

CAN GLYPHOSATE-RESISTANT HORSEWEED BE USED AS AN INDICATOR FOR OTHER SPECIES DIFFICULT TO CONTROL WITH GLYPHOSATE? Andrew. M. Westhoven, Vince. M. Davis, Greg. R. Kruger, Valerie. A. Mock, and William. G. Johnson, Graduate Research Assistant, Graduate Research Assistant, Graduate Research Assistant, Graduate Research Assistant, and Associate Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN, 47907.

Current U.S. soybean production practices place heavy reliance on glyphosate for weed management. An exhaustive in-field survey was conducted in Indiana during September and October of 2003, 2004, and 2005. In the survey, common lambsquarters and giant ragweed plants were present in 11 and 22%, respectively, of randomly surveyed soybean fields that also contained glyphosate-resistant horseweed biotypes. The objective of this research was to determine if the presence of glyphosate-resistant horseweed was correlated with the presence of common lambsquarters and giant ragweed biotypes with elevated tolerance to glyphosate. The survey database was queried for fields that contained glyphosate-resistant horseweed plus giant ragweed and/or common lambsquarters. In the falls of 2005 and 2006, sites with these weed species combinations were surveyed again. We surveyed 81 sites in 29 counties, and collected 13 common lambsquarters and 22 giant ragweed seed samples. Seed samples were screened for response to glyphosate in the greenhouse and 10 common lambsquarters and 7 giant ragweed populations showed tolerance to glyphosate. Horseweed was found in approximately 69% of all soybean fields in the subsequent survey. When horseweed was documented as glyphosate-resistant 1 to 3 years earlier, 81% of the fields had horseweed present in the subsequent survey. Of the fields that had glyphosate-resistant horseweed, 31 and 57% of the fields in the subsequent survey also had glyphosate-tolerant giant ragweed and common lambsquarters populations, respectively. Contrastingly, of the fields that had glyphosate-susceptible horseweed, 33 and 100% of the fields in the subsequent survey had glyphosate-tolerant giant ragweed and common lambsquarters populations, respectively. Therefore, the results from this research demonstrate that glyphosate-resistant horseweed was not an indicator for glyphosate tolerance in common lambsquarters and/or giant ragweed.