metsulfuron. Glyphosate, the standard treatment in most control efforts, varied in it success across all sites with the reduction in cover at 88%, 60%, 100%, and 81% in spring Green Bay, Sparta, Postville, and fall Green Bay respectively. This indicates that the effectiveness of glyphosate may differ depending on stage of growth or environmental factors specific to each site.

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