

EVALUATION OF FALL AND SPRING CONTROL METHODS ON GARLIC MUSTARD. Mark J. Renz, Brendon. J. Panke, Vijaikumar Pandian, Joyce Cielecki, and Steve Huntzicker. Assistant Professor and Assistant Research Associate, University of Wisconsin, Madison, WI 53706. Brown County Horticulture Extension Educator, Green Bay, WI 54302. La Crosse County Horticulture Educator and Assistant Professor, La Crosse, WI 54601.

As garlic mustard (*Alliaria petiolata*) continues to spread, interest exists in developing management strategies that can be implemented at various timings throughout the fall and spring as these timing prevent seed production and limit non-target plant injury. Research was conducted in understories of hardwood forests in three locations in Wisconsin to evaluate the effectiveness of herbicide application methods and rates for controlling garlic mustard and the response of other herbaceous vegetation present. Treatments consisted of individual plant treatments (IPT) with glyphosate in a 540 g ae L<sup>-1</sup> formulation at 1% product solution, IPT with glyphosate at 2% product solution, broadcasted glyphosate at 0.84 kg ae ha<sup>-1</sup>, broadcasted metsulfuron at 10.5 g ai ha<sup>-1</sup>, and hand-pulled plants (late fall and late spring only). These methods were implemented in early fall before a frost, late in fall after several frosts, early spring just after garlic mustard germination, and late in the spring when garlic mustard is producing flowerbuds. Percent cover of garlic mustard and non-target vegetation were recorded in plots in June one month after late spring applications.

Treatments applied were effective in reducing adult garlic mustard plant cover, with few differences between timings. Reduced control with the 1% rate of glyphosate treated to individual plants was observed in the late fall and early spring at one site. In contrast, control with metsulfuron was consistent across timings at all sites. Hand-pulling garlic mustard in the fall significantly reduced cover the following summer only at one site, but was effective at two of the three sites when pulled in the late spring. Seedling garlic mustard plants were not controlled with any of the fall treatments except metsulfuron in the late fall at one site. All spring herbicide treatments nearly eliminated seedling cover. Hand pulling in the fall resulted in an increase in seedling cover the following spring at one site, but was effective at reducing seedling cover at all sites when conducted in the late spring. Resulting cover of resident non-garlic mustard herbaceous plants from treatments was variable between sites, with sites heavily infested with garlic mustard showing minimal response and medium and light infestations showing some injury depending upon treatment. In medium and light infested areas late fall and early spring herbicide treatments had the greatest herbaceous plant cover excluding garlic mustard. Results document a range of management options are available that are effective for garlic mustard management and if timed correctly management can enhance herbaceous plant cover.