

BROADLEAF WEED MANAGEMENT IN CORN UTILIZING SYNERGISTIC HERBICIDE COMBINATIONS. Andrew J. Woodyard, Douglas J. Maxwell, and Dean E. Riechers, Graduate Student, Principal Research Specialist, and Associate Professor, Department of Crop Sciences, University of Illinois, Urbana, IL 61801.

The interaction of photosystem II (PSII) and the 4-hydroxyphenylpyruvate dioxygenase (HPPD) inhibitors is a useful herbicide interaction that can be utilized for managing problematic and herbicide-resistant weeds. Field studies were conducted during 2007 and 2008 in Urbana and Dekalb, IL to analyze rate requirements using synergistic combinations of two PS II inhibitors with the HPPD inhibitor, mesotrione. The studies evaluated and compared the control of three problematic broadleaf weed species in corn (waterhemp, common lambsquarters, and giant ragweed). Two rates of each herbicide were evaluated, with the highest rate representing a typical field-use rate and the lowest a fraction of a field-use rate. Synergistic responses in weed control were detected but varied by weed species and rates. Synergistic interactions were consistently detected for waterhemp control through visual assessment of herbicide injury from 10 to 30 d after treatment (DAT) regardless of rates, moisture accumulation, or plant height. A synergistic interaction was determined for common lambsquarters control in 2007, but taller weed heights in 2008 affected the interaction at lower herbicide rates. Synergism was determined for giant ragweed control with all rates in 2008, but synergism was not detected between bromoxynil and mesotrione in 2007, likely due to a dry early season.