

ASSESSMENT OF THE SUSTAINABILITY OF GLYPHOSATE RESISTANT CROPPING SYSTEMS – AN ALTERNATIVE APPROACH. Andrew M. Westhoven, William G. Johnson, Mark M. Loux, and Jeff M. Stachler, Graduate Research Assistant, Associate Professor, Department of Botany and Plant Pathology Purdue University, West Lafayette, IN 47907, Professor, Extension Program Specialist, Department of Horticulture and Crop Science The Ohio State University, Columbus, OH 43210.

Soybean production practices place heavy reliance on glyphosate for weed management. Our field surveys have shown that glyphosate resistant horseweed is widespread in Indiana. In fields where we have found glyphosate resistant horseweed, we have documented other weeds which have escaped treatment with glyphosate and entered this information into a database. In an attempt to evaluate the sustainability of glyphosate cropping systems, we will attempt to learn if the presence of glyphosate resistant horseweed can be used as an indicator species for other weeds with enhanced glyphosate tolerance. The database, which is comprised of 2003 field survey information, was queried for escaped weeds, specifically giant ragweed (GRW) and common lambsquarters (CLQ). In the fall of 2005, GRW and CLQ seed samples were collected and will eventually be screened for tolerance to glyphosate.

Results from database queries led us to sample primarily the SE region of Indiana. This area had the highest incidence of horseweed, GRW, and CLQ escapes in 2003. In the fall of 2005, we investigated 73 sites in 28 counties, and collected seed samples from 27 fields in 17 counties. A total of 229 GRW and 173 CLQ samples were collected. Since horseweed is being used as an indicator species, it's presence was recorded in the 2005 sampling process. All fields sampled contained horseweed with approximately 70 percent of the sites visited documented as containing resistant populations in the 2003 survey. From the 2003 survey database, horseweed, GRW, and CLQ were present in approximately 33 percent of the sites visited in 2005.