

WEED CONTROL IN CORN WITH MESOTRIONE AND ATRAZINE COMBINATIONS APPLIED PREEMERGENCE. Scott L. Bollman and James J. Kells, Graduate Research Assistant and Professor, Department of Crop and Soil Science, Michigan State University, East Lansing, MI 48824; Thomas T. Bauman, Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907; Mark M. Loux, Associate Professor, Department of Horticulture and Crop Science, Ohio State University, Columbus, OH 43210; Charles H. Slack, Department of Agronomy, Agricultural Research Specialist, University of Kentucky, Lexington, KY 40506; Christy L. Sprague, Assistant Professor, Department of Crop Sciences, University of Illinois, Urbana, IL 61820.

Atrazine continues to be an important component of preemergence weed control in corn. The combination of mesotrione and atrazine has been effective in controlling several troublesome broadleaf weeds. An understanding of the response of weeds to atrazine and mesotrione is needed for the most cost effective control strategies. A study was conducted at seven sites in 2002 to determine the optimum rates of mesotrione and atrazine applied preemergence for consistent control of velvetleaf, common ragweed, giant ragweed, and common cocklebur.

Mesotrione was applied at rates of 0, 53, 105, 158, and 210 g ai/ha and atrazine was applied at rates of 0, 280, 560, 1120, and 1780 g ai/ha. Each site received s-metolachlor at the recommended rate for each soil type. Weed control (visual) and weed densities were evaluated 30, 45, and 60 DAT. Plots were also harvested for corn yield determination.

Neither atrazine nor mesotrione applied alone controlled all four target weeds. All treatments with mesotrione resulted in 85 percent or greater control of velvetleaf. Giant ragweed control increased as mesotrione rate and atrazine rate increased. The most effective control of giant ragweed was at the highest rates of the two herbicides in combination. In Urbana, all mesotrione and atrazine treatments were effective for controlling common cocklebur, however only the highest rates of both herbicides provided greater than 85 percent control in Lexington. All rates of both herbicides controlled common ragweed in South Charleston, OH, while only combinations of mesotrione and atrazine were effective in East Lansing. The highest level of control for the target weed species was obtained by the combinations of both herbicides.