

COMPARISON OF HERBICIDES FOR EARLY SEASON SUPPRESSION OF MILE-A-MINUTE AND IMPACT ON NON-TARGET VEGETATION. A.E. Gover and J.L. Huffman, Penn State Univ., Univ. Park.

ABSTRACT

Pendimethalin is the current preferred herbicide for selective PRE suppression of mile-a-minute (*Polygonum perfoliatum* L., POLPF) in Pennsylvania state parks due to efficacy and minimal impact to established non-target species. Pendimethalin is not effective when seed germination has occurred, and is not labeled for use in wetland settings. An experiment was established in a floodplain at Bald Eagle State Park in Howard, PA, on April 21, 2011, to evaluate alternative treatments for selective suppression of mile-a-minute and Japanese stiltgrass (*Microstegium vimineum* (Trin.) A. Camus var. *imberbe* (Nees) Honda, MCGVM), which were both beginning to emerge. Soil temperatures were 17, 11, and 9 C at 2.5, 7.5, and 15 cm deep, respectively. Treatments included pendimethalin at 4.4 kg/ha, imazapic at 0.0 18 kg/ha alone or added to pendimethalin at 4.4 kg/ha, proflumicafone at 1.6 kg/ha, or oryzalin at 4.5 kg/ha; and flumioxazin at 0.29 or 0.43 kg/ha. A methylated seed oil surfactant was added to treatments containing imazapic or flumioxazin, at 0.5 percent, v/v. Imazapic was added to see if it would provide enough activity to control germinated seedlings without causing injury to established plants. Flumioxazin has contact and residual activity, and aquatic labeling. Treatments were applied in a carrier volume of 190 L/ha to a 2.3 by 4.6 m area in a 3.8 by 4.6 m plot, leaving a 1.5 by 4.6 m untreated strip in each plot. The plots were arranged in a randomized complete block with three replications. Data collected included visual ratings of total cover, and POLPF and MCGVM reduction on May 24; percent total, POLPF, and MCGVM cover on July 29; and dry weight of POLPF, MCGVM, and the combination of all remaining species on August 17, 2011. POLPF was harvested from the entire plot, and the other samples were collected from a 0.5 m² subplot. For each plot, data were collected separately from the treated and untreated portions. Data were subjected to analysis of variance, and means separated using Fisher's Protected LSD.

POLPF pressure was light, averaging 3.7 g/m² in untreated plots, and 0.1 g/m² in treated plots. Common non-target species were boneset (*Eupatorium perfoliatum* L.), goldenrod species (*Solidago* spp.), American burnweed (*Erechtites hieraciifolius* (L.) Raf. ex DC.), beggars lice (*Hackelia virginiana* (L.) I.M. Johnston), and several sedge (*Carex* spp.) species. Suppression of MCGVM was the only significant treatment effect at the end of the season, with imazapic alone averaging 192 g m⁻², pendimethalin alone 66 g m⁻², and all other treatments averaging 1.6 g m⁻² or less. The primary difference between the July and August data was an apparent increase in the proportion of stiltgrass in plots treated with pendimethalin alone from July to August.

The addition of imazapic did improve suppression from pendimethalin, and in combination with proflumicafone or oryzalin provided equal suppression to the pendimethalin combination. The imazapic rate was low enough to enhance suppression from pendimethalin without causing reduction in non-target species biomass. Flumioxazin provided excellent suppression of POLPF and MCGVM, and the

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contact activity was transient enough to cause no reduction in non-target or total biomass.