

Soybean Cyst Nematode Sampling Program: 2017

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Situation Statement:

Soybean cyst nematode is the most significant disease threat to soybean production in the United States, and it continues to spread in North Dakota. Management tools for SCN are available, but a 15-30% yield loss is common before above ground symptoms appear, making proactive identification critical to avoiding yield loss. In 2013, the NDSC and NDSU Extension developed a free-sampling-bag program for growers, in order to encourage growers to sample for SCN. Since its creation, thousands of bags have been submitted by North Dakota producers. The economic impact for every grower that proactively detects SCN before incurring yield loss is very high.

Objectives:

1. Provide incentive for growers to sample for SCN by covering the cost of up to three SCN samples (pre-labeled bags) per grower on a first-come first-serve basis (up to 2,000 bags total). Bags will be distributed through Extension County offices, my office, Research Director Nicholls office, at field days and by any other means appropriate.
2. Creation of a SCN distribution map (limited resolution – no farms or growers can be identified) that can be used to determine how widespread SCN. This map was widely distributed in an effort to encourage growers to sample and/or manage SCN.

Description of the Research Conducted:

Soybean Cyst Nematode sample bags were obtained from Agvise in June 2017. Bags were labeled with distinct yellow tags containing funding and identification numbers. Bags and accompanying instruction/submission forms were distributed to every Extension County office in early August. The number of bags distributed was roughly proportional to acreage (i.e., Richland County received more bags than Divide County). Bags were also distributed through the NDSU Plant Pathology Department, the NDSC Research Directors office, field days, NDSU Research Extension Centers and any other means appropriate. To advertise the availability of the program, multiple radio interviews were delivered, NDSU Crop and Pest Reports were written and other advertising was done.

Soybean growers were asked to sample around the time of harvest (before or after) which is when SCN numbers are known to be highest. Growers submitted samples to Agvise directly, or through the NDSU County Extension offices. Upon receipt, Agvise processed the samples and sends results through the U.S. mail back to the submitter. Dr. Markell received geographic data

points and egg levels and construct a map of SCN egg levels and distribution in the state. No additional personal information about submitters was obtained or used.

Findings:

710 samples were received in the fall of 2017. This represents an approximate 25% increase from the previous year (531). 237 of the 710 samples were positive (approximately 33%), which is slightly higher than positives reported in years past (25-30% positives). Egg counts of positive samples ranged from 50 eggs/100 cc to 55,400 eggs/100cc in the 2017/2018 season.

Maps were drafted with SCN data from 2017 (Figures 1 and 2) and from 2013 to 2017 (Figures 3 and 4). A notable increase in samples from Grand Forks County were recorded in 2017. While some egg counts in the county were very high (in excess of 20,000 eggs/100 cc), most were negative. Enough data points were collected from 2013 to 2017 that 'heat maps' were created for the southeast and southcentral counties in North Dakota (Figure 5). Additionally, county specific maps were made upon request.

Maps were distributed widely throughout winter months, in both popular press and events. This included many NDSU sponsored or supported programs, including the Northern Corn and Soybean Expo and the Getting it Right Soybean Series. Feedback from growers and attendees indicated that the heat maps were much more impactful, and growers found them much easier to read and interpret than the original 'dot' maps.

Benefits to the North Dakota Soybean Farmers:

Early detection of SCN is critical to avoiding yield loss. Distribution of cost-free SCN sampling bags appears to have great buy-in among North Dakota growers. Additionally, secondary benefits of this program have occurred, including the increased talk among growers about SCN, many press interviews and importantly, a significant amount of positive press for the NDSC and its mission to serve the ND growers.

Acknowledgements:

We express our thanks to; the many Extension agents, crop consultants and other agricultural professionals who helped distribute sample bags and sampling instructions, to Michaela Halvorson for map construction, to Agvise for sample processing, and finally to the North Dakota Soybean Council for support.



