

SOYBEAN CYST NEMATODE REPRODUCTION ON PURPLE DEADNETTLE UNDER GREENHOUSE CONDITIONS. R. Venkatesh, S. K. Harrison, E. E. Regnier, and R. M. Riedel, Postdoctoral Research Associate, Associate Professors, Department of Horticulture and Crop Science, and Professor, Department of Plant Pathology, The Ohio State University, Columbus, OH 43210.

Soybean cyst nematode (SCN) is the most economically important soybean pathogen in the United States. Purple deadnettle is an obligate winter annual weed of no-tillage crop fields in the Corn Belt, and an alternate host of SCN. Greenhouse experiments were conducted to investigate the effects of purple deadnettle population density and removal time on SCN reproduction in a controlled environment. Seeds of PDN were sown in 500-cm³ styrofoam cups containing sand. After seedling emergence, purple deadnettle seedlings were thinned to densities of 1, 2, and 4 seedlings per cup. Controls contained either no plants or 1 to 2 plants per cup of Corsoy 79 soybean (susceptible). Three to four weeks after emergence, each cup was inoculated with 4,000 to 5,000 SCN eggs + juveniles of race 3 SCN, the most prevalent race infesting soybean fields in Ohio. Plants were then removed at 10, 20, 30, or 40 days after inoculation (DAI). At each removal time, soil and roots were extracted for determination of SCN eggs + juveniles/200 cm³ of soil. The treatments were arranged factorially in a randomized complete block design with 6 replications and experiment was conducted twice. SCN counts were transformed to log₁₀ (x+1) values to standardize the variance prior to ANOVA, and the means were back-transformed for presentation. Mean SCN reproduction was 2.3 to 4.2 times greater on PDN than on Corsoy 79, but SCN egg counts did not differ significantly among PDN population densities. The main effect of plant removal time on SCN reproduction was highly significant. Plant removal treatments of 10, 20, 30, and 40 DAI had mean SCN egg concentrations of 3, 69, 886, and 1746 eggs + juveniles/200 cm³ soil, and nonlinear regression analysis indicated that egg counts increased logarithmically between 20 and 30 DAI. These studies indicate that under optimal conditions, SCN is capable of completing its life cycle on PDN within a 20 to 30 day period. In SCN-infested field soils, early control of PDN seedlings that emerge in the fall may thus be necessary to avoid SCN reproduction and rapid increases in SCN inoculum levels.