

Minnesota SCN Squad: 2022 Minnesota Soybean Cyst Nematode Sampling and Education Program

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Project Summary: Results of a prior Minnesota Soybean Research & Promotion Council-sponsored SCN sampling program administered by UMN Extension was disappointing. In 2018-2019, only 363 samples were returned for analysis after more than 5,000 sample bags were distributed to more than 1800 soybean producers, limiting the ability of UMN Extension and MSRPC members to get a '30,000 ft view' of sample results that might drive both further sampling efforts and changes to soybean production practices to more actively manage SCN populations. The Team Soybean! project was designed to excite the next generation of soybean producers, agronomists and ag service providers and provide them with practical, hands-on experience in how best to detect and monitor SCN and end up getting a better '30,000 ft view'.

Project Objectives:

1) Minnesota SCN Squad: 2022 Minnesota Soybean Cyst Nematode Sampling and Education Program

- a. Provide an educational curriculum to Minnesota ag teachers/FFA club advisors to increase students' general knowledge about soybeans, their importance to the rural Minnesota economy and SCN, the most yield-limiting pathogen of Minnesota soybeans.

The first of three annotated PowerPoint presentations designed for FFA advisors to use in their classrooms has been completed (**Figure 1**). This presentation focuses on the contribution of soybean to Minnesota's economy, the threat to Minnesota soybean yield posed by SCN, how the Team Soybean! program works and how to collect a soil sample for SCN in either fields that one knows is already infested or where SCN status is not known.



Figure 1. A sample of the slides designed for the Team Soybean! introductory PowerPoint presentation.

Another annotated PowerPoint presentation will be geared toward helping students interpret SCN egg count data, and how best to provide these data and egg count-based management recommendations to farmers that volunteered fields to sample. Lastly, another annotated PowerPoint presentation will be for those chapters and students that would like to “take it further” and will focus on graphically summarizing overall chapter results and providing farmers with information about regionally-adapted soybean varieties expressing a source of SCN resistance different from the most widely used PI88788.

- b. Provide MSRPC-branded SCN sampling kits to FFA chapters so that they can collect soil samples for analysis from real-world farm fields, be they fields their own family or fields that local area producers farm. This sort of hands-on learning tends to create memorable ‘teachable moments’ for learners.

Items that make up the contents of an SCN sample kit were purchased and used to assemble individual sample kits for delivery to participating FFA chapters, including: bright, yellow 2 gallon buckets with lids, soil probes “branded” with a MSRPC sticker, chapter-specific sample bag labels, soil sample bags, fine and ultra-fine point Sharpies for labeling, work gloves, laminated sampling instructions (**Figure 2**), shipping box and pre-paid shipping label (**Figure 3**).

Soybean cyst nematode sampling instructions

Note: sampling strategy depends upon whether the field is known to be infested with SCN.

Caution: Don't sample wet soil!

In fields that are not yet known to be infested with SCN:

- 1) Using the ultra-fine tip Sharpie, fill out the label on a sample bag.
- 2) Make sure that the soil probe is clearly marked 8 inches from bottom with the fine-tip Sharpie.
- 3) Collect 15-20 eight-inch-deep soil cores (through the soybean root zone if possible), from those field areas that SCN is most likely to first infest or accumulate.
- 4) Once all cores have been collected, gently break them up & pour about 2 cups of soil into the sample bag.
- 5) Close the sample bag by rolling the top of the bag down & bend the wire in on either side to keep bag closed.
- 6) Store filled sample bags in a cool, dry place until all have been collected and are ready to ship to the lab.
- 7) Practice sanitation to avoid spreading SCN: brush soil from sampling bucket, probe, your clothing and shoes before getting into vehicle to leave field site.

In fields that are known to be infested with SCN:

- 1) Using the ultra-fine tip Sharpie, fill out the label on a sample bag.
- 2) Make sure that the soil probe is clearly marked 8 inches from bottom with the fine-tip Sharpie.
- 3) Walking in a zig-zag fashion, collect 15-20 eight-inch-deep soil cores (through soybean root zone if possible), from a field area no larger than 10 acres.
- 4) Once all cores have been collected, gently break them up, mix the soil together & pour about 2 cups of soil into the sample bag.
- 5) Close the sample bag by rolling the top of the bag down and bend the wire in on either side to prevent the bag from opening.
- 6) Store filled sample bags in a cool, dry place until all have been collected and are ready to ship to the lab.
- 7) Practice sanitation to avoid spreading SCN: brush soil from sampling bucket, probe, your clothing and shoes before getting into vehicle to leave field site.

