

Soybean Cyst Nematode Sampling and Testing in Wisconsin

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Soybean cyst nematode (SCN) (*Heterodera glycines* Ichinohe) is one of the most devastating agronomic pests of soybean. Economic losses due to SCN in Wisconsin alone are estimated to be \$25 to 50 million annually. SCN was first identified in Racine County in 1981. Since then, SCN has been identified in over 90% of the soybean producing counties in WI. To increase grower awareness about SCN, the Wisconsin Soybean Marketing Board (WSMB) has sponsored an SCN sampling and testing program since 2002. **This program allows any grower in the state to submit up to 4 soil samples per year for screening, free of charge.**

The WSMB sponsored SCN sampling and testing program has received over 1690 samples over the past 9 years with 20% of those samples testing positive for SCN (Tables 1 & 3 and graph below). Egg numbers range from 0 to 53,000, and counts over 500 eggs per 100cc of soil can equate to a yield loss on silt and clay loams (Table 2). **The data from this sampling program suggests that any grower dealing with soybean yield plateaus should consider sampling for SCN.**

Core Recommendations for Managing Soybean Cyst Nematode

- ✓ Rotate, rotate, rotate:
 - ✓ Use of nonhost crops
 - ✓ Rotate with resistant varieties
 - ✓ Rotate the resistant varieties you use
- ✓ Rotate with tolerant or susceptible varieties only if SCN numbers low
- ✓ Relieve stress through good weeds, water, and soil fertility management
- ✓ Monitor SCN populations through periodic sampling and monitor how numbers change

Source: http://www.planthealth.info/pdf_docs/SCNGuide_5thEd.pdf



Positive Detections and Yearly Sample Number
WSMB Grower SCN Sampling Program

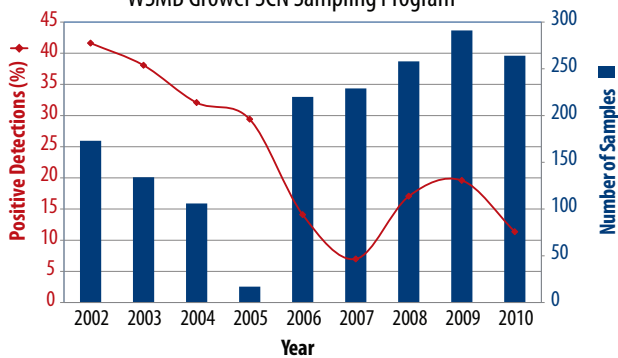


Table 2. Potential risk of yield loss due to SCN as a function of soil type and egg count.

Soil Type	Egg count range (per 100 cm ³ soil)	Potential Yield Loss for SCN susceptible variety	Risk
Silt or clay	0 eggs	None	None
Silt or clay	1-500 eggs	0-10%	Low
Silt or clay	500-2000 eggs	10-20%	Moderate
Silt or clay	2000-5000 eggs	10-50%	High
Silt or clay	>5000 eggs	Significant: likely >50%	Very High
Sand	0 eggs	None	None
Sand	1-500 eggs	5-20%	Low
Sand	500-5000 eggs	10-50%	Moderate
Sand	>5000 eggs	Significant: likely >50%	Very High

Table 1. Annual results for SCN egg counts and percentage of samples per risk category from 2002-2010.

Year	# samples	SCN count eggs/100 cc			% in risk category					% positive
		Min	Max	Average	None	Low	Moderate	High	Very High	
2002	173	0	3306	176	58.4	31.8	8.1	1.7	0.0	41.6
2003	134	0	6773	392	61.9	20.9	10.4	5.2	1.5	38.1
2004	106	0	6080	320	67.9	22.6	3.8	3.8	1.9	32.1
2005	17	0	1733	157	70.6	17.6	11.8	0.0	0.0	29.4
2006	220	0	40120	434	85.9	5.0	5.0	2.3	1.8	14.1
2007	229	0	2336	25	93.0	6.1	0.4	0.4	0.0	7.0
2008	258	0	4100	101	82.9	12.4	2.7	1.9	0.0	17.1
2009	291	0	53000	986	80.4	5.5	5.8	3.4	4.8	19.6
2010	264	0	11100	147	88.6	6.4	3.0	1.1	0.8	11.4
Total/average	1692				79.9	11.8	4.6	2.2	1.4	20.1

Table 3. Soybean cyst nematode egg counts and percentage of samples per risk category for individual counties and reporting districts, 2002-2010.

