

SOYBEAN ROW SPACING AND POPULATION AFFECT WEED GROWTH AND SOYBEAN YIELD. Dana B. Harder, Karen A. Renner, Christy L. Sprague, and Kurt D. Thelen, Graduate Research Assistant, Professor, Assistant Professor, and Associate Professor, Michigan State University, East Lansing, MI 48824.

Planting soybean in narrow-row widths is a cultural weed management practice, but the recommended seeding rate is 25-50% greater than the seeding rate for wide-row soybean. Soybean producers may reduce soybean seeding rate in narrow row soybean as a way to lower input costs since soybean has the ability to compensate for low populations by increased branching and pod set, resulting in yield similar to soybean planted at a higher population. Studies were initiated to determine the effect of soybean population and row width on soybean yield in the presence and absence of weeds. Field studies were conducted at three locations in 2004. Soybean was planted in 19, 38, and 76 cm rows and thinned to populations of 197,600, 296,400, and 444,600 plants ha<sup>-1</sup> at St. Charles, and 123,500, 185,250, and 308,750 plants ha<sup>-1</sup> at Clarksville and East Lansing. Leaf area index (LAI), an indicator of canopy closure, was recorded every 7 to 14 days from late June to late August. At Clarksville, LAI was greater for soybean planted in 38 cm rows 81 days after planting compared to 19 and 76 cm rows. Weed-free yield was similar for soybean planted in 19 and 38 cm rows at 308,750 plants ha<sup>-1</sup>, but yield was greater at 308,750 plants ha<sup>-1</sup> in 76 cm rows compared to the other two populations at Clarksville. At St. Charles, LAI was significantly lower for soybean planted in 76 cm rows at 444,600 plants ha<sup>-1</sup>, compared to soybean planted in 19 and 38 cm rows. Weed-free soybean yield was similar between populations in each row width at St. Charles. However, soybean yield in the weed-free 19 and 38 cm rows planted at populations of 296,400 and 444,600 plants ha<sup>-1</sup> was greater than soybean yield in the same population planted in 76 cm rows. Weed biomass at Clarksville and East Lansing was similar in 19 and 38 cm row widths, and was reduced compared to weed biomass in 76 cm rows, regardless of soybean population. Similarly, soybean planted in 19 cm rows at St. Charles decreased weed biomass compared to the other two row widths at 296,400 plants ha<sup>-1</sup>. Soybean yield loss from weeds was greater when soybean was planted in 76 cm rows at populations of 185,250 and 308,750 plants ha<sup>-1</sup> at Clarksville, and for all populations at St. Charles in comparison to the other two row widths. Furthermore, soybean yield loss from weeds was greater at the low population of 296,400 plants ha<sup>-1</sup> compared to the high population of 444,600 plants ha<sup>-1</sup> in each row width at St. Charles. Therefore, the benefit of increased soybean seeding rates was evident only when weeds were not controlled at 2 of the 3 locations.