

AMANDA C. HARDEN, CHRISTY L. SPRAGUE and GARY E. POWELL*, Department of Plant, Soil, and Microbial Sciences, Michigan State University, 1066 Bogue Street, East Lansing, MI 48824. **Competitiveness and management of volunteer corn in sugarbeet.**

Glyphosate-resistant volunteer corn is a consistent problem in glyphosate-resistant sugarbeet grown in Michigan. Two field experiments were conducted in 2012 and 2013 at the Michigan State University Agronomy Farm in East Lansing and at the Saginaw Valley Research and Extension Center near Richville, Michigan. The objectives were to: 1) quantify the effects of volunteer glyphosate-resistant corn on glyphosate-resistant sugarbeet yield and sucrose quality, 2) determine the effects of row-width on volunteer corn interference in sugarbeet, and 3) develop effective management strategies. In one trial glyphosate-resistant 'HM 9173 RR' was planted at 124,000 plants ha⁻¹ in 38- and 76-cm rows. At the time of planting, 'F₂' glyphosate-resistant corn seed was planted approximately 13-cm off the sugarbeet row at populations of 0; 2,150; 4,310; 8,610; 17,220; and 34,430 plants ha⁻¹. In another study a targeted population of 17,220 volunteer corn plants ha⁻¹ (1.7 plants m⁻²) was controlled at five different stages between the V2 and V11 corn. Results were often reflected by variations in precipitation between years and locations. However, in general sugarbeet planted in narrow rows competed more effectively with volunteer corn than sugarbeet in wide rows. Narrow rows also inhibited corn growth which resulted in lower corn biomass quantities than in wide rows. Sugar quality was also lower in wide rows in three of four site-years and sugarbeet yield was similar between 0 and 8,610 volunteer corn plants ha⁻¹. Overall planting sugarbeet in narrow rows helped reduce competition from glyphosate-resistant volunteer corn. Volunteer corn needs to be controlled if populations are greater than 8,610 plants ha⁻¹ in order to maximize sugarbeet yield and quality. Although there was variability within the years, volunteer glyphosate-resistant corn should be controlled with clethodim or quizalofop prior to the V8 corn stage to maximize sugarbeet yield and quality.