

NATURAL HYBRIDIZATION BETWEEN GIANT AND COMMON RAGWEED. Dean S. Volenberg, A. Lane Rayburn, Danman Zheng, and Patrick J. Tranel, Postdoctoral Research Associate, Associate Professor, Graduate Research Assistant, and Associate Professor, Department of Crop Sciences, University of Illinois, Urbana, IL 61801.

Hybrids between common (pollen receptor) and giant (pollen donor) ragweed have been reported to occur under field conditions. However, hybrids between giant (pollen receptor) and common (pollen donor) ragweed have not been reported to occur, except for being produced in controlled crosses and through the use of *in vitro* embryo rescue. Here we report on the interspecific hybridization between giant and common ragweed under field conditions.

A field study was conducted to determine the pollen dispersal characteristics of giant ragweed. Plants of a biotype resistant to acetolactate synthase (ALS)-inhibiting herbicides were surrounded by plants of a sensitive biotype in concentric circles having radii of 5, 10, 20, 40, and 60 m. Progeny obtained from herbicide-sensitive plants were screened for resistance to an ALS inhibitor to establish pollen dispersal from resistant plants. The majority of giant ragweed pollen was dispersed within 5 m and pollen dispersal declined rapidly as the distance increased. The mean percentages of herbicide resistant progeny –which presumably received pollen from the resistant plants–were 31, 11, 8, 4, and 5% at 5, 10, 20, 40, and 60 m, respectively. Pollen was uniformly dispersed in all directions, except for the true west direction in which herbicide-resistant progeny were <5% at all distances. Some of the progeny plants displayed peculiar leaf morphology which resembled that of common ragweed. These plants as well as representative plants of giant and common ragweed, were further investigated using flow cytometry (DNA content), root squashes (chromosome counts), and pollen viability (*in vitro* germination). Results of flow cytometry suggested that these peculiar plants are hybrids between giant and common ragweed. The DNA content of the hybrids was 3.03 pg, whereas the DNA content of giant and common ragweed was 3.94 and 2.36 pg, respectively. Chromosome counts revealed that the hybrid plants contained on average 30 chromosomes (range 29 to 31), whereas giant and common ragweed contained 24 (range 23 to 24) and 36 (range 35 to 36) chromosomes, respectively. Pollen germination tests demonstrated a mean germination rate of 26% for giant ragweed, compared to rates of 5 and <1% for common ragweed and the hybrid, respectively. Hybrid ragweed pollen grains varied in size, whereas the pollen grains of giant and common ragweed were uniform in size. Hybrid ragweed plants crossed to either common or giant ragweed plants produced seeds, however in most seeds examined thus far, embryos have aborted. Future studies will examine seeds produced in reciprocal crosses.