WATERHEMP CONTROL IN CORN AND SOYBEAN WITH SEQUENTIAL HERBICIDES. Nader Soltani*, Joshua D. Vyn, and Peter H. Sikkema. University of Guelph Ridgetown Campus, Ridgetown, Ontario, Canada. N0P 2C0.

Common waterhemp (*Amaranthus tuberculatus*) is an aggressive annual broadleaf weed that is a dominant species in cropping systems in the mid-western United States. Waterhemp was first identified in Ontario, Canada in 2002 and is expected to rapidly infest agricultural land in eastern Canada similar to its development in the United States. In 2005 and 2006, four separate field experiments (2 in corn & 2 in soybean) were established on two Ontario farms (near Petrolia and Comber, Ontario) with heavy infestations of waterhemp to evaluate the efficacy of various PRE- and POST-emergence herbicides applied alone or in sequence for the control of waterhemp in corn and soybean. There was no injury to corn and soybean from any of the herbicide treatments evaluated. In corn, sequential herbicide programs of isoxaflutole + atrazine PRE fb either dicamba POST, dicamba/diflufenzopyr POST, dicamba/atrazine POST or mesotrione + atrazine POST provide consistent full-season control of waterhemp. Corn yield was reduced 48% when waterhemp was not controlled. Corn yield was equivalent to the weed-free check with the herbicide treatments evaluated. In soybean, PRE or POST herbicides alone provided 52 to 94% control of waterhemp however, waterhemp control was 92 to 99% with the sequential herbicide programs. Dimethenamid (PRE; 1250 g/ha) followed by glyphosate (POST1; 900 g/ha) followed by glyphosate (POST2; 900 g/ha) controlled waterhemp 99%. Results with waterhemp density were similar to visible control. Soybean yield was reduced 41% when waterhemp was not controlled. Soybean yield was equivalent to the weed-free check with all the herbicide treatment except dimethenamid PRE, acifluorfen POST1 and fomesafen POST1 where the yield was lower 30, 19 and 19%, respectively.

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