MANAGEMENT OF GLYPHOSATE-RESISTANT GIANT RAGWEED IN SUGARBEET. Jason M. Fisher, Jeff M. Stachler, and John L. Luecke, Graduate Research Assistant, Assistant Professor, and Research Specialist, Department of Plant Sciences, North Dakota State University and University of Minnesota, Fargo, ND 58108-6050.

Glyphosate-resistant giant ragweed was identified in southern Minnesota in 2006. Glyphosate-resistant giant ragweed continues to increase in southern MN, especially near Hutchinson, MN. Controlling glyphosate-resistant giant ragweed with glyphosate only in the newly (2007) introduced glyphosate-resistant sugar beet will be difficult in this area of MN. Small-plot field research was conducted in 2009 at two locations near Hutchinson, MN to determine the response of glyphosate-resistant sugarbeet and giant ragweed to clopyralid and glyphosate at various rates, timings, and number of applications. Factors in the study consisted of herbicide timing (giant ragweed heights of 2.5, 7.6, and 15.2 cm at initial application) and treatments. Treatments at each timing included glyphosate (840 g ae/ha) applied alone and in combination with clopyralid at 8.6, 17.2, and 34.5 g ae/ha) in a single application. In addition, clopyralid was applied twice at 8.6 and 17.2 g ae/ha and 17.2 followed by 34.5 g ae/ha and three times at 17.2 g ae/ha and 8.6 followed by 8.6, followed by 17.2 g ae/ha. Applications were applied to the four middle rows of each plot at a length of 12 m with a carbon dioxide pressurized bicycle sprayer. Fifteen giant ragweed plants were flagged in each plot prior to the initial applications. Visual whole plot and individual plant evaluations were recorded 21 days after each application and at harvest. The sugarbeets were harvested in September 1st.

Glyphosate applied in a single application at the three initial timings controlled giant ragweed less than 25% at harvest. Giant ragweed control was greater than 93% at harvest when clopyralid and glyphosate was applied twice totaling 51.7 g ae/ha or applied three times. Individual plant mortality at harvest was 99% or greater when clopyralid was applied at $\geq$ 17.2 g ae/ha to 2.5 cm giant ragweed and at $\geq$ 34.5 g ae/ha to 7.6 cm giant ragweed. Maximum sugarbeet yields ranged from 31 to 45 metric tons/ha when clopyralid plus glyphosate was applied in multiple applications to 2.5 or 7.6 cm giant ragweed.

This field research confirms the presence of glyphosate-resistant giant ragweed near Hutchinson, MN. Clopyralid must be applied two or more times in combination with glyphosate to 7.6 cm or smaller giant ragweed to maximize sugar beet yield and eliminate nearly all flagged plants.