

GLYPHOSATE DOSE-RESPONSE OF SELECTED INDIANA HORSEWEED BIOTYPES. Janelle M. Donahue, Vince M. Davis, Greg R. Kruger, and William G. Johnson, Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907-2054.

Glyphosate-resistant horseweed (*Conyza canadensis*) biotypes have been reported in 14 states. Populations from several states have demonstrated glyphosate tolerance in dose-response experiments. However, there is little information about the inheritance of variable levels of glyphosate tolerance in horseweed. The objective of this experiment is to determine if the rank in levels of glyphosate tolerance among first generation progeny corresponds to the rank in tolerance from respective maternal parents. Initial glyphosate screens were conducted on horseweed populations comprised of 40 composite mother plants. Resistant survivors that demonstrated varying levels of glyphosate tolerance were identified and allowed to self-pollinate. Seeds from individual plants were collected and grown in the greenhouse. Three experimental runs with plants 2 to 4 centimeters in diameter were sprayed with 0, 0.11, 0.21, 0.42, 0.84, 1.68, 3.36, 6.72, and 13.44 kg ae/ha of glyphosate and replicated 4 times. At 28 days after treatment (DAT), horseweed rosette widths were measured, individual plants were rated for visual control on a scale of 0 to 100, and plants were harvested for fresh and dry weight biomass production. The correlation between rankings of glyphosate tolerance levels from the mother plant to respective progeny was poor for most growth parameters. However, the ranking of glyphosate tolerance in the mother plants corresponded well with progeny survival at the 1.68 kg ae/ha rate. Mother plants with a “high” level of resistance had progeny survival of 92%, while a population with a “low” level of resistance had progeny survival of 25% at the 1.68 kg ae/ha rate.