

STACHLER, JEFF M.* and JOHN L. LUECKE, Department of Plant Sciences, North Dakota State University and University of Minnesota, Department 7670, P. O. Box 6050, Fargo, ND 58108-6050. **Weed control challenges in glyphosate-resistant sugar beets in Minnesota and eastern North Dakota.**

ABSTRACT

Glyphosate-resistant sugar beets were commercially available for the first time in Minnesota and eastern North Dakota for the 2008 growing season. With this introduction emerging weed control issues were observed and reported. The 40th Annual Survey of Weed Control and Production Practices on Sugar Beet in Minnesota and Eastern North Dakota was conducted in 2008. Growers planting glyphosate-resistant sugarbeet only reported the following “Worst Weed Problems”: pigweed; kochia; lambsquarters; wild buckwheat; tansy mustard; glyphosate-resistant canola, corn, and soybean. Seven percent of all glyphosate-resistant sugarbeet growers reported observing glyphosate-resistant weeds. Wild buckwheat, glyphosate-resistant canola, lambsquarters, waterhemp, glyphosate-resistant soybean, ragweed, and barnyardgrass were reported as being resistant to glyphosate. Between 49 and 67% of the growers at the 2008 Sugarbeet Grower Seminars in Minnesota and eastern North Dakota reported having glyphosate-resistant weeds. Weed control failures were observed in southern and central Minnesota where glyphosate is relied upon for weed control in glyphosate-resistant corn and soybeans.

In a small-plot research study near Mayville, North Dakota glyphosate was applied at 0.8, 1.3, 1.7, and 3.4 kg ae/ha and applied at 0.8 or 1.3 kg/ha and followed with one or three sequential glyphosate applications. The initial applications were applied to common ragweed less than 2.5, 5, and 15 cm in height. Fifteen common ragweed plants were flagged per plot prior to the initial application. Plant mortality ranged from 9 to 100% for glyphosate applied once at the four rates. Only glyphosate applied at 3.4 kg/ha to less than 2.5 cm killed all flagged common ragweed. Plant mortality increased as the number of glyphosate applications increased. At this time common ragweed, giant ragweed, and waterhemp in Minnesota and common ragweed in North Dakota have been confirmed resistant to glyphosate.

In a commercial soybean field in southern Minnesota, only one percent of 100 flagged giant ragweed plants were controlled with glyphosate at 1.1 kg/ha plus cloransulam at 18 g ai/A. Therefore this location is resistant to glyphosate and an ALS-inhibiting herbicide. As additional glyphosate-resistant weed populations are selected in Minnesota and North Dakota, the utility of glyphosate-resistant sugar beet will decline.

Volunteer glyphosate-resistant corn, soybeans, and canola were observed at harvest in some glyphosate-resistant sugar beet fields. Herbicide combinations with glyphosate in glyphosate-resistant sugar beets will need to be managed differently compared to herbicide combinations in conventional sugar beets. Application timing, herbicide rates, and adjuvants will all impact the performance of herbicide combinations with glyphosate. Glyphosate-resistant sugar beet varieties will need to be subjected to conventional herbicides to maintain current tolerance levels. Control of waterhemp, Powell amaranth, common and giant ragweed, lambsquarters, kochia, and wild buckwheat will need to be closely monitored throughout the area.