

WEED DIVERSITY IN GLYPHOSATE-TOLERANT SOYBEAN FROM MINNESOTA TO LOUISIANA. Julio Scursoni, Dean Peterson, Frank Forcella, Jeff Gunsolus, Roberto Benez Arnold, Mike Owen, Reid Smeda, Dick Oliver, and Roy Vidrine; University of Buenos Aires, Argentina, USDA-ARS, Morris, MN, University of Minnesota – St Paul, Iowa State University, University of Missouri, University of Arkansas, and Louisiana State University.

In Europe, especially, glyphosate-tolerant crop technology has elicited great concern. Some of this concern involves the perception that this new technology kills weeds so thoroughly that biodiversity will decrease relative to traditional forms of weed management. The concern with biodiversity involves not only the weeds, but also animals and microbes that depend upon weeds for food and cover. Our objectives were to examine trends in weed diversity (alpha, beta, and gamma diversity) along an environmental/longitudinal transect from Minnesota (5 sites), Iowa (3 sites), Missouri (2 sites), Arkansas (2 sites), to Louisiana (1 site); and a gradient of management intensity at each site that included the following treatments in glyphosate-tolerant soybean: (a) weedy check, (b) one-pass glyphosate, (c) two-pass glyphosate, (d) standard PRE plus glyphosate, and (e) standard PRE only or standard PRE plus standard POST, or standard POST only. Preliminary analyses of effective species richness ( $e^H$ ) indicate that rankings of weed diversity across treatments did not change substantially among locations. Diversity in the one-pass glyphosate treatment often was higher than that of weedy checks because the herbicide differentially suppressed dominant weed species. Standard PRE plus glyphosate and other standard treatments had comparably moderate diversities. Diversity in the two-pass glyphosate treatment typically was low: near zero in the North and substantially higher than zero in the South, but still usually lower than standard herbicide treatments. Bearing in mind that our data merit much more rigorous analyses, tentative results suggest that the impacts of glyphosate-tolerant crop technology on biodiversity will vary according to latitude and the number of glyphosate applications made in the soybean crop.