

ARMSTRONG, JON-JOSEPH Q. and CHRISTY L. SPRAGUE*, Michigan State University, Plant and Soil Sciences Building, East Lansing, MI 48824. **Effect of row width and plant population on weeds and yields in glyphosate-resistant sugar beet.**

ABSTRACT

The adoption of glyphosate-resistant varieties will greatly impact how Michigan growers manage weeds and produce sugar beets. Planting sugar beets in narrow rows is one option for making the sugar beet crop more competitive relative to weeds to improve weed control, yield, and quality. To evaluate weed management and potential yield improvements in narrow row glyphosate-resistant sugar beet, field trials were conducted at one site in 2006 and three sites each year in 2007 and 2008. Three row widths (38-, 51-, and 76-cm rows) and four plant populations (54,000; 78,000; 101,000; and 124,000 plants/ha) were investigated in these trials. In untreated plots, weed biomass was not different among row widths. However, a trend of slightly reduced biomass in narrower rows was observed at two of three sites in 2007. In plots which received a single glyphosate application when weeds were 10 cm tall, subsequent weed biomass was significantly reduced in the 38- and 51-cm rows compared with 76-cm rows at all sites in 2008. Though producers will not be able to achieve season-long weed control with only one application of glyphosate, reduced weed biomass following an initial glyphosate application indicates increased competitiveness of sugar beet in narrow rows. In addition to the benefits of weed control, planting sugar beet in narrow rows also led to higher root and sugar yield. Among all plant populations, root yield was higher in 38- or 51-cm rows compared with 76-cm rows in five of seven site-years.