

PURPLE DEADNETTLE EFFECTS ON SOYBEAN CYST NEMATODE POPULATIONS IN NO-TILL SOYBEAN. R. Venkatesh, S. K. Harrison, E. E. Regnier, and R. M. Riedel, Research Associate, Professor and Associate Professor, Department of Horticulture and Crop Science, and Professor Emeritus, Department of Plant Pathology, The Ohio State University, Columbus, OH 43210.

Purple deadnettle is a common winter annual weed of no-tillage crop fields and serves as alternate host of soybean cyst nematode (SCN). The objectives of our study were to determine (a) the effect of purple deadnettle establishment dates and (b) the effect of purple deadnettle removal times on SCN reproduction in continuous no-tillage soybean. Field studies were conducted in micro plots from 2001 to 2003. A previously non-infested field was inoculated uniformly with SCN in 2001. An SCN-susceptible soybean variety was planted each spring, and purple deadnettle was seeded each fall following soybean harvest. The treatments for establishment date study included a plant-free control, a soybean-only control, and seven purple deadnettle seeding dates ranging from 8/30 to 10/11. Treatments were arranged in a completely randomized design with 7 replications and individual plot size was 2 x 2 m. In the removal time study, purple deadnettle was seeded in all plots on September 7, and treatments consisted of plant-free and soybean only controls, plus seven purple deadnettle removal dates ranging from 5 weeks after emergence (WAE) in the fall to full maturity the following spring (32 WAE). Treatments were arranged in a randomized complete block design with 6 replications and individual plot size was 1 x 2 m. Soil samples were collected from each plot in spring and fall to determine SCN egg population densities in soil.

In September 2002 following the first complete weed and crop cycle, mean SCN egg populations in plots seeded previously with susceptible soybean and purple deadnettle ranged from 380 to 1590 eggs/200 cc soil, compared to 210 eggs/200 cc soil in plots seeded with soybean only. After the second cycle, SCN egg populations in September 2003 showed little change overall from the previous year but were generally higher in plots that had been seeded with purple deadnettle and soybean (540 to 1770 eggs/200 cc soil) compared to soybean alone (340 eggs/200 cc soil). Results of the purple deadnettle removal study showed no differences in SCN egg populations due to removal times in the first year. Second-year results indicated that SCN egg populations were reduced significantly when purple deadnettle was removed in May compared to earlier removal dates in September and October.

The overall results of this study verified that purple deadnettle could contribute to increases in SCN populations under field conditions. Results also suggest that timing of purple deadnettle control may have the potential to reduce SCN egg populations in soil by serving as a trap crop, although more basic information is needed on the temperature dependence and temporal nature of the SCN-purple deadnettle interaction.