INFLUENCE OF NO-TILL MANAGEMENT PRACTICES AND HERBICIDE APPLICATION TIMING ON WINTER ANNUAL WEEDS. Vince M. Davis, Kevin D. Gibson, and William G. Johnson, Graduate Research Assistant, Associate Professor, and Associate Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907.

Winter annual weeds such as common chickweed, purple deadnettle, smallflower buttercup, cressleaf groundsel, and annual bluegrass are common weeds in no-till cropping systems in the Eastern cornbelt. As densities of these weed species increase in no-till fields over time, they can delay crop establishment because of wet soil conditions. The objective of this study was to determine the influence of crop rotation, winter wheat cover crops, residual non-glyphosate herbicides, and burndown application timing on the population dynamics of winter annual weeds. A field study was conducted from 2003 to 2006 in a no-till field located in southeastern Indiana where winter annual weeds are a common occurrence in no-till fields. The experiment was a split-plot design with crop rotation (soybean-corn or soybean-soybean) as main plots and management systems as subplots. Management systems were evaluated by quantifying in-field plant density in the fall following crop harvest, and seedbank density. Seedbank and in-field densities responded to herbicide selection and crop rotation differently for different winter annual species, but herbicide applications in the fall reduced seedbank and in-field densities of all winter annual species.

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