

GROWER PERCEPTIONS OF PROBLEM WEEDS IN GLYPHOSATE-RESISTANT CROP SYSTEMS: EVOLVED GLYPHOSATE RESISTANCE AND WEED POPULATION SHIFTS. Micheal D. K. Owen, Greg Kruger, William G. Johnson, Stephen Weller, Robert G. Wilson, David R. Shaw, John Wilcut, and Bryan G. Young, Professor, Agronomy Department, Iowa State University, Ames, IA 50011-1011, Graduate Research Assistant, Associate Professor and Professor, Purdue University, West Lafayette, IN 47907, Professor, University of Nebraska, Scottsbluff, NE 69361, Professor, Mississippi State University, Mississippi State, MS 39762-9555, Professor, North Carolina State University, Raleigh, NC 27695-7620, Associate Professor, Southern Illinois University, Carbondale, IL 62901.

A survey of growers in Illinois, Indiana, Iowa, Mississippi, Nebraska, and North Carolina provided information about what growers thought about the influence of glyphosate-resistant (GR) crops and glyphosate-based weed control on weed populations. Questions were developed to ascertain the perceptions of 1200 growers about weed population density, weed community composition and changes in the weed community in fields where glyphosate-resistant crops had been grown for a minimum of three years on at least 101 hectares. Five crop systems were represented; continuous GR soybean, continuous GR cotton, GR corn/soybean rotation, GR soybean/non-GR crop rotation, and GR corn/non-GR crop rotation. Weed population density was assessed by growers on a relative scale of “light”, “moderate” or “heavy”. Differences in tillage systems, no tillage, reduced tillage, and conventional tillage, were also determined. A majority of growers suggested that weed population densities had declined or remained the same with the adoption of GR crops. When tillage system was considered, there were slight but inconsistent differences in grower assessments of weed population densities but 93 to 100% of the growers perceived that weed population densities had declined or remained the same with the introduction of GR crops. Interestingly, the GR corn/non-GR crop had the highest percentage of growers reporting an increase in weed population density (5 to 7% depending on the tillage system). Growers reported on a number of problem weeds in the GR cropping systems. These weeds included Johnsongrass, foxtail spp., morningglory spp., ragweed spp., common cocklebur, pigweed spp., common waterhemp, velvetleaf, sicklepod, and common lambsquarters. The occurrence of these weeds was somewhat regional and affected by GR crop system. Importantly, there was no indication by growers that the problem weeds had increased in response to the adoption of GR crop system. Growers in Illinois, Indiana, Iowa and Nebraska reported that common waterhemp was a common weed found in the GR crop systems and consistently listed in these states. Indiana growers also listed ragweed spp., Johnsongrass and horseweed as common problem weeds. In Mississippi and North Carolina, morningglory spp. and Johnsongrass were prominent as was pigweed spp. It is noteworthy that all of the weed species that growers perceived as problematic and common in GR crop systems, with the exception of morningglory spp., has been reported as having evolved resistance to glyphosate. Thus, while grower perceptions are that GR crop systems and the use of glyphosate has provided an important and consistent opportunity to manage weed problems, the possibility of weeds within these GR crop systems evolving resistance to glyphosate exists resulting in weed population shifts.