Volunteer Corn in Northern Indiana Soybean Correlates to Glyphosate-Resistant Corn Adoption

Vince M. Davis, Graduate Research Assistant, Paul T. Marquardt, Research Associate, and William G. Johnson, Associate Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907-2054

Corresponding author: Vince M. Davis. davisv@purdue.edu


Crop producers and advisers have expressed concern about the increasing prevalence of volunteer corn (Zea mays) in soybean fields, which can reduce crop quality and yield (1) (Fig. 1). Cropping sequences throughout the Midwest routinely alternate between corn and soybean. In Indiana, herbicide-resistant corn acres increased from 4% in 2000 to 47% in 2007 (3) and the increase was driven by adoption of glyphosate-resistant varieties. Glyphosate-resistant soybean have been grown on greater than 88% of soybean acres since 2003. Since glyphosate-resistant corn is rapidly increasing in cropping systems that already rely heavily on glyphosate for postemergence weed control, it was hypothesized that volunteer corn in soybean may increase in conjunction with increasing frequency of glyphosate-resistant corn.

A total of 505 randomly-selected northern Indiana soybean fields (156 in 2003, 147 in 2004, and 202 in 2005) were surveyed to assess the frequency and distribution of weed species prior to crop harvest. Data were collected from individual fields each year in the northern half of the state. The frequency of soybean following corn in fields sampled was not different ($P = 0.27$) at 93, 93, and 96% for 2003, 2004, and 2005, respectively. Furthermore, tillage practices in fields where volunteer corn was present were not different across years ($P = 0.96$) with 50, 57, and 52% of fields tilled, respectively. In fields with volunteer corn, field coverage was estimated by visually dividing acres in 100 cell grids and estimating the average number of cells with volunteer corn across the entire field (Fig. 1).