GIANT RAGWEED INTERFERENCE IN CORN: IMPACT OF N RATE AND APPLICATION TIMING. Eric J. Ott, William G. Johnson, and Reece A. Dewell, Graduate Research Assistant, Assistant Professor of Weed Science, Research Associate in Weed Science, Department of Botany and Plant Pathology Purdue University, West Lafayette, IN 47907-2054.

Environmental concerns regarding the use of nitrogen fertilizer and soil-applied herbicides such as atrazine, and the adoption of glyphosate-resistance corn hybrids will likely cause changes in the dynamics of weed interference in corn. Giant ragweed (GRW) is a highly competitive weed that commonly infests crop production fields in the Midwest. GRW has the ability to emerge throughout the early growing season making it difficult to control with just a single herbicide application. Previous research evaluating the influence of N application timings and giant ragweed removal timings in corn has not been published. A field experiment was conducted at the Purdue University Agronomy Center for Research and Education. Treatments were established in a split plot design with four replications. Three nitrogen treatments (200 kg/ha before planting (BPLT), 200 kg/ha side dressed (SIDE), and 100 kg/ha BPLT + 100 kg/ha SIDE (SPLIT)), assigned to the main plots and four GRW removal timings (weed free, 10-cm, 40-cm, and season long) were assigned to the subplots. GRW plants were allowed to emerge with the corn, and GRW density was established at 0.5 plants/1m^2 at V4 corn and maintained until the appropriate removal timing. Weed free plots were maintained throughout the growing season by hand weeding at biweekly intervals. Corn was then harvested for grain and yields were then converted to 15.5% grain moisture.

Results show allowing GRW to reach 40-cm before removal results in significant reductions in the amount of N in the soil regardless of N fertility regime. Higher corn yields were observed in the SIDE and SPLIT N fertility regimes than in the BPLT when GRW interference periods were pooled together. Corn yields were similar for all N fertility regimes at the weed free and 10-cm GRW removal timings. Yield was significantly lower at the 40-cm GRW removal timing with the BPLT N fertility regime when compared to the SIDE and SPLIT N fertility regimes. Knowing how GRW interferes with corn in different N fertility regimes may play an important role in reducing herbicide and N inputs in corn production in the Midwest.

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