THE MANAGEMENT OF GLYPHOSATE RESISTANCE THROUGH POLLEN 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 (*Ambrosia artemisiifolia*) has been identified in a 52 hectare area, which has been under continuous production of glyphosate-resistant soybeans since their introduction in 1996. Of concern is the spread of Gly-R to adjacent areas. The objective of this research was to determine if pollen from Gly-R plants could spread resistance, and the distance that resistance could be transmitted. A block of Gly-R plants was established as pollen source plants at the edge of the known infested area. Glyphosate-susceptible (Gly-S) seedlings were established in repeated groups of 2-3 plants equidistant and downwind from Gly-R plants. Gly-S seedlings were located a distance of 1, 3, 11, 30, 91, 198, and 580 meters from Gly-R plants. All Gly-S seedlings were located in a field containing glyphosate-resistant soybeans. As common ragweed plants matured, pollen from Gly-R plants was permitted to freely 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% injury = R, 31-89% injury = intermediate (I) and 90-100% injury = S]. In 2005, pollen from Gly-R plants resulted in detection of Gly-R seedlings up to 91 meters away from the source plants with a minimum of 411 seedlings evaluated per arc. The percentage of Gly-R seedlings from Gly-S plants were 1, .01, 1, 0, 1.8, and 4.6% for the 1, 3, 11, 30, and 91 meter distances from Gly-R source plants, respectively. There were no Gly-R seedlings found greater than 91 meters from Gly-R plants, indicating no probability for Gly-R plants to pollinate Gly-S plants at distances beyond 91 meters. Data from 2006, minimum of 213 plants evaluated, indicate the percentage of Gly-R seedlings from the Gly-S plants collected from the 1, 3, 11, 30, 91, and 198 meter distances from the Gly-R source plants were 2, 0, 1.7, 0.75, 0, and 0.32%, respectively. There were no Gly-R seedlings found greater than 198 meters from Gly-R plants, indicating no probability for Gly-R plants to pollinate Gly-S plants at distances beyond 198 meters. Glyphosate resistance can spread through pollen of common ragweed a sufficient distance to cross field borders and roadsides, thus leading to new area infested.

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