

CONTROL OF STAR-OF-BETHLEHEM PRIOR TO CORN AND SOYBEAN. Jennifer A. Hagerman and Bryan G. Young. Graduate Research Assistant and Assistant Professor, Plant, Soil and Agricultural Systems, Southern Illinois University, Carbondale, IL 62901.

Star-of-Bethlehem is an emerging weed problem in no-till agricultural fields and pastures. Research was conducted to evaluate the efficacy of glyphosate, 2,4-D, and paraquat applied at three rates each for preplant control in no-till crop production. Herbicides were applied on April 11, 2002 and again on April 18, 2003 to the same respective plots as in 2002. Star-of-Bethlehem plants were 15 to 20 cm in height at each application. Visual evaluations were taken 14 days and approximately one year after herbicide application. In April, 2004, star-of-Bethlehem bulbs were collected from soil samples at a depth of 7.6 cm.

Following the first application of herbicides, control of star-of-Bethlehem at 14 days after treatment (DAT) was 97% or greater with paraquat. Glyphosate and 2,4-D, controlled less than 55% of star-of-Bethlehem at 14 DAT, regardless of herbicide rate. Star-of-Bethlehem control one year after the 2002 herbicide application (prior to 2003 herbicide application) was 70 to 89% with paraquat and less than 29% from glyphosate and 2,4-D. Control of star-of-Bethlehem following the second application of paraquat was 99% for all herbicide rates, 14 DAT. The second application of glyphosate and 2,4-D controlled less than 63% of star-of-Bethlehem regardless of herbicide rate. Two consecutive preplant applications (2002 and 2003) of paraquat resulted in 95% or greater control of star-of-Bethlehem, whereas glyphosate and 2,4-D controlled less than 18% of star-of-Bethlehem when evaluated one year after the second application.

The total number of star-of-Bethlehem bulbs collected in the nontreated plot in 2004 was 6,248/m<sup>2</sup>. Paraquat reduced the bulb density by 88% compared with only a 5% reduction for glyphosate. Conversely, the sequential application of 2,4-D resulted in a 15% increase in the bulb density compared with the nontreated. Thus, paraquat is more effective than glyphosate or 2,4-D for both short-term and long-term management of star-of-Bethlehem in no-till preplant applications.