

PERFORMANCE INTERACTIONS BETWEEN TOPRAMEZONE AND ALS-INHIBITING HERBICIDES FOR THE CONTROL OF ANNUAL GRASSES. Allan C. Kaastra<sup>1</sup>, Clarence J. Swanton<sup>1</sup>, François Tardif<sup>1</sup>, and Peter H. Sikkema<sup>2</sup>. <sup>1</sup>University of Guelph, Department of Plant Agriculture, Guelph, Ontario, Canada, N1G 2W1; <sup>2</sup>University of Guelph Ridgetown Campus, Ridgetown, Ontario, Canada, N0P 2C0.

There is little information available on performance interactions for tank mixtures of topramezone and ALS-inhibiting herbicides. Controlled-environment and field experiments were conducted in 2006 and 2007 to determine the interactions of topramezone when tank-mixed with ALS-inhibiting herbicides. Controlled-environment experiments were conducted on four annual grass species treated at the five- to six-leaf stage. Dose–response curves for large crabgrass, barnyardgrass, yellow foxtail, and green foxtail were generated for nicosulfuron or foramsulfuron alone and in combination with label rates of topramezone or mesotrione. Eight field experiments were conducted using registered rates of two HPPD-inhibiting and three ALS inhibiting herbicides alone and in combination. All herbicide treatments in the field were applied at the two- to three-leaf and five- to six-leaf stages of barnyardgrass, green foxtail, giant green foxtail, and witchgrass. In both the controlled environment and field experiments, antagonistic interactions were found to be species specific. In the controlled environment, nicosulfuron antagonized topramezone for the control of large crabgrass and barnyardgrass, but did not influence control of yellow or green foxtail. This antagonism was overcome with the addition of atrazine or an increased dose of nicosulfuron. Antagonism was not observed with tank mixtures of topramezone and foramsulfuron on the species tested under controlled-environment or field conditions. In the field, antagonism was not influenced by growth stage of the annual grasses. Antagonistic interactions were observed when topramezone was tank-mixed with nicosulfuron or nicosulfuron + rimsulfuron for the control of barnyardgrass and, to a lesser extent, giant green foxtail.