

Soybean Cyst Nematode Analysis



Background

The soybean cyst nematode (SCN) is the most destructive soybean pathogen in the United States. SCN now occurs in every major soybean producing area and can be responsible for sizable yield loss if not identified and managed properly.

- SCN can cause yield loss even before a soybean crop appears damaged
- Testing for SCN in the fall, close to harvest, will allow time for management decisions
- Resistant soybean varieties help keep populations low and good practices can limit spread
- Once infested, SCN is impossible to eliminate from a field

Impact of SCN

Yellowing and stunted growth are sometimes indicators of SCN infestations, but the symptoms are not always obvious. It is possible to lose up to 30 percent of total yield without the soybean crop looking noticeably damaged. Injury from SCN occurs on the roots where the nematodes feed, stunting root growth and limiting nutrient uptake, and this damage can also promote the development of other root and stem diseases in the weakened plants. Therefore, because



symptoms can be obscured, or they may not appear, it is important to sample for SCN periodically to see if it is present in each field and then to help determine management strategies when SCN has been identified.

Management

Once SCN is established in a field it cannot be eradicated, but it can be managed. Nematodes have very limited mobility in the soil, but the cysts and eggs are easily spread when soil is moved from field to field or within a field, even in the flow of water across the soil surface. Being careful to limit the spread of contaminated soil is important to limiting the spread of the infestation.

Managing the size of the SCN population is extremely important to maintaining the productivity of a field. This can be difficult since no single management tactic will control SCN. Chemical control with nematicides has only a limited effect even in the season when it is applied, and treatments are costly. By providing adequate nutrient supply, weed and pest control, and good water management it is possible to compensate for SCN damage to a crop. But this doesn't reduce the population pressure.

Crop rotations are the best way to reduce populations of SCN. Adding resistant varieties of soybeans into a rotation and/or increasing the number of non-host crops in the rotation can limit reproduction and growth of the nematodes and reduce the size of the population. Avoid using the same resistant seed variety year after year, as this could lead to the nematodes developing resistance in a new population.

Sampling Procedures

Samples can be taken anytime during the year; however, it makes the most sense to sample fields for SCN in the fall, just before or just after harvest.

- To effectively check fields for the presence of SCN limit the area being sampled to no more than a 20-acre section, collecting a composite sample of 15 to 20 soil cores.
- Higher risk areas, where SCN may first appear, could include the following:
 - Areas near a driveway or entrance into a field
 - Along fence lines or areas of poor weed control
 - In low areas that may have been flooded
 - Areas of the field where soil pH is above 7.0
- When sampling where SCN infestations are already known to occur:
 - Collect cores from within 2 inches of the soybean row to a depth of 6-8 inches.
 - Target areas of the field where symptoms or yield loss were identified
 - If 'hot spot' areas of high infestation are being sampled collect soil from the outer edges of the area rather than the center.
- Mix the soil cores very well and place in a tightly closed soil bag.
- Keep the samples at room temperature or cooler and out of sunlight until they can be shipped to an AgSource Laboratories location.

The results will be shown as eggs per 100cc of soil.

Resources

Soybean Cyst Nematode Management Guide 5th edition: http://www.soybeanresearchinfo.com/pdf_docs/SCNGuide_5thEd.pdf

<https://www.apsnet.org/edcenter/intropp/lessons/Nematodes/Pages/SoyCystNema.aspx>

<https://www.plantpath.iastate.edu/scn/>

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