

YIELD OF HERBICIDE-RESISTANT SOYBEAN UNDER VARIOUS WEED CONTROL SYSTEMS. Molly M. Buckham and Christy L. Sprague, Graduate Research Assistant and Associate Professor, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824

The recent commercialization of glufosinate-resistant (Liberty Link®) and second generation glyphosate-resistant (Roundup Ready 2 Yield®) soybean have provided new weed control opportunities and potentially higher yields for soybean growers. A field study was conducted in East Lansing and Richville, Michigan to evaluate weed control and compare yield of thirteen soybean varieties with four different herbicide-resistance characteristics under various weed management systems. The study was established as a split-plot design with four replications. Herbicide-resistance characteristic was the main plot factor and weed management system was the sub-plot factor. Soybeans were planted in 38-cm rows at 432,250 seeds per acre in mid-May at both locations. Since soybean isolines were not available, four varieties for each herbicide-resistance characteristic conventional, glyphosate-resistant (Roundup Ready®), and Liberty Link, as well as, a single Ready 2 Yield soybean variety were used in this study. The four weed management systems evaluated in this study included: 1) a preemergence (PRE) followed by postemergence (POST) herbicide program, 2) a two pass POST herbicide program, 3) a weed-free control, and 4) a nontreated control. Specific herbicides applied POST varied by the herbicide-resistance characteristic of the soybean varieties. The weed-free and nontreated controls were treated similarly for all thirteen soybean varieties. The two locations had very different weed populations. There was less than one weed per m² at Richville, and over 800 weeds per m² at East Lansing. Soybean injury was also different for the two locations from PRE herbicide applications. Soybean was injured from PRE applications at East Lansing only, due to over 10-cm of rain within two-weeks of application. Averaged across varieties, there was not a significant characteristic by weed management interaction for soybean yield at Richville. In fact, only herbicide-resistance characteristic was significant and yield was lowest for conventional soybean. However, at East Lansing there was a significant herbicide-resistance characteristic by weed management interaction for soybean yield. Similar to Richville, yields of the conventional soybean tended to be lower and the soybean varieties with the Roundup Ready 2 Yield and Liberty Link soybean characteristics had the highest yields across the different weed management systems.