

DIFFERENTIAL RESPONSE OF COMMON RAGWEED TO GLYPHOSATE. Justin M. Pollard*, Brent A. Sellers, and Reid J. Smeda, Graduate Research Assistant, Post Doctoral Research Assistant, and Assistant Professor, Department of Agronomy, University of Missouri, Columbia, MO 65211.

Glyphosate is a broad-spectrum herbicide that is utilized on greater than 80% of the soybean production area in the United States. Much of the soybean production area currently receives two or more applications of glyphosate per year. In 2002, a population of common ragweed was discovered in Missouri that was inadequately controlled following six years of glyphosate applications. Common ragweed seedlings were established in the greenhouse, and when plants reached 6 nodes they were treated with technical grade potassium salt of glyphosate. Application rates varied from 1/16X to 12X (1X=0.84 kg ae/ha) for the suspect resistant population, and 1/256X to 1X for the susceptible population; surfactant (MON 56151) was added to each spray solution at a rate equivalent to that of a 1X Roundup WeatherMax™ application. Applications were made with a moving track sprayer at 187 L/ha with a spray pressure of 167 kPa. Ammonium sulfate was added to all treatments at 2.8 kg/ha. The above ground tissue was harvested four weeks after treatment and plant dry weights recorded following 4 days at 50 C. The suspect resistant population exhibited an I₅₀ value that was 9.6-fold higher than the susceptible biotype on a dry weight basis. Preliminary results from an in vivo shikimate assay demonstrated that differences in shikimate accumulation were up to 3-fold greater for the susceptible compared to the resistant common ragweed population. Although heritability of this trait has not been established, these data suggest that the suspect population is likely resistant to glyphosate.