

GLYPHOSATE EFFICACY ON GIANT RAGWEED INFESTED WITH EUROPEAN CORN BORER. Eric J. Ott, William G. Johnson, John L. Obermeyer, and Dan J. Childs, Graduate Research Assistant, Assistant Professor of Weed Science, Department of Botany and Plant Pathology Purdue University, West Lafayette, IN 47907-2054, IPM Supervisor, Department of Entomology Purdue University, West Lafayette, IN 47907-2089, Agronomist, Deiner Seeds, Reynolds, IN 47980.

Glyphosate occasionally fails to control giant ragweed. Closer investigation of some escaped plants reveals the presence of stalk boring insects and tunneling. Greenhouse and field studies were conducted to evaluate the influence of stalk boring insects on giant ragweed control with glyphosate. In the greenhouse study, ninety-six giant ragweed seedlings 3- to 5-cm tall were collected from the Purdue University Agronomy Center for Research and Education near West Lafayette, IN at three different times, placed in plastic pots, fertilized and placed in a greenhouse. When the giant ragweed plants were 6- to 8-cm tall, 48 of the plants were infested with 2- to 4-European corn borer (*Ostrinia nubilalis*) neonates. When the giant ragweed reached a height of 13- to 15-cm, 24 infested and 24 non-infested plants were selected to be sprayed with four different rates of glyphosate (0 kg ae/ha, 0.63 kg ae/ha, 0.76 kg ae/ha, 1.52 kg ae/ha). When the 48 remaining plants reached a height of 40- to 44-cm, they were treated with glyphosate as described earlier. European corn borer tunnel length and giant ragweed dry weights were recorded 21 days after treatment. This experiment was conducted three times. Plants that were 13 -to 15-cm tall when sprayed showed reduction in dry weight with increased length of European corn borer tunneling in all treatments including untreated checks. The plants that were 40 -to 44-cm tall when sprayed showed similar results except at the 0.63 kg ae/ha rate. In this treatment, as the length of European corn borer tunneling increased, giant ragweed dry weight increased as well. In many of the plants in this treatment, axillary shoots were produced below where European corn borer had bored, and giant ragweed continued to grow. Glyphosate efficacy, with lower rates, was reduced in larger plants infested with European corn borer. In field studies, new cohorts of giant ragweed seedlings were initiated on two week intervals beginning in late May by tilling strips of ground in an area with a natural infestation of giant ragweed. Glyphosate was applied at the rates and weed sizes listed earlier. This experiment was repeated in time at two and four weeks after the initial tilling. Preliminary results indicate that most natural occurring infestations of giant ragweed take place  $12.5 \pm 7$  cm above the soil surface. Many of the escaped plants in the field showed similar characteristics with what was seen in the greenhouse study.