

HOW TO TAKE SOIL SAMPLES FOR SOYBEAN CYST NEMATODE

Soybean cyst nematode (SCN) is a devastating, yield-limiting pest of the soybean worldwide, and it is becoming better at adapting to resistant genetics. Syngenta, as a pioneer in controlling this pathogen, offers the SCN Education Series to help educate growers and retailers on the best practices for controlling damage and increasing soybean yields. Clariva[®] Complete Beans seed treatment, a combination of separately registered products from Syngenta, consists of naturally occurring soil bacteria with a unique, direct mode of action on nematodes, delivering immediate and long-lasting protection of plant root systems resulting in significant yield benefits.

As the number one soybean pest of U.S. growers, soybean cyst nematode (SCN) is estimated to be found in more than 50 percent of soils across Midwest states. With SCN, growers can lose 30-40 percent of their yield without a great deal of above-ground visibility. It may not be recognized as SCN, and many growers mistake the symptoms as herbicide carryover, disease or a high-pH area, or any number of other deficiencies or problems.

SCN acts as a parasite of soybeans, taking energy directly away from plants. It opens the root system and stresses the plant, making it more susceptible to insect issues and other plant diseases like brown stem rot and sudden death syndrome.

“Once you have it, you never get rid of it,” says Dale Ireland, Technical Product Lead, U.S. Soybean and Corn Seedcare, Syngenta Crop Protection. “That’s why once you confirm you have SCN, managing it is so important.” Sampling to find the level of infestation is critical to managing the damage this pest does to soybean crops.

When To Perform Soil Sampling For Soybean Cyst Nematode

There are two recommendations for how often to perform soil sampling for SCN: either every three to five years or every second or third soybean crop cycle. With either timing, sampling is recommended in the fall following crop harvest and before the soil freezes. About the only time not recommended for SCN sampling is when the soil is muddy, as this

condition makes the process of egg extraction more difficult.

Depending on what crop was grown previously, growers may want to consider a couple of different schemes for where to take samples from in the field. If growing beans after beans, samples should be taken from directly within the harvested crop rows. If the previous crop is a non-host, like alfalfa or corn, wait until after the fall tillage and sample irrespective of the row. With either one of those schemes, sample the top eight inches of soil. The more soil cores that are taken from an area, the more accurately the SCN level will be represented.

“Normally you wouldn’t do it on such a small scale, but you can imagine that if you took 15 cores from a 20 foot by 20 foot area, you’re describing that area much more accurately than if it’s a 20-acre area,” Ireland says. “The more cores you take from a smaller area, the more accurately you capture the present situation.”

Grid Sampling Versus Conventional Sampling

Soybean cyst nematode is not uniformly distributed and shows up in hot spots through fields; because of this, sub-samples combined from across a field should be taken for soil sampling. There are two types of soil sampling that can help determine the level of infestation: grid sampling and conventional sampling.

Grid sampling is performed based on the process already in place for soil fertility sampling. Since GPS has enabled much more targeted fertilizer applications, many soil cores are taken from a systematic grid pattern across a field to determine where soil is not as fertile and where it is very fertile. As those cores are pulled for fertility sampling, an extra core or two are pulled and kept in a separate bucket. The accumulation of those samples in a composite from across approximately 20 acres is the basis for the SCN sample.

In conventional sampling, the grower would take 15 to 20 cores in a zig zag pattern from an area that represents about 20 acres or less, including areas near waterways, trees or any natural agronomic features of the land. The goal of each sampling method is to collect samples from many areas of the field.

“Don’t just go straight down a line or all in one spot,” Ireland says. “Take a representative sample across this 20-acre or less area. Fifteen to 20 cores is a pretty common recommendation.”

Where To Send Soil Cores For Testing

Soil samples contain biological material, and for that reason, you may not ship soil or plant material across state lines without proper USDA phytosanitary permits. Samples should be sent to the home state’s land-grant university nematode lab.

We recommend that growers stick close with local lab recommendations. Nematode lab websites also contain useful information for growers on management and maintenance, along with sample submission forms for the nematode clinic or lab. You can visit the websites of nematode labs of land grant universities at the following websites:

University of Minnesota

<http://pdc.umn.edu/>

North Dakota State

<https://www.ag.ndsu.edu/pdl/submit-a-sample>

University of Nebraska

<http://nematode.unl.edu/wormlab.htm>

Iowa State

<http://www.plantpath.iastate.edu/tylkalab/>

University of Missouri

<http://soilplantlab.missouri.edu/nematode/>

Kansas State University

<http://www.plantpath.k-state.edu/extension/diagnostic-lab/>

University of Illinois

<http://web.extension.illinois.edu/plantclinic/>

The Ohio State University

<http://ppdc.osu.edu/>

Purdue University

<https://extension.entm.purdue.edu/nematology/>

Michigan State University

<http://www.pestid.msu.edu/>

University of Wisconsin

<http://labs.russell.wisc.edu/uw-nematode-diagnostic-lab/>