

TRANSMISSION OF GLYPHOSATE RESISTANCE IN COMMON RAGWEED. Johnathan P. Dierking and Reid J. Smeda, Graduate Student and Associate Professor, Division of Plant Sciences, University of Missouri-Columbia, Columbia, MO 65211.

In Missouri, glyphosate-resistant (Gly-R) common ragweed has been identified in one 52 hectare area which has been under continuous production of glyphosate-resistant soybeans since their introduction in 1996. Common ragweed seed can be spread to adjacent areas by animals or equipment, but there is concern that transmission of resistance to glyphosate may be mediated by pollen. The objective of this research was to determine the distance that resistance could be spread via pollen from known resistant plants, and the frequency of this event. Along the edge of the area containing Gly-R plants, Gly-R seedlings were established as pollen source plants in a staggered row. Glyphosate-susceptible (Gly-S) seedlings were established in groups of 2-3 plants for replicated, equidistant groups at a distance of 1, 3, 11, 30, 91, 198, and 580 meters from Gly-R seedlings. All Gly-S seedlings were grown in a field containing glyphosate-resistant soybeans. As common ragweed plants matured, pollen from Gly-R plants was permitted to flow across the area containing Gly-S plants. Mature seed from Gly-S and Gly-R common ragweed were collected and planted in a professional potting mix under greenhouse conditions. As seedlings reached 7 to 13 cm in height, they were treated with 1.68 kg ae/ha glyphosate, and evaluated visually 3 weeks later for injury [0-30% (R), 31-89% (I), 90-100% (S)]. For known resistant plants, the frequency of Gly-R plants was 17.5%. Seedlings of Gly-S plants with a Gly-R phenotype were detected up to 91 meters from Gly-R source plants. The frequency of Gly-R plants from the Gly-S population was 1.5, 1.3, 0, 2.4 and 6.4% for the 1, 3, 11, 30, and 91 meter distances from Gly-R source plants. A minimum of 530 total seedlings was examined for Gly-S plants at each distance from Gly-R source plants.