Soybean Cyst Nematode Now Confirmed in Six Additional Counties in New York

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The soybean cyst nematode (SCN) is considered the number one pest of economic concern of soybeans nationally and globally, potentially causing 10-30% yield loss in the absence of above ground symptoms. In 2017, national estimates reported over 109 million bushels lost to this pest in the U.S. alone. Considering that this pest is confirmed in surrounding states and provinces, and given its potential to spread, statewide survey efforts have been underway since 2013 to determine the presence or absence of the soybean cyst nematode in NY. From 2013-2016, numerous fields in 17 counties were sampled and tested as part of a statewide soybean disease survey led by Cornell's Field Crops Pathology program, funded by Northern NY Agricultural Development Program and NY Corn and Soybean Growers Association. In 2016, SCN was confirmed in one field in Cayuga County by Cornell's USDA ARS Nematology lab, albeit at very low levels. Since then, survey efforts have continued, because it is widely assumed that SCN is much more prevalent in NY.

In 2019, the NYS Integrated Pest Management Program was commissioned by NYS Department of Ag and Markets to coordinate a Cooperative Agricultural Pest Survey (CAPS) in soybeans with Cornell Cooperative Extension specialists to maintain vigilance against potentially invasive species. For more information about the CAPS program and this survey effort, please refer to this article. As part of this survey, 25 soil samples were collected from fields in 16 counties across NYS and were submitted for testing at the SCN Diagnostics laboratory. Of those 25 samples, seven of them were positive for SCN in six different counties, confirming our suspicions that this pest is potentially widespread throughout soybean production areas in NY. This brings us to a total of seven counties in NY with at least one field positive for SCN. The counties identified with fields positive in 2019 include Columbia, Dutchess, Jefferson, Monroe, Tompkins and Wayne (Fig. 1).

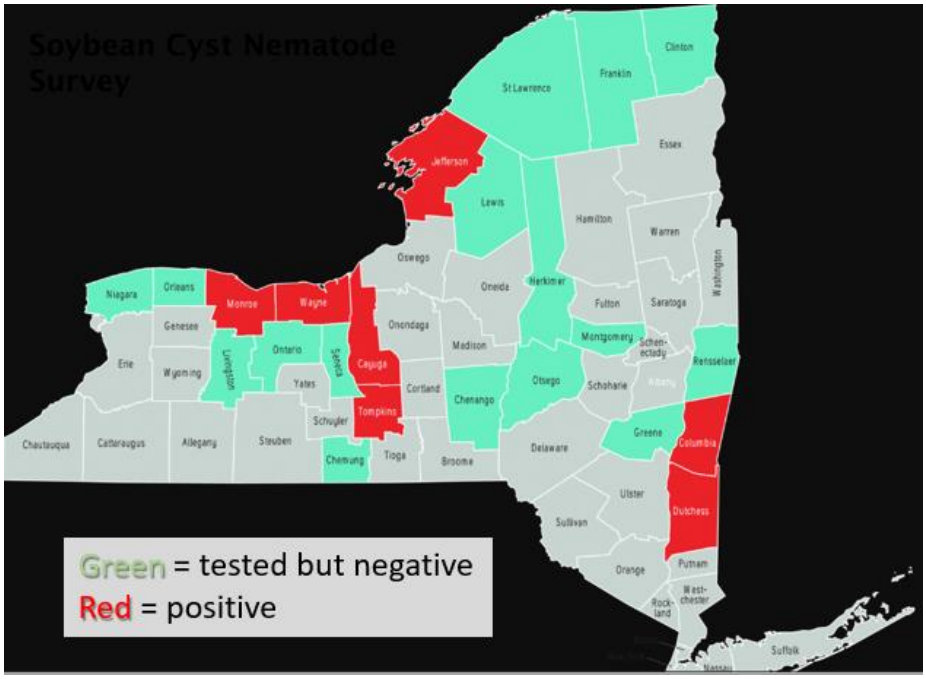


Figure 1. Soybean cyst nematode survey efforts in NY since 2013. Counties colored in green had fields tested with negative results, and counties colored in red had one or more fields that tested positive. The first positive result was in Cayuga County in 216. In 2019, six more counties tested positive as a result of the soybean Cooperative Agricultural Pest Survey.

