BENCHMARK STUDY: VARIATION IN WEED MANAGEMENT TACTICS IMPLEMENTED IN GLYPHOSATE-RESISTANT CROPPING SYSTEMS. Bryan G. Young, Joseph L. Matthews, David L. Jordan, Micheal D. K. Owen, David R. Shaw, Stephen C. Weller, Robert G. Wilson, William G. Johnson, and Philip M. Dixon, Professor and Researcher, Southern Illinois University, Carbondale, IL 62901, Professor, North Carolina State University, Raleigh, NC 27695, Professor, Iowa State University, Ames, IA 50011, Professor, Mississippi State University, Mississippi State, MS 39762, Professor, Purdue University, West Lafayette, IN 47907, Professor, University of Nebraska, Scottsbluff, NE 69361, Professor, Purdue University, West Lafayette, IN 47907, Professor, Iowa State University, Ames, IA 50011.

During 2006 and 2007 a total of 155 commercial fields in Illinois, Indiana, Iowa, Nebraska, North Carolina, and Mississippi were the foundation for comparing weed management tactics implemented by growers versus management practices recommended by a state university weed specialist. The recommendations provided by the university specialist were targeted at deterring the selection of glyphosate-resistant weed species. Each field was divided into two sections with half managed as typical for the grower and the other half managed following university recommendations. Fields were categorized into three cropping systems: 1) a single continuous glyphosate-resistant (GR) crop, 2) a rotation of two GR crops, and 3) a GR crop rotated with a non-GR crop.

Over both grower and university sections, the frequency of glyphosate applications used for weed management was greatest in a single continuous GR crop (2 applications/year) followed by a rotation of two GR crops (1.6 applications/year) and least with a GR crop rotated with a non-GR crop (1 application/year). In most instances, the university recommendation did not reduce the frequency of glyphosate applications compared with grower practices. However, growers used 3 applications of glyphosate on an annual basis in GR cotton compared with an average of 2 and 1.2 applications, respectively, for GR soybean and corn. The rate of glyphosate used per application was similar between grower and university (~ 840 g ae/ha). The application rate of glyphosate increased from 763 to 913 g/ha, respectively, as the cropping system moved from a GR crop rotated with a non-GR crop to a continuous monoculture of a GR crop. Averaged over all crops and fields, growers used glyphosate as the only herbicide for weed management in 40% of the sites compared with only 3% for the university recommendation. Instead of excluding glyphosate as a weed management tool, the university recommendation utilized soil residual herbicides or tank-mixtures with glyphosate twice as frequently as growers. At 68% of the sites, university weed scientists recommended using a preplant residual herbicide in addition to glyphosate.

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