INFLUENCE OF STEM-BORING INSECTS ON COMMON LAMBSQUARTER CONTROL WITH GLYPHOSATE. Dana B. Harder, Christy L. Sprague, Karen A. Renner, and Christina D. DiFonzo, Graduate Research Assistant, Assistant Professor, and Professor, Department of Crop and Soil Sciences, Associate Professor, Department of Entomology, Agriculture, and Natural Resources, Michigan State University, East Lansing, MI 48824.

Common lambsquarters control with glyphosate in Michigan has been variable. In 2003, beet petiole borers (*Cosmobaris americana*) were found tunneling throughout the vascular tissue of dissected common lambsquarters plants that survived glyphosate application. In 2004, field studies and sampling efforts were established to: 1) determine when initial insect larval feeding occurs in common lambsquarters, 2) determine the extent and distribution of insect infestation in common lambsquarters that escaped control with glyphosate, and 3) evaluate the effect of glyphosate rate, application timing, and insect larval tunneling on common lambsquarters control. At 922 GDD base temperature 4 C (June 23), an unidentified fly maggot was found inside common lambsquarters and at 1278 GDD (July 23) the first beet petiole borer was detected. The number of common lambsquarters infested increased steadily from 1029 GDD (July 1) to 1594 GDD (August 5) with 90% of plants infested. On May 6 and June 4, two separate field studies were planted with glyphosate-resistant soybean. When common lambsquarters plants were 10, 25, and 46 cm in height, glyphosate was applied at 0, 0.63, 0.84, and 1.68 kg ae ha^{-1}. Common lambsquarters plants were examined for insect tunneling prior to and 28 d after each glyphosate application (DAT). Visual control, plant biomass, and number of plants remaining after application were recorded 28 DAT. In the May 6 planting, there were no insects present prior to the 10 or 25 cm application timings. However, 40% of common lambsquarters plants were infested prior to the 46 cm application timing, resulting in significantly less common lambsquarters control compared with the other two application timings. Common lambsquarters infestation rate ranged from 40 to 70% prior to glyphosate application for the June planting, but common lambsquarters control did not differ for the high and medium glyphosate rates across all application timings. The number of plants remaining 28 DAT correlated to the total number of plants infested for the June planting. In August, sampling was conducted in soybean fields throughout Michigan and northern Indiana where it appeared common lambsquarters escaped control. Over 70% of common lambsquarters plants were infested with either the beet petiole borer or fly maggot in 17 of the 29 counties sampled in Michigan and 4 of the 8 counties in Indiana.

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