Thankfully, the egg counts in these positive samples were all below 500 eggs per cup of soil (250 cc of soil). Although that may sound like a lot, these are very low numbers compared to the 10,000-80,000 egg counts that some growers struggle with in other states. This means that we are in a good position to *proactively* manage for this pest *before* it gets out of hand and starts causing economic losses.

An integrated management approach will help NY soybean growers stay ahead of the soybean cyst nematode. This involves continued testing efforts to monitor your fields for SCN. Determining if you have the pest is the first step toward management. For detailed information and recommendations on how to collect samples for SCN testing and where to send those samples to, please refer to this article. If you get a positive result, keep records of your egg counts for each individual field. Implement the following tactics when managing for this pest:

1. SCN can be moved among fields on soil, whether it be via wind, water, equipment, or boots. Consider improving sanitation of equipment coming from fields with known SCN infestation to avoid spreading it to others.
2. Crop rotation is the number one tool for managing SCN. Rotating to a non-host crop, such as corn, small grains, alfalfa, forage grasses and mixes for one year can reduce the nematode population by up to 50%. Continuous soybean production in an infested field can increase nematode populations exponentially, since this pest can have up to three life cycles per season in NY.
3. Select and plant soybean varieties with resistance to SCN, and rotate those resistant varieties that you plant. The nematode quickly develops resistance to the resistant varieties when

exposed to the same varieties over and over, in the same way that weeds develop resistance to over-used herbicides.

4. Consider nematicidal seed treatments if your SCN populations start causing economic damage (Fig. 2). Research has shown that these products are only cost-effective with high SCN population levels causing significant damage.
5. *Keep testing*. Continue to test fields that you get negative results from, and especially continue to test fields that you get positive results from. Keep track of your egg counts in each field to know how your populations are changing, as that may affect your management strategy. It is recommended that as long as egg counts remain below 30,000 eggs per cup of soil, crop rotation with SCN-resistant soybean varieties is the best approach.

