COMPETITION OF VOLUNTEER CORN *(ZEA MAYS* L.*)* AND REMOVAL FROM TRANSGENIC CORN HYBRIDS. Tye C. Shauck, David L. Kleinsorge, and Reid J. Smeda, Graduate Research Assistant, Research Specialist, and Associate Professor, Division of Plant Sciences University of Missouri, Columbia, MO 65211.

Volunteer corn *(Zea mays* L.*)* results from seed dropped due to weather, insect, and disease induced lodging as well as harvest inefficiencies. The increasing popularity of glyphosate-resistant (Gly-R) corn results in additional Gly-R volunteer corn as a management problem. Gly-R volunteer corn is managed easily in Gly-R soybeans *(Glycine max)*, however, research is limited on the impact and management of Gly-R volunteer corn in corn. Field trials were established in Novelty, Missouri in 2008 to determine competition effects of volunteer corn in corn and Gly-R volunteer corn removal in glufosinate-resistant corn with glufosinate. On May 20, under no-till conditions, corn hybrids (population of 69,190 seed per hectare) were sown in 76 cm rows in a randomized complete block design. Nitrogen, at 168 kg/ha, was broadcasted at the time of planting. To determine competition effects, Gly-R volunteer corn was planted randomly with a jab planter at densities ranging from 0 to 4 plants/m², and was allowed to compete season-long. In a second study with glufosinate-resistant corn, Gly-R volunteer corn was planted randomly in plots to establish densities of 1 and 4 plants/m². Gly-R volunteer corn was treated with glufosinate at a rate of 0.49 kg ai/ha at heights of 10, 20, and 40 cm.

In the competition study, chlorophyll SPAD meter readings, an indication of leaf nitrogen content, decreased for corn at the V8, VT, and R1 growth stages by 13, 20, and 6%, respectively at 4 volunteer corn plants/m² compared to the untreated control. However, in a year where rainfall during the growing season was 47.3 cm above normal, competition effects resulted in no significant yield losses due to increasing densities of volunteer corn. In the management study and at both volunteer corn densities, glufosinate resulted in control of $\geq$ 97, 19, and $\leq$ 50% at 10, 20, and 40 cm removal treatments, respectively. Dry weights of volunteer plants were reduced 74 to 99% for treated compared to untreated plants. Between the 10 and 40 cm removal timings, grain yield was reduced up to 8% in the 1 plant/m² density, but there was no relationship between treatment height and grain yield in the 4 plants/m² densities. Volunteer corn competes with planted corn for available nitrogen, but impacts on grain yield may be minimal with adequate levels of nitrogen and rainfall. Glufosinate is an adequate means of volunteer corn removal at early growth stages.

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