STUDIES ON A SOUTH DAKOTA POPULATION OF SOYBEAN CYST NEMATODE, *Heterodera glycines*

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ABSTRACT

The soybean cyst nematode (SCN), *Heterodera glycines* Ichinohe, is the most serious disease threat to soybeans throughout much of the soybean growing area of the United States. Yield losses in the North Central Region of the United States are estimated at 50 million bushels per year. The first report of SCN in South Dakota was in Union County in 1995. A 1996 survey identified SCN in several additional locations in Turner County.

Crop production practices in SCN-infested areas often include corn-soybean or soybean-soybean rotations which are conducive to rapid increases in SCN populations. A small-plot test and field-length test strips using resistant and susceptible soybean varieties were established in an SCN-infested field in Union County. The objectives of the study were to determine: population dynamics of the soybean cyst nematode over the growing season on a susceptible and resistant soybean variety; SCN population changes in SCN-infested fields planted to corn following soybean; and the effects of SCN on soybean yields and yield components, including number of pods, number of seeds, seed weight per plant, and plant height. Plots planted to the resistant variety Bell and susceptible variety Hardin were sampled bi-weekly to determine population dynamics over the growing season. Five corn fields infested with SCN were also sampled bi-weekly to determine SCN populations on a non-host crop.

A significant reduction in SCN populations was measured in plots planted to the resistant soybean variety while populations in plots planted to the susceptible variety increased over the growing season. Populations in SCN-infested corn fields declined over the growing season, although the decline was not as great as that recorded in plots planted to the resistant soybean variety. Yields of resistant soybean varieties were significantly greater (44 to 100 %) than those of susceptible varieties. Yield components of resistant varieties were also generally greater than those of susceptible varieties.

In conclusion, the identification of SCN in Union and Turner Counties represents a serious problem for soybean producers in southeastern South Dakota. This research indicated that planting susceptible soybean varieties in the presence of SCN will result in increased SCN populations and significant yield loss. Rotation to corn for one year did not greatly reduce SCN populations.