SCN Survey 2017

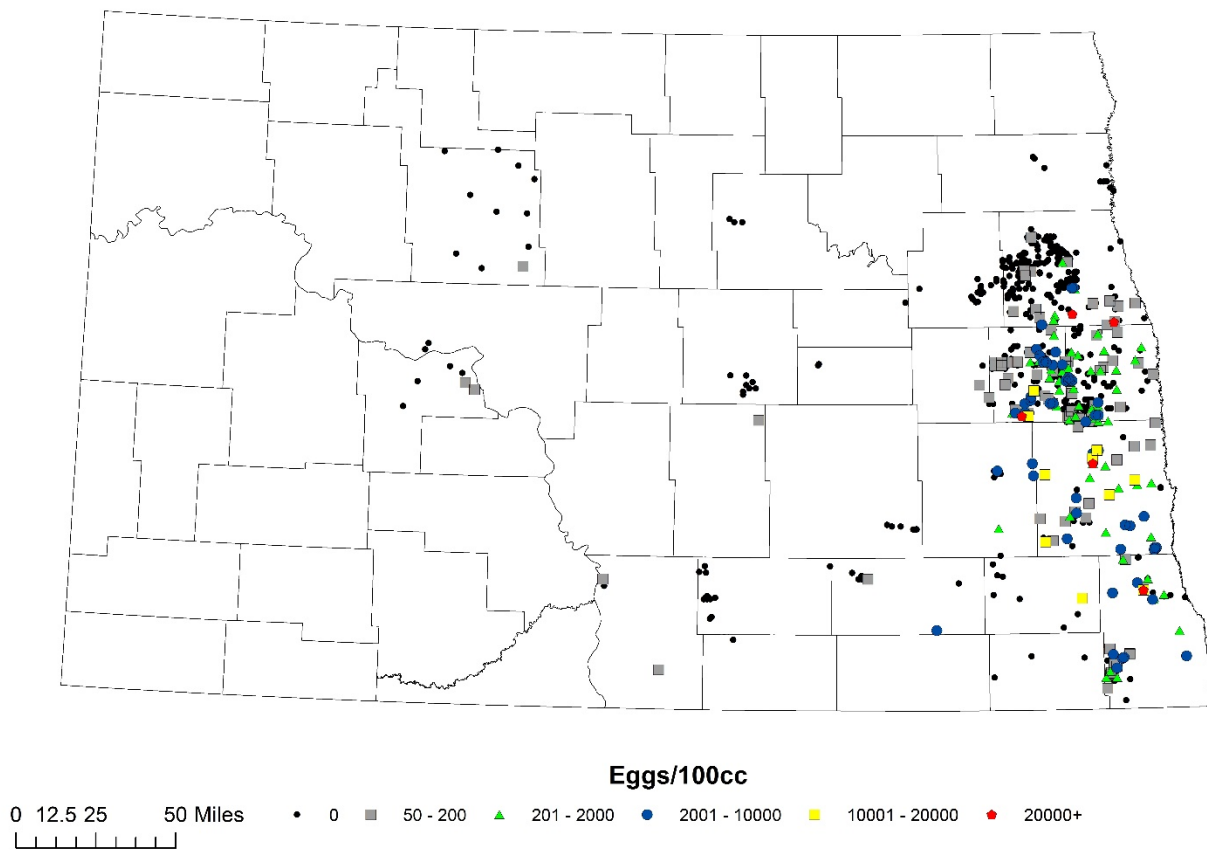
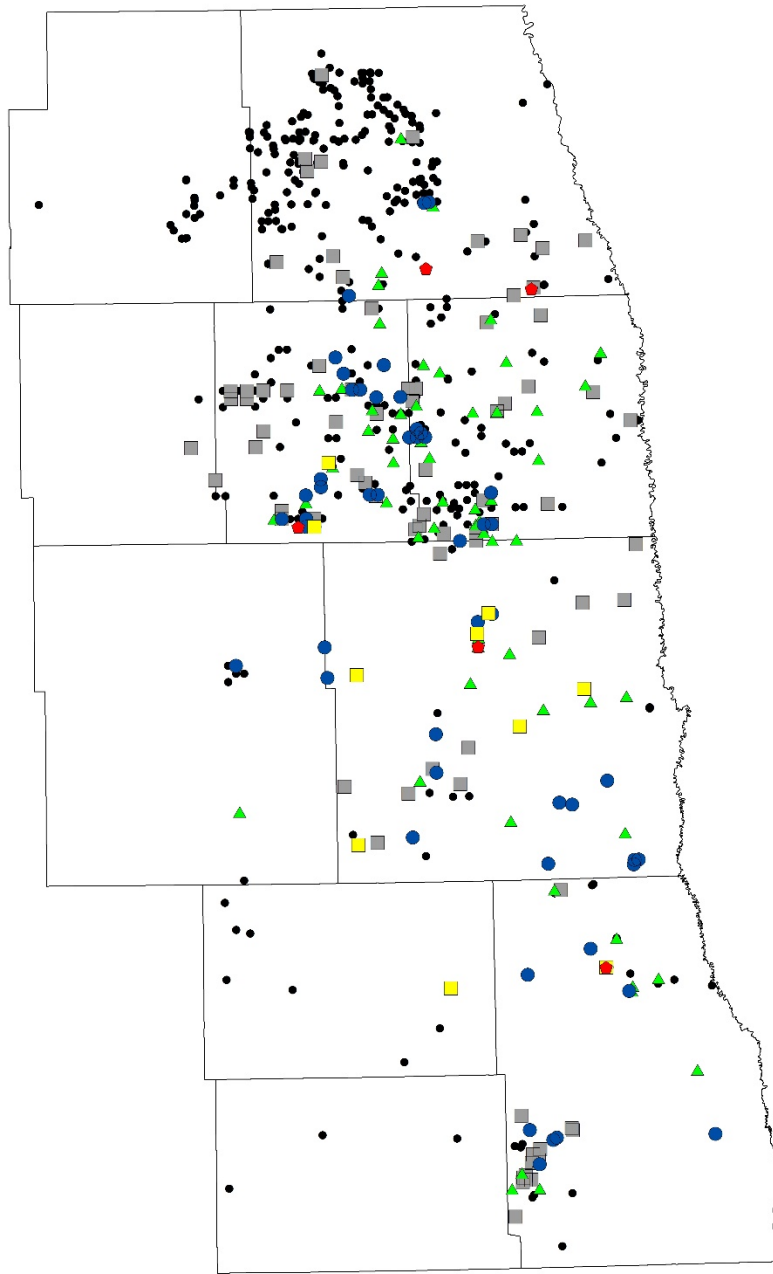


