

SUSCEPTABILITY TO GLYPHOSATE OF WEED ESCAPES IN GLYPHOSATE-TOLERANT SOYBEAN. Gary Amundson, Julio Scursoni, and Frank Forcella, Engineering Technician, Instructor, and Research Agronomist; USDA-ARS, Morris, MN 56267; and University of Buenos Aires, Argentina.

We hypothesized that one of many mechanisms by which weeds could escape control by glyphosate in cropping systems that employ continual use of glyphosate-tolerant crops was evolved tolerance to this herbicide. To examine this hypothesis, we collected seeds that were produced by plants that escaped control by glyphosate as well as seeds of plants not exposed to glyphosate. All seeds were collected in plots maintained in state-wide herbicide trials at university experiment stations in Minnesota, Iowa, Missouri, Arkansas, and Louisiana. Treatments from which seeds were collected typically were the weedy check, one-pass glyphosate, and two-pass glyphosate treatments. Seeds were germinated in the greenhouse the following year, thinned to four seedlings per pot, and exposed to a 10% label rate of glyphosate in a spray cabinet at either of two stages of seedling development (<15 cm tall and <30 cm tall). Two weeks after exposure the seedlings were measured for survival and various gross morphological traits. Most plants showed no differential susceptibility to glyphosate based upon 0, 1, or 2 exposures to this herbicide the previous year. However, some species did show a differential response: common lambsquarters (*Chenopodium album*) and prickly sida (*Sida spinosa*) were two species that showed greater tolerance and other species when exposed to a 10% label rate of glyphosate. Survival, height, leaf number per plant, and dry weight were greater for seedlings grown from seeds whose maternal parents previously were exposed to glyphosate than those from parents grown in weedy check treatments.