

INFLUENCE OF COVER CROPS ON GLYPHOSATE-RESISTANT SUGAR BEET. Molly M. Buckham, Christy L. Sprague, Erin C. Taylor, Gary E. Powell, Graduate Research Assistant, Associate Professor, Research Associate, Research Associate, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824-1325.

Questions have been posed as to whether or not the recent commercialization of glyphosate-resistant sugar beet will allow for changes from current production practices. A field study was conducted in 2008 in Saginaw, Michigan to investigate the effects of cover crops and strip tillage on weed management, stand establishment, and crop yield in glyphosate-resistant sugar beet. The study was established as a strip-strip-strip plot. The main plot was cover crop, the sub-plot was tillage, and the sub-sub plot was glyphosate application timing. Cover crops included in this study were oilseed radish, oriental mustard, oats, winter wheat and no cover as a control. These crops were planted the previous fall and all winter killed except for wheat. Two weeks prior to planting, half of the plots were strip-tilled. Glyphosate at 0.84 kg ae/ha plus ammonium sulfate at 2% v/v was applied two weeks prior to planting in the winter wheat plots and applied at planting and two weeks after planting in all other plots. Weed populations were counted 14, 31, and 50 days after planting. Sugar beet stand was evaluated mid-season and at harvest and were harvested for yield. There was a significant interaction between cover crop and glyphosate application timing for sugar beet stand and yield. Data showed that cover crop treatments with the highest stand counts resulted in the highest yields. The highest yielding treatments were plots that were planted in the no cover crop control (66,620 to 70,816 kg/ha). The lowest yielding treatment was where wheat was controlled two weeks after planting (26,693 kg/ha). Tillage also had a significant effect on sugar beet yield. Average yields were significantly higher in the no-till system (56,237 kg/ha) compared with the strip-till system (51,543 kg/ha). Overall results showed that treatments with no cover crop and no tillage had significantly higher yields than strip-till or cover crop treatments.