

NITROGEN CONSUMPTION IN WEED SPECIES AS INFLUENCED BY APPLICATION RATE AND WEED REMOVAL TIMING. Laura E. Bast, Wesley J. Everman and Darryl D. Warncke, Graduate Research Assistant, Assistant Professor and Professor, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824.

Nitrogen application rate and weed control timing are important components of integrated pest management and understanding their interaction is necessary to maximize economic return. A field study was established in 2009 in East Lansing, MI to quantify N consumption by giant foxtail, Powell amaranth, velvetleaf, common ragweed, and common lambsquarters and to evaluate N consumption as influenced by N application rate and weed removal timing. A split-plot, randomized complete block design consisted of four preplant nitrogen application rates (0, 67, 134, and 202 kg N/ha) as main plots and four weed removal timings as subplots. Weed removal timings were defined by weed heights of 5, 10, 15, and 20 cm tall. Fresh and dry weights were recorded at each weed removal timing from weed biomass samples collected from a 0.25 m² section of the plot. Additional samples of each weed species were collected and separated into root and shoot portions and analyzed for total N. Nitrogen content of giant foxtail, Powell amaranth, and velvetleaf shoots increased across fertility levels when weeds were 10, 15, and 20 cm. Root N content of Powell amaranth also increased with increasing N rate. Ragweed shoots and roots did not show as great a response to N rate, and N rate had no effect on N content of lambsquarters. For all species, 10 cm shoots tended to have the greatest percentages of N across fertility levels. Total N content was generally greater in shoots than in roots for all species regardless of N rate or removal timing, and for all species root N decreased with weed height. The results indicate the influence of N application rate and weed removal timing on N content varies among weed species, but corresponds with current weed control recommendations in Michigan to control weeds before they reach 10 cm in corn.