Figure 1. State-wide distribution and egg level of soybean cyst nematode in North Dakota received through the NDSC / NDSU sampling program in 2017.



0 5 10 20 Miles

SCN Survey 2017



Eggs/100cc

- 0
- 50 - 200
- ▲ 201 - 2000
- 2001 - 10000
- 10001 - 20000
- ◆ 20000+

Figure 2. Region-wide distribution and egg level of soybean cyst nematode in southeast North Dakota received through the NDSC / NDSU sampling program in 2017.



SCN Survey 2013 - 2017

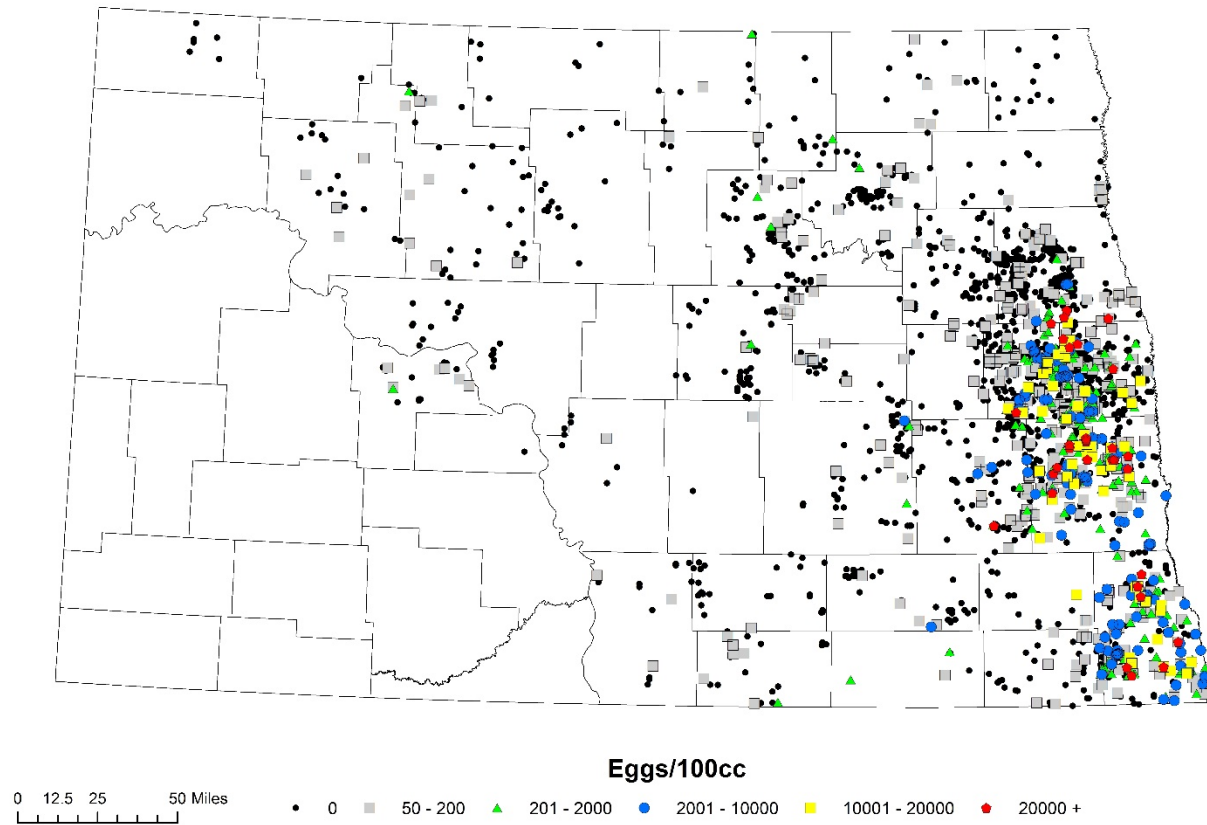
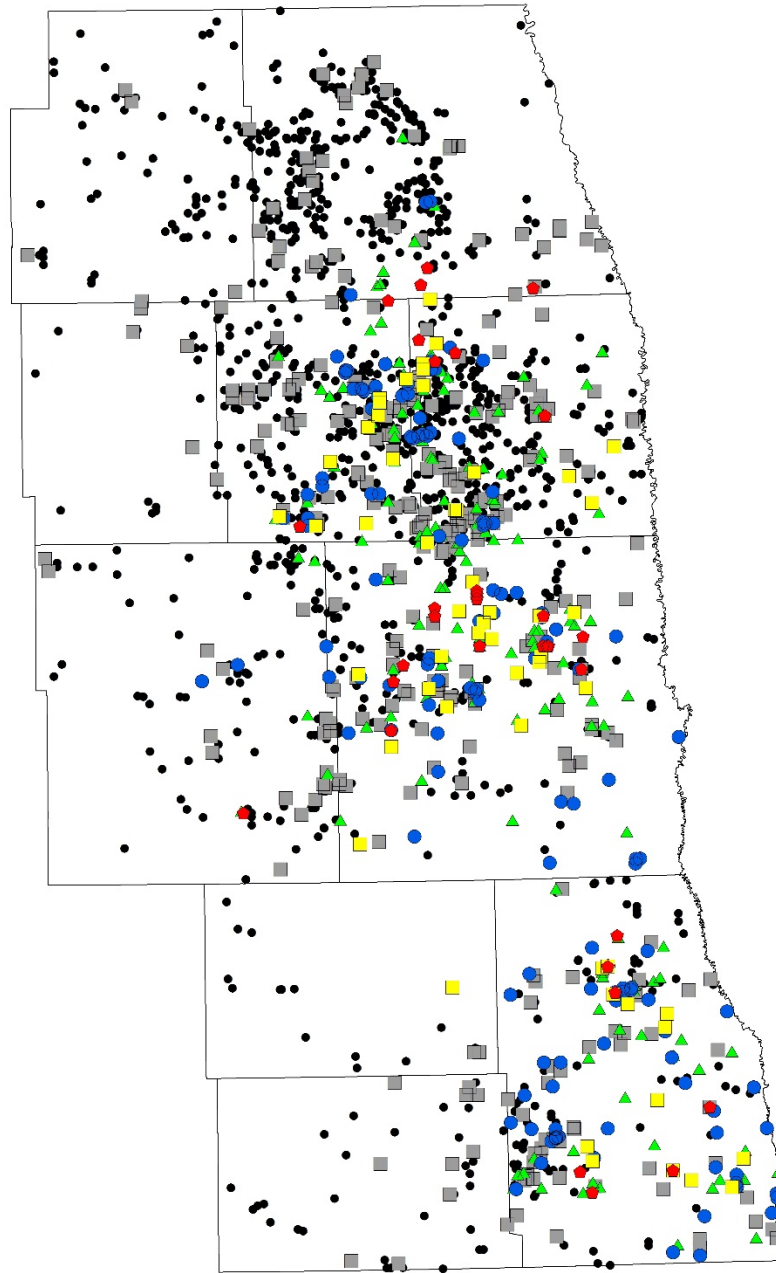


Figure 3. State-wide distribution and egg level of soybean cyst nematode in North Dakota received through the NDSC / NDSU sampling program 2013-2017.



