

POSTEMERGENCE COMMON WATERHEMP CONTROL WITH MESOTRIONE AND DICAMBA + DIFLUFENZOPYR IN CORN. Joseph C. Cordes and William G. Johnson, Graduate Research Assistant and Assistant Professor, Department of Agronomy, University of Missouri, Columbia, MO 65211.

The frequency of late herbicide applications increases when environmental conditions do not allow for timely applications. Dose response curves must be evaluated for adequate late season weed control. Greenhouse studies were conducted with the objective to evaluate the dose-response curve of mesotrione and diflufenzopyr + dicamba on 30-cm tall common waterhemp (*Amaranthus rudis*). A secondary objective was to analyze if synergistic activity was present when atrazine was added to mesotrione. Common waterhemp was planted in 15-cm pots and thinned to 1 plant pot⁻¹ at 14 days after planting. Herbicide rates were 0.06 to 2x of the recommended labeled rate (61.52 g ha⁻¹ of diflufenzopyr + 153.8 g ha⁻¹ of dicamba and 105.2 g ha⁻¹ of mesotrione). Atrazine was applied at 0.56 kg ha⁻¹ alone and with all rates of mesotrione. At 14 days after treatment (DAT) plants were harvested and the dry weights were compared to the untreated plants to determine the percent growth reduction. The GR₅₀ and GR₈₀ values were calculated from regression lines and the Colby multiplicative survival model was used to determine if the interaction between mesotrione and atrazine was synergistic. The GR₅₀ values for mesotrione and diflufenzopyr + dicamba was 8 and 57% of the 1x rate respectively. The GR₈₀ value for mesotrione + atrazine was 27% of the 1x rate. When atrazine was applied alone it provided 22% growth reduction. The Colby analysis determined that the mean expected value for growth reduction with mesotrione + atrazine was 77% while the mean observed value was 82%. The analysis determined that the addition of atrazine to mesotrione was synergistic ($\alpha = 0.05$).