For answers to your sampling questions, contact: Angie Peltier (218) 281-8692, apeltier@umn.edu or Anthony Hanson (320) 589-1711 ext. 2124, hans4022@umn.edu

UNIVERSITY OF MINNESOTA EXTENSION

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Figure 2. What the laminated soil sampling instructions look like. Note the credit to MSRPC included in the yellow banner across the bottom of the instructions.



Figure 3. Contents of MSRPC-sponsored Team Soybean! sampling kit, including a soil probe with a MSRPC sticker affixed.

- c. Provide results from SCN samples collected by FFA chapters so that students can discuss and map the results of their own survey, 'learning by doing' about the

- importance of gathering real-world data to assist soybean producers' decision making.
- d. Provide data sheets and management recommendations that students will share with the farmers whose fields they sampled. This is a way to introduce students to one of the tasks of ag service providers and Extension agents.
 - e. Get a '30,000 ft' picture of the prevalence and severity of SCN infestations in areas of MN where SCN survey data has been sparse and underrepresented.
 - f. Survey participating FFA instructors, FFA students and farmers to evaluate program effectiveness for increasing knowledge about SCN and SCN management and increasing the desire to periodically monitor SCN population densities.

Multiple efforts have been made to recruit FFA chapters by sending email and U.S. mail communications targeted toward both key high school principals and FFA advisors/ag teachers. Initial outreach began with an email sent just prior to the state FFA convention this April. Additional communications through email, U.S. mail and through the ag press have continued. It is our expectation that many of these communications that took place over the summer will not yet have been received by FFA advisors if they did not check their physical or virtual mailboxes.

Four FFA chapters have agreed to be a part of Team Soybean! from Minnesota FFA region 1 (northwest MN), four from region 2 and seven from region 3 with another tentatively agreeing to join (**Table 1**).

Table 1. FFA chapters that have agreed to be a part of Team Soybean!

FFA Region	FFA Chapter	County
1	Climax-Shelly	Polk-Norman
1	Fosston	Polk
1	Frazee-Vergas	Becker
1	Ulen-Hitterdal	Clay
2	Aitkin	Aitkin
2	Bertha-Hewitt	Todd
2	Pierz-Healy	Morrison
2	Sebeka	Wadena
3	Battle Lake	Otter Tail
3	Brandon-Evansville	Douglas
3	Herman-Norcross	Grant

3	Minnewaska-Glenwood Area	Pope
3	Osakis	Douglas-Todd
3	Paynesville	Stearns
3	West Central Area	Grant
3*	Wheaton	Traverse

* FFA advisor is on-board with chapter being a member of Team Soybean!, but wants to talk it over with FFA officers first.

A flier advertising this project was distributed via email to members of county Soybean and Corn Growers Associations in at least 25 Minnesota counties with the thought that soybean producers' support might spark additional chapters to join Team Soybean!. For the same reason, a press release was also distributed to these same 25 counties to be published by local newspapers. A nice feature article by Paula Mohr about this program was published in *The Farmer* by Paula Mohr. This article was distributed to their massive mailing list at least twice and was picked up for feature on the Minnesota Soybean Grower's *Minneline* digital newsletter.

Lastly, several radio interviews have also highlighted this program:

- July 14. KQLX. Fargo.
- July 28. KTRF. Thief River Falls.
- July 28. KROX. Crookston.

Team Soybean! would be grateful for any additional assistance that members of the Minnesota Soybean Growers Association or the Minnesota Soybean Research & Promotion Council could provide in recruiting additional FFA chapters or 4-H clubs (with a large number of youth in late-middle school or high school with an interest in crop production). While **Table 2** details the FFA chapters that were initially targeted, the first 42 FFA chapters with an interest in participating will be welcome.

