

GROWTH ANALYSIS OF GLYPHOSATE RESISTANT GIANT RAGWEED BIOTYPES. Chad B. Brabham and William G. Johnson, Graduate Student and Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907.

The first giant ragweed (*Ambrosia trifida*) biotype in Indiana to evolve glyphosate resistance was discovered in 2005. However, it is unclear if glyphosate-resistance in giant ragweed has any fitness penalties. Our objective was to compare growth and reproductive characteristics of a glyphosate-resistant biotype to a susceptible giant ragweed biotype in the absence of glyphosate. Seeds of each biotype were hand planted on May 28th and June 1st, 2009 in West Lafayette, IN. Nine individuals of each biotype were harvested weekly for six weeks starting 15 days after planting. At each harvest, individual plants were measured for total height, width, node number, internode length, leaf area and dry weight of leaf biomass, stem and branches, main stem and overall above ground weight. The reproductive characteristics recorded were initial flowering date, total number of seeds produced and 100 seed weight. A glyphosate dose response analysis was conducted to determine the differences in GR₅₀'s and GR₉₀'s. There was a 1.42 fold difference in the GR₉₀ of the resistant and susceptible biotypes in response to glyphosate. No obvious difference was observed between biotypes during vegetative stages. During reproduction resistant individuals flowered earlier and produced fewer seeds than the susceptible biotype. Further comparison of plant growth and functions will help determine if a fitness penalty is associated with glyphosate-resistance.