

SCN is the **most destructive pest** of soybeans in the world. **Understanding nematode biology** is key to recognizing **early infestation** and **managing** its negative **economic impact**.

2 Steps for Controlling SCN

1. Rotate, rotate and rotate Crop and variety rotations

- Rotate with non-host crops such as corn, wheat or alfalfa.
- If SCN numbers are high, rotate with soybean varieties having different sources of resistance.
- Four genetic sources of resistance are currently available.
- The use of one source of resistance will eventually lead to SCN populations that overcome that resistance.
- Soybean varieties with similar sources of resistance can differ in their ability to suppress reproduction, so it is important to switch varieties.
- Rotate with tolerant or susceptible varieties when SCN numbers are low.

2. Relieve stress

Manage these to avoid compounding damage due to SCN:

- **weeds**
- **water**
- **fertility**
- **herbicide**

| Example rotation schedule | |
|---------------------------|---|
| Year 0 | Identification of SCN |
| Year 1 | Non-host crop (corn, alfalfa, wheat) |
| Year 2 | Adapted resistant variety |
| Year 3 | Non-host crop |
| Year 4 | Susceptible soybean variety if soil analysis shows that SCN levels are below threshold, resistant variety if levels are still high. |
| Year 5 | Repeat rotation sequence |

SCN Key Points

- ▶ Find out if you have SCN, you may have it and not know it.
- ▶ SCN may not cause obvious symptoms.
- ▶ SCN can cause substantial yield loss without causing symptoms.
- ▶ If you have SCN, follow local recommendations.

For more information:

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1575 Linden Drive
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608-262-7975
www.coolbean.info

Field Crops Plant Pathology
fyi.uwex.edu/fieldcroppathology/soybean

The Soy Report
thesoyreport.blogspot.com

North Central Soybean Research Program
www.ncsrp.com

Free SCN testing available to Wisconsin growers

Program funded by WSMB. Request up to 4 free kits for your farm:

freesctest@mailplus.wisc.edu

Funded by the soybean checkoff through the Wisconsin Soybean Marketing Board (WSMB)

www.wisoybean.org

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Wisconsin Soybean Cyst Nematode Management

The Billion Dollar Pest
What you can't see, will hurt you!

Guide
for Wisconsin



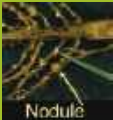
Recognizing a SCN Problem

- Symptoms of SCN infections can range from no visible evidence of plant injury to plant death in certain areas of the field.
- Chlorosis (yellowing) is caused by nitrogen deficiency because of the ability of SCN to inhibit Rhizobium nodule formation.
- Areas are patchy, circular or oval in shape.
- Symptoms associated with SCN damage are similar to other crop production problems, such as potassium and nitrogen deficiencies, iron chlorosis, herbicide injury, soil compaction, drought stress and other soybean diseases.
- White or yellow females are the only visible sign of SCN infection, but they may not be present at the time of sampling. Cysts (dead brown females) are not visible in soil.
- White female SCN are most readily seen in the field when the soybean plant begins to flower. While observation of white females will confirm an SCN infestation, it tells you little about the level of infestation. If you dig up roots and don't find a white female, that does not mean that SCN is absent. The only way to get a reliable diagnosis is through a professional diagnostic laboratory.



White females of SCN on soybean roots are visible to the naked eye but are still very small (here magnified 32X).

Nitrogen-fixing nodules are much larger.



Soil Sampling for SCN

Soil can be sampled any time for the presence of SCN. A good time to sample soil is in the fall, before the soybean harvest during routine sampling to determine soil fertility.

Procedure:

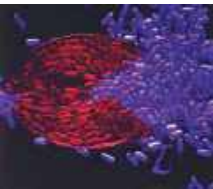
1. Use a soil probe or narrow-bladed trowel or shovel. Take cores close to plants at a depth of 6-8 inches. Be sure to include plant roots.
2. Submit one sample for each 10 acre field or for a suspected area within the field. Sample from plants in the margins of suspected areas, not from their centers. Plants in the center of the affected area have severely stunted root systems that cannot support SCN. Or collect in a zig-zag pattern across the field. Collect from areas of similar soil texture and cropping history. If different crops were grown, or there is markedly different soils within a field, sample separately.
3. Take soil and roots from 12-20 cores per 10 acres and mix into one sample. Place 1 pint (2 cups) of mixed soil into a plastic soil sample bag, fasten the open end securely and write your name on the bag label. Keep the samples out of the sun and don't let them dry out.
4. Mail as soon as possible and early in the week to avoid delays in transit.

Understanding SCN Soil Test Results

There is a relationship between the number of SCN eggs present at the time of planting and soybean yield. To test a sample for SCN, the soil is added to water and then passed over a sieve to remove the cyst (female) stage of the nematode. The cysts are separated from organic debris by a centrifugation technique and then crushed to release the eggs. Each cyst may contain 10-250 eggs. Egg counts are used to assess the risk of yield loss due to SCN.

SCN results are usually expressed as the number of eggs per volume of soil. Some labs report number of cysts per volume of soil. Egg population density is a better predictor of risk than cyst number. This table will help you understand your SCN lab report.

| SOIL TEXTURE | | | | |
|--------------|-------------|--|-------------|--|
| SILT OR CLAY | | SAND | | |
| | Eggs/100 cc | Susceptible variety potential yield loss | Eggs/100 cc | Susceptible variety potential yield loss |
| RISK | | | | |
| None | 0 | None | 0 | None |
| Low | 1-500 | 0-10% | -- | -- |
| Moderate | 500-2000 | 10-20% | 1-500 | 5-20% |
| High | 2000-5000 | 10-50% | 500-5000 | 10-50% |
| Very High | >5000 | Very high | >5000 | Very high |



This SCN cyst has been broken open to reveal the eggs inside. Eggs can remain viable for years even in the absence of a suitable host.

The 'yield robber' Soybean Cyst Nematode

A disease that can live for many years in the soil, and is relatively **invisible** when looking at an **infested field**.

Soybean Cyst Nematode (SCN) was first found in the U.S. in North Carolina in 1954.

SCN is the most **serious** soybean pest in the U.S.

SCN causes more than **\$1 billion in soybean yield losses** each year.

A microscopic roundworm, the nematode occurs in all **major soybean production areas**.

SCN causes **no specific symptoms** and its effects are often not dramatic.

Many growers do not know they have a problem until a **severe infestation develops**.

Yield losses due to SCN can be over **50%**.

Understanding the life cycle of SCN, **routine soil testing** and **proper crop management** can **reduce** the incidence of this **pest**.

SCN **resistant soybean varieties** will **increase yield** potential of infested fields.