

IMPACT OF WINTER WEED MANAGEMENT AND CROP ROTATION ON WINTER ANNUAL WEEDS AND SCN. William G. Johnson and J. Earl Creech, Associate Professor and Graduate Research Assistant, 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. However, the importance of winter weed management in managing SCN has not been documented. The objective of this research was to evaluate the value of winter annual weed management on SCN population densities, winter annual weed populations, and soybean profitability. Long-term field experiments were established in fall 2003 at the Agronomy Center for Research and Education (ACRE) in West Lafayette, IN and at the Southwest Purdue Agricultural Center (SWPAC) in Vincennes, IN. The winter annual weed management regimes included (1) no control of winter annuals in the fall or spring, (2) control of winter annuals in both the fall and spring, (3) control of winter annuals in the fall but not the spring, (4) control of winter annual weeds in the spring but not the fall, (5) Italian ryegrass (*Lolium multiflorum*) cover crop, and (6) winter wheat (*Triticum aestivum*) cover crop. The SWPAC site has high weed and SCN pressure while the ACRE site has low weed and SCN pressure. The only significant treatment difference between the winter weed treatments on SCN population density after 1 year was the annual ryegrass cover crop at SWPAC where SCN was reduced from 5,940 to 3,480 eggs/100 cc soil. After 1 year, total winter annual weed seed in the soil seedbank was significantly lower in treatments where winter weed management tactics were utilized than the treatment where weeds were allowed to grow uninhibited. No significant soybean yield differences due to winter weed treatments were detected in 2004.