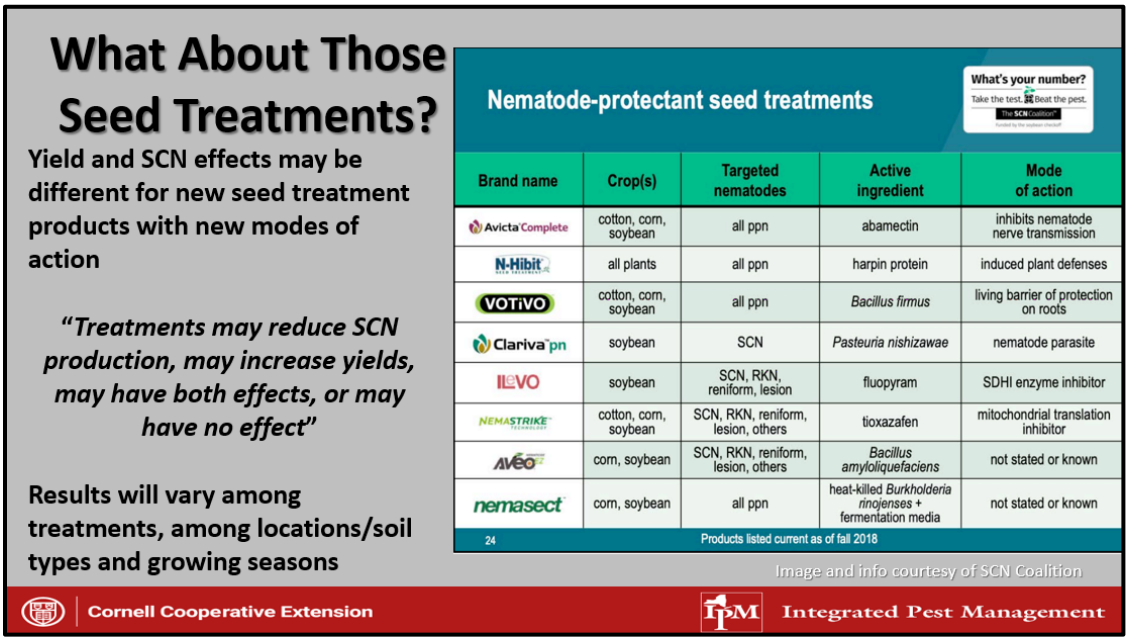


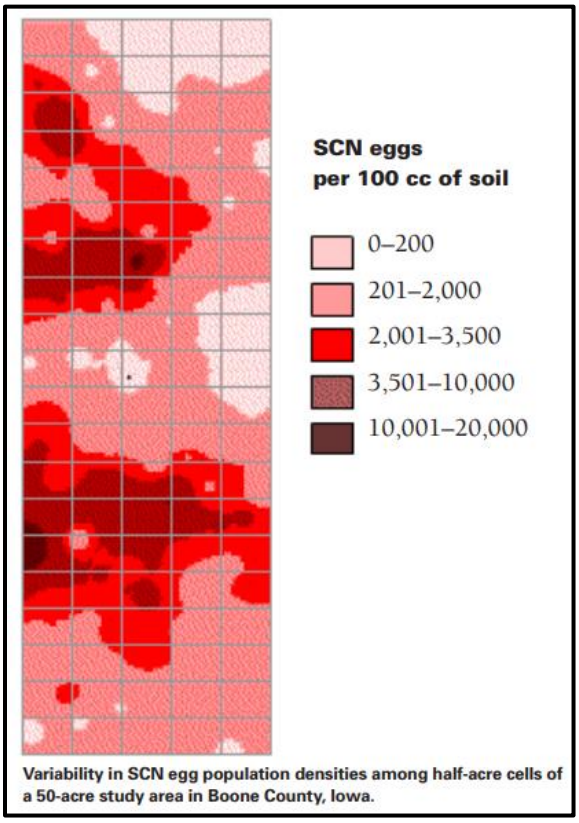
Figure 2. Nematicidal seed treatments available for managing soybean cyst nematode.

Crop rotation is the most important tool, and we are lucky to have a number of non-host crops already in our rotations. But, SCN has a fairly wide host range, including a number of our common weeds and cover crops. Some of these weed and cover crop hosts include chickweed, some clovers, common mullein, henbit, pokeweed, vetch and purslane (Table 1). That's just another thing to remember as you plan your crop rotations and weed management strategies.

Table I. Host plants for SCN, including weed hosts, that have had one or more populations of SCN reproduce on them, and nonhost crops. (Courtesy of Univ. of Nebraska, extension publication G1383)

Host Crops	*Weed Hosts*	*Nonhost Crops*
Birdsfoot Trefoil	Common Chickweed	Alfalfa
Edible Beans	Common Mullen	Canola
Clover (Alsike, Crimson, Sweet)	Field Pennycress	Clover (Red, White, Ladino)
Cowpea	Henbit	Corn
Lespedezas	Pokeweed	Forage Grasses
Lupine (White, Yellow)	Purslane	Small Grains (Barley, Oats, Rye, Wheat)
Soybeans	Sericea Lespedeza	Sorghum (Grain, Forage)
Vetch (Common, Crown, Hairy)	Wild Mustard	Sugar Beets

Keep in mind that testing for SCN can be tricky, since it can be difficult to detect at low population densities, and populations can be quite variable within a field (Fig. 3). Focus your testing efforts on fields with unexplained lower yields, or fields with a history of Sudden Death Syndrome (SDS) or Brown Stem Rot. It is well known that there is a strong correlation between the presence of SCN and SDS. If you see patches of SDS in your field, that would be an ideal location to pull soil samples for testing for SCN. For more information on the relationship between SDS and SCN, please refer to this article.



Variability in SCN egg population densities among half-acre cells of a 50-acre study area in Boone County, Iowa.

Figure 3. Grid sampling reveals high variability in soybean cyst nematode population densities within a single field. (Image courtesy of Iowa State University)

For more information on this pest and recommendations, please visit the Soybean Cyst Nematode Coalition website. There you will find numerous resources explaining the resistance issues with this pest, how and where to test for it, management recommendations, and success stories. Expanded SCN testing efforts will commence in 2020, supported by the NY Corn and Soybean Growers Association. If you suspect SCN in your fields, contact your area Cornell Cooperative Extension specialist for assistance, they may be able to offer you free testing on suspect fields as part of the expanded testing efforts in 2020.