SCN Survey 2013 - 2017

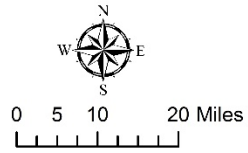
0 5 10 20 Miles



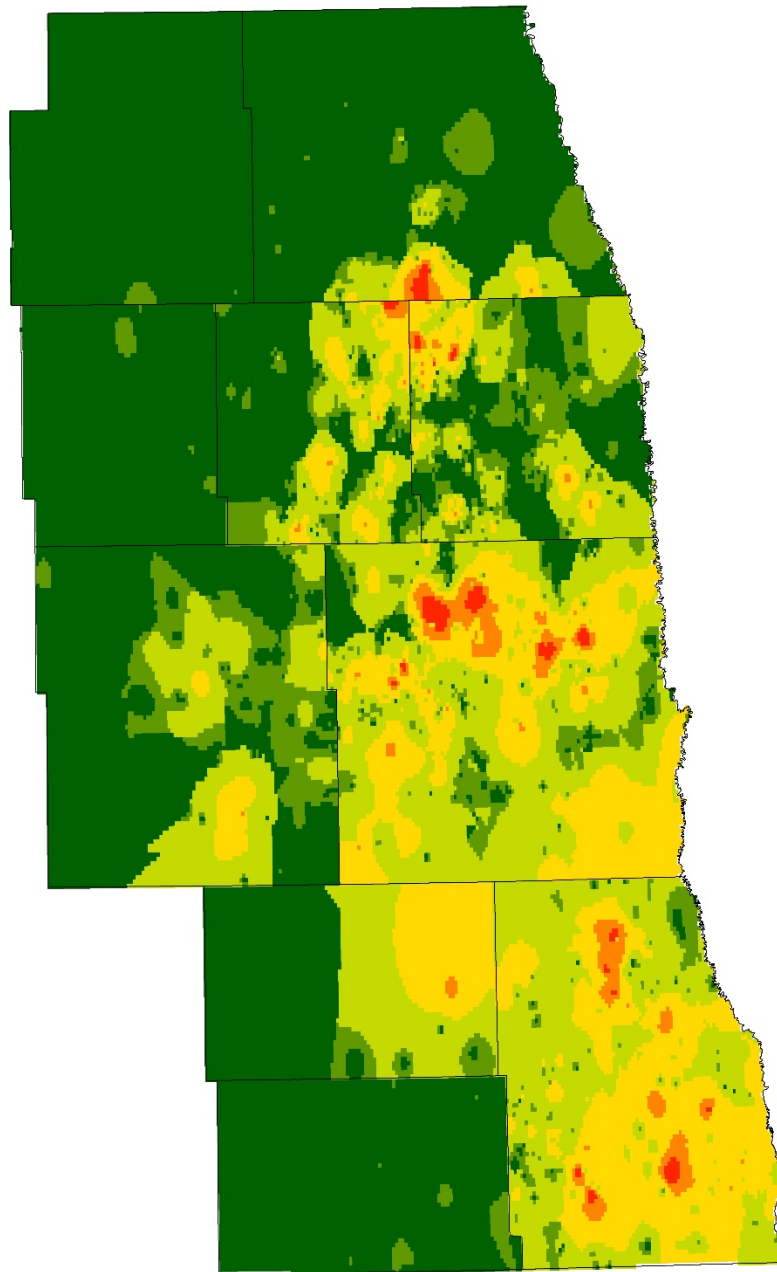
Egg/100cc

- 0
- 1 - 200
- ▲ 201 - 2000
- 2001 - 10000
- 10001 - 20000
- ◆ 20000 +

Figure 4. Region-wide distribution and egg level of soybean cyst nematode in southeast North Dakota received through the NDSC / NDSU sampling program in 2013-2017.



SCN Survey 2013 - 2017



Eggs/100cc



Figure 5. Heat map of distribution and egg level of soybean cyst nematode in southeast North Dakota received through the NDSC / NDSU sampling program in 2013-2017.