SUSPECTED GLYPHOSATE-RESISTANT GIANT RAGWEED IN ONTARIO. Peter H. Sikkema[1], Nader Soltani[1], Peter J. Smith[2], Christy Shropshire[1], Mark B. Lawton[3] and Francois J. Tardif[2]. [1]University of Guelph Ridgetown Campus, Ridgetown, ON; [2]Department of Plant Agriculture, University of Guelph, Guelph, ON; [3]Monsanto Canada, Guelph, ON

Giant ragweed (*Ambrosia trifida*) is a competitive weed with an early and prolonged emergence pattern in southwestern Ontario. Wide spread adoption of glyphosate-tolerant corn and soybean has increased the reliance on glyphosate for weed management. A population of giant ragweed from a field near Windsor, Ontario was not controlled by glyphosate in 2008. Seeds were collected and greenhouse experiments were conducted during the winter of 2009. Plants from the Windsor population were able to survive rates of glyphosate up to two times the field rate while plants from other locations were completely killed by rates as low as a quarter of the field rate. The Windsor population was also able to survive the Group 2 herbicide such as cloransulam-methyl suggesting multiple-resistance. Five field trials conducted during the summer of 2009 confirmed that this biotype of giant ragweed could survive after application of glyphosate at rates as high as 10800 g ae ha^{-1}. Glyphosate plus dicamba/diflufenzopyr, dicamba/atrazine, bromoxynil + atrazine, mesotrione + atrazine, chlorimuron-ethyl, cloransulam-methyl, and fomesafen applied postemergence controlled giant ragweed 78, 79, 71, 70, 52, 54, and 54%, reduced giant ragweed density 82, 74, 69, 67, 33, 33, and 31% and reduced giant ragweed shoot dry weight 96, 92, 94, 92, 57, 65, and 71%, respectively. Based on these preliminary results, dicamba based herbicides provide the best control in corn but options in soybeans are limited. Seeds were collected from surviving plants and they will be tested to confirm resistance. Heritability studies are underway to confirm the glyphosate resistant status of this giant ragweed population.