CROP ROTATION AND WINTER WEED MANAGEMENT EFFECTS ON THE WEED SEEDBANK AND SOYBEAN CYST NEMATODE DENSITY. J. Earl Creech, Valerie A. Mock, William G. Johnson, Virginia R. Ferris, Jamal Faghihi, and Andreas Westphal, Graduate Research Assistants, Associate Professor, Professor, Extension Nematologist, and Assistant Professor, Purdue University, West Lafayette, IN 47907.

Soybean cyst nematode (SCN) is a threat to profitable soybean production in Indiana and throughout the soybean growing regions of the U.S. Research has shown that a number of winter annual weed species can serve as alternative hosts for SCN in the greenhouse. However, the importance of winter weed management in managing SCN in the field has not been documented. The objective of this research was to evaluate the impact of winter annual weed management and crop rotation on SCN population densities, winter annual weed populations, and crop yield. Field trials were established in the fall of 2003 at the Agronomy Center for Research and Education in West Lafayette, IN and at the Southwest Purdue Agricultural Center in Vincennes, IN. The experimental design was a randomized complete block split-plot with six replications. The main plots consisted of two crop rotations: continuous soybean and a 2-yr rotation of soybean-corn. The subplot treatments were comprised of various herbicide application timings and cover crops. Cover crops included fall-seeded annual ryegrass (*Lolium multiflorum*) and winter wheat (*Triticum aestivum*). Winter weed control timings were 1) a non-treated control, 2) fall and spring control, 3) spring control, and 4) fall control. After establishment, the plots to which the main- and sub-plot factors were applied remained fixed throughout the entire experiment to determine the cumulative treatment effects over time. To date, winter annual weed management has not influenced SCN egg density but crop rotation and SCN resistant cultivars have proven to be important SCN management tools. The failure of winter weed management to impact SCN population density is likely due to the low weed pressure in the plot area at the onset of the experiment. Herbicides have been more effective than cover crops at reducing the amount of weed seed in the soil seedbank. Cover crops negatively influenced corn and soybean yield at West Lafayette but not Vincennes.

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