Table 2. Initially targeted FFA chapters, the counties in which they reside, the FFA chapter advisor's name and email address

FFA Chapter	County	FFA advisor	Advisor email
Ada-Borup	Norman	Ms. Abbie Savage	abbies@ada.k12.mn.us
Barnesville	Clay	Mr. James Joyce	jjoyce@barnesville.k12.mn.us
Clearbrook-Gonvick	Clearwater	Ms. Monica Johnson	monicajohnson@clearbrook-gonvick.k12.mn.us

Crookston	Polk	Ms. Carolyn Pavish	carolynpavish@isd593.org
Detroit Lakes	Becker	Ms. Janelle Hueners Mr. Gene Snetsinger	jhueners@detlakes.k12.mn.us gsnetsinger@detlakes.k12.mn.us
Fisher	Polk	Ms. Kristen Schwarz	schwarzk@fisher.k12.mn.us
Hawley	Clay	Mr. David Swanson	dswanson@hawley.k12.mn.us
Mahnomen	Mahnomen	Ms. Jenna Bendickson Mr. Kurt Francis	jenna.bendickson@mahnomen.k12.mn.us kfrancis@mahnomen.k12.mn.us
Norman County East	Norman	Ms. Jordyn Newberg	jordynn@nce.k12.mn.us
Pelican Rapids	Otter Tail	Mr. Lee Larsen	llarsen@pelicanrapids.k12.mn.us
Perham-Dent	Otter Tail	Ms. Shell Tumberg	stumberg@perhamschools.org
Rothsay	Otter Tail/Wilkin	Ms. Rita Olson	rolson@rothsaystaff.org
Stephen-Argyle	Marshall	Ms. Maddie Stewart	mstewart@sac.k12.mn.us
Thief River Falls	Pennington	Ms. Katie Shaw	katie.shaw@myprowler.org
Black Duck	Beltrami	Mr. Amos Bessler	
Browerville	Todd	Mr. Rollin Lais	rlais@browerville.k12.mn.us
Deer River	Itasca	Ms. Hannah Eckblad	heckblad@isd317.org
Grand Rapids	Itasca	Mr. Shawn Linder	slinder@isd318.org

Little Falls	Morrison	Mr. Matt Petrowitz	mattpetrowitz@lfalls.k12.mn.us
Little Falls-Grey Eagle	Todd	Mr. Curt Gjerstad	cgjerstad@lpge.org
Menahga	Wadena	Ms. Maria Ness	mness@menahga.k12.mn.us
Nevis	Hubbard	Ms. Ashley Anderson	aanderson@nevis308.org
Park Rapids	Hubbard	Mr. Stephen Funk Ms. Amber Seibert	sfunk@parkrapids.k12.mn.us aseibert@parkrapids.k12.mn.us
Pillager	Cass	Ms. Audrey Schleper	aschleper@isd116.org
Royalton	Morrison/Benton	Mr. Robert Skwira Mr. Nathan Goldade	rskwira@isd485.org nathan.goldade@isd485.org
Upsala	Morrison	Ms. Gretchen Schleper	gschleper@upsala.k12.mn.us
Verndale	Wadena	Ms. Hanna Milligan	hmilligan@vps.verndale.k12.mn.us
Wadena-Deer Creek	Wadena/Otter Tail	Mr. Richard Muckala	rmuckala@wdc2155.k12.mn.us
Willow River	Pine	Ms. Laura Wyatt	lwyatt@isd577.org
Albany Area	Stearns	Mr. Duane Lichy Ms. Amy Schneider	dlichy@district745.org aschneider@district745.org
Alexandria Area	Douglas	Mr. Jeff Pokorney	jpokorney@alexschools.org lschweisthal@alexschools.org

		Ms. Linnay Schweisthal	
Ashby	Grant	Mr. Dustin Steenblock	dsteenblock@ashbyps.org
Belgrade-Brooten-Elrosa	Stearns	Mr. Gary Rodgers	grodgers@bbejaguars.org
Breckenridge	Wilkin	Ms. Grace Ruckheim	ruckheimg@isd846.org
Fergus Falls	Otter Tail	Mr. Dennis Wutzke	dwutzke@fergusotters.org
Hancock	Stevens	Mr. Wes Anderson Mr. Andrew Steiner	wes.anderson@hancockisd768.org andrew.steiner@hancockisd768.org
Holdingsford	Stearns	Mr. John Roberts	john.roberts@isd738.org
Melrose	Stearns	Ms. Megan Seifert	mseifert@isd740.org
Morris Area	Stevens	Ms. Tammy Socha Ms. Jennah Trefz	tsocha@morris.k12.mn.us jtrefz@morris.k12.mn.us
Parkers Prairie	Otter Tail	Ms. Bonita Oestreich	boestreich@pp.k12.mn.us
ROCORI	Stearns	Ms. Tamara Berger	bergert@rocori.k12.mn.us
Sauk Centre	Stearns	Ms. Tami Gerads	tami.gerads@isd743.org
Warren-Alvarado	Marshall	Ms. Jane Strand	jstrand@wao.k12.mn.us