

RESPONSE OF PEPPERMINT AND SPEARMINT TO MESOTRIONE AND CLOMAZONE. Mary S. Gumz and Stephen C. Weller, Graduate Research Assistant and Professor, Department of Horticulture and Landscape Architecture, Purdue University, West Lafayette, IN 47907.

A critical need in Midwest peppermint and spearmint production is to have access to herbicides that control *Amaranthus* spp. and white cockle. In order to address this need, greenhouse and field trials were conducted to determine the potential of mesotrione and clomazone for safe and efficacious use in peppermint and spearmint.

In greenhouse studies, mesotrione rates of 0, 17, 35, 52, 70, 92, and 105 g a.i./ha were applied pre- and postemergence to peppermint, spearmint, and Powell amaranth. Clomazone was applied preemergence at rates of 0, 420, 840, 1260, and 1680 g a.i. /ha to peppermint, spearmint and white cockle, and postemergence to white cockle rosettes. Both herbicides showed potential to provide weed control with limited crop injury and resulted in the design of field experiments to more specifically determine herbicide rates that provided efficacy and minimal crop injury under Indiana field conditions.

In field studies, mesotrione was applied preemergence at rates of 0, 70, 105, and 210 g a.i. /ha and postemergence at rates at rates of 0, 35, 70, 105, and 210 g a.i./ha (plus 1% v/v COC and 1kg/100L AMS). Clomazone was applied at rates of 0, 210, 420, and 630 g a.i. /ha. Both herbicides were applied at two times during the season, either in the spring or in the fall. Preemergence mesotrione or clomazone was applied prior to weed and crop emergence in the spring and after crop harvest in the fall. Postemergence application of mesotrione was made after crop and weed emergence in the spring and fall. Spring pre- and postemergence treatments of mesotrione caused less injury than fall applications to both peppermint and spearmint. At both timings, peppermint had greater tolerance to preemergence applications while spearmint had greater tolerance to postemergence applications. Twenty-four DAT, the 35 g a.i. /ha preemergence mesotrione had caused no injury when applied in the spring compared to 10% and 15% when applied in the fall on peppermint and spearmint, respectively. Injury 24 DAT from 35 g a.i. /ha postemergence mesotrione was 8.3% in spring peppermint, 12% in fall peppermint, 5% in spring spearmint, and 10% in fall spearmint. *Amaranthus* spp. were controlled (>90%) at all rates by both the pre- and postemergence applications. Although clomazone at most rates caused some initial chlorosis on the mints, by 24 DAT, no injury was apparent on either peppermint or spearmint and clomazone resulted in greater than 90% control of white cockle seedlings and rosettes.