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Soybean Cyst Nematode

James D. Smolik
South Dakota State University

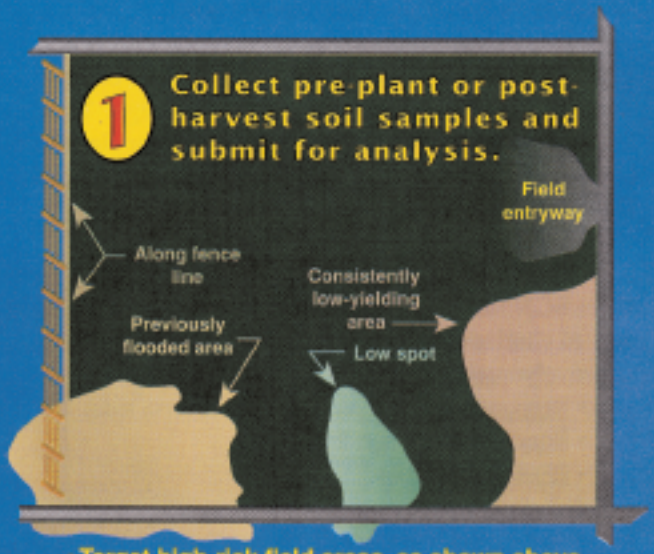
John P. Gillie

Scouting for

Soybean Cyst Nematode

For effective integrated SCN management, scout fields BEFORE symptoms appear.

Three steps to good SCN scouting are:



- Target high-risk field areas, as shown above.

- Sample from six weeks after planting until late August.
- Dig roots; do not pull them from the soil.

- Collect soil near stunted or yellowed plants.
- Send soil samples to the SDSU Plant Disease Clinic or another laboratory for analysis.

NOTE

Infested fields may not have stunted or yellowed plants such as these for years, but may have much lower yields.

COOPERATIVE EXTENSION SERVICE
South Dakota State University

SOUTH DAKOTA SOYBEAN RESEARCH & PROMOTION COUNCIL

For more information, contact your local county Extension office or Jim Smolik, SDSU Plant Science Department, (605) 688-5543.

Integrated Pest Management / Extension Special Series 44-11

Soybean Cyst Nematode

ESS 44-11

by James D. Smolik, nematologist, and James L. Jones, graduate assistant, SDSU Plant Science Department, and John P. Gille, Union Co. Extension agent

The soybean cyst nematode (SCN), *Heterodera glycine* is a serious threat to South Dakota soybean production. It was first detected in South Dakota in Union County in 1995, and in 1996 it was also found in a number of fields in Turner County. It very likely is also present in several other southeastern South Dakota counties.

Nematodes are unsegmented roundworms. Most of the plant parasitic types are very small and feed on or in plant roots. The adult females of SCN are about 1/32 of an inch long and are visible to the unaided eye. (See the reverse side for a guide to scouting for SCN with a photo of SCN females attached to a soybean root.)

Very low populations of this nematode do not cause obvious symptoms. In a corn-soybean rotation it may take 8-12 years for SCN to increase to damaging levels. Continuous cropping of soybeans or rotating soybeans with another host such as dry beans will dramatically shorten this time interval. **One of the indications that this nematode may be present is declining soybean yields in portions or all of a field. Other symptoms include stunting, yellowing, and early maturity. The presence of SCN can be confirmed by observing cysts attached to roots or by submitting a soil sample for cyst analysis.**

With the aid of the S.D. Soybean Research and Promotion Council, a test plot was established in a cooperator's field in Union County. Yields in the test plot ranged from 16.3 to 43.5 bu/A, with the highest yields generally associated with the resistant varieties. Two of the varieties included in the test plot and in the Crop Performance Testing program at the Southeast Farm are compared in Table 1. The field at the Southeast Farm was not infested with SCN. The Union County plot was approximately 20 miles from the Southeast Farm. Although yields at the Southeast Farm are not directly comparable, they do provide a measure of the yield potential of the two varieties in the absence of SCN. For instance, variety Sturdy yielded 70 bu/A at the Southeast Farm and only 25.3 bu/A in the test plot.

Populations of SCN at planting (Pi) were high (Table 1). A series of wet years had prevented corn planting in the test plot field. Soybeans had been continuously cropped the previous three years, which contributed to the high SCN populations. **High populations of SCN are difficult to manage, even with resistant varieties.** Resistant varieties prevent or slow the reproduction of SCN. However, they are invaded by the infective stage (the second-stage juvenile or J-2) of SCN, and thus suffer substantial damage in the presence of **high** SCN populations. Evidence of this damage is reflected in the yield (Table 1) of the resistant variety Bell in the test plot (36.3 bu/A) versus the yield of Bell in the Southeast Farm plot (64 bu/A).

Populations of SCN detected in 1996 in several of the Turner County fields also were high to very high. Thus, **it appears that SCN has been responsible for significant soybean yield losses in at least two southeastern South Dakota counties.**

Control

Once SCN has become established, there is no practical way to eliminate it from a field. It can, however, be effectively managed through the three Rs:

- Recognition of the problem (see reverse side).
- Rotation with a non-host crop.
- Resistant varieties.

Non-hosts include corn, sorghum, small grains, and alfalfa. Dry beans are a good host for SCN and should not be rotated with soybeans. Populations of SCN will remain high in a corn-soybean rotation unless resistant soybean varieties are used. Also, it is a good practice to **change the sources of resistance to prevent the build-up of SCN races capable of attacking formerly resistant varieties.**

This nematode is moved with anything that moves soil, including tillage and harvest equipment, wind and water erosion, and soil peds in seed stocks. If SCN is present in only certain fields on a farm, work the infested fields last, and power wash equipment prior to moving to non-infested areas. Cultural practices that reduce wind and water erosion also will slow the spread of SCN. Plant only properly cleaned seed.

Table 1. Yield of SCN Resistant and Susceptible Varieties

Variety	SE Research Farm Yield (Bu/A)	Union County Yield (Bu/A)	Pi	Pf
Bell (Resistant)	64.0	36.3	9876[a]	2743[b]
Sturdy (Susceptible)	70.0	25.3	7472	6689

[a] Pi = Number of SCN eggs and J-2 per 100cm³ soil at planting.
[b] Pf = Number of SCN eggs and J-2 per 100cm³ soil at harvest.
NOTE: SCN was not present at SE Farm.

4/97