Reporting District	County	# samples	SCN count (eggs/100 cm ³ soil)			% in risk category**					
			Min	Max	Average	None	Low	Moderate	High	Very High	% positive
CN*		138	0	3680	65	88.4	9.4	0.7	1.4	0.0	11.6
	Adams	23	0	3350	195	87.0	4.3	4.3	4.3	0.0	13.0
	Green Lake	34	0	50	3	91.2	8.8	0.0	0.0	0.0	8.8
	Juneau	15	0	3680	278	66.7	26.7	0.0	6.7	0.0	33.3
	Marquette	6	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Portage	4	0	26	8	50.0	50.0	0.0	0.0	0.0	50.0
	Waupaca	26	0	60	2	96.2	3.8	0.0	0.0	0.0	3.8
	Waushara	12	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Wood	18	0	100	8	88.9	11.1	0.0	0.0	0.0	11.1
EC		385	0	40120	456	89.9	3.9	2.6	1.8	1.8	10.1
	Brown	54	0	40120	894	81.5	7.4	5.6	3.7	1.9	18.5
	Calumet	20	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Door	2	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Fond du Lac	127	0	8933	73	95.3	3.9	0.0	0.0	0.8	4.7
	Kewaunee	4	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Manitowoc	43	0	7	0	93.0	7.0	0.0	0.0	0.0	7.0
	Outagamie	58	0	27633	1556	75.9	1.7	8.6	6.9	6.9	24.1
	Sheboygan	53	0	233	4	98.1	1.9	0.0	0.0	0.0	1.9
	Winnebago	24	0	21200	1145	79.2	4.2	8.3	4.2	4.2	20.8
NC		46	0	236	7	93.5	6.5	0.0	0.0	0.0	6.5
	Clark	26	0	236	9	96.2	3.9	0.0	0.0	0.0	3.9
	Marathon	20	0	93	5	90.0	10.0	0.0	0.0	0.0	10.0
NE		21	0	16	1	95.2	4.8	0.0	0.0	0.0	4.8
	Oconto	16	0	16	1	93.8	6.3	0.0	0.0	0.0	6.3
	Shawano	5	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
NW		36	0	700	19	97.2	0.0	2.8	0.0	0.0	2.8
	Barron	8	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Chippewa	20	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Douglas	1	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Polk	7	0	700	100	85.7	0.0	14.3	0.0	0.0	14.3
SC		387	0	53000	400	70.8	18.9	5.9	3.1	1.3	29.2
	Columbia	117	0	6880	321	58.1	30.8	6.0	3.4	1.7	41.9
	Dane	100	0	4100	144	85.0	8.0	4.0	3.0	0.0	15.0
	Dodge	62	0	455	8	93.5	6.5	0.0	0.0	0.0	6.5
	Green	14	0	400	37	57.1	42.9	0.0	0.0	0.0	42.9
	Jefferson	44	0	53000	1749	72.7	6.8	13.6	2.3	4.5	27.3
	Rock	50	0	5068	499	46.0	32.0	12.0	8.0	2.0	54.0
SE		173	0	7750	264	59.0	26.0	12.1	2.3	0.6	41.0
	Ozaukee	14	0	7750	570	64.3	28.6	0.0	0.0	7.1	35.7
	Racine	16	0	1413	548	6.3	50.0	43.8	0.0	0.0	93.8
	Walworth	30	0	1333	99	70.0	23.3	6.7	0.0	0.0	30.0
	Washington	80	0	3440	225	66.3	23.8	5.0	5.0	0.0	33.8
	Waukesha	33	0	1600	243	54.5	21.2	24.2	0.0	0.0	45.5
SW		110	0	6880	162	90.0	3.6	3.6	1.8	0.9	10.0
	Crawford	1	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Grant	55	0	2080	74	89.1	5.5	3.6	1.8	0.0	10.9
	Iowa	10	0	4012	663	70.0	0.0	20.0	10.0	0.0	30.0
	Lafayette	15	0	232	15	93.3	6.7	0.0	0.0	0.0	6.7
	Richland	8	0	6880	860	87.5	0.0	0.0	0.0	12.5	12.5
	Sauk	13	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Vernon	8	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
WC		396	0	20900	425	78.5	11.6	4.5	2.8	2.5	21.5
	Buffalo	62	0	13600	535	85.5	4.8	3.2	3.2	3.2	14.5
	Dunn	70	0	20900	796	70.0	14.3	5.7	5.7	4.3	30.0
	Eau Claire	33	0	2560	175	63.6	27.3	6.1	3.0	0.0	36.4
	Jackson	8	0	75	11	62.5	37.5	0.0	0.0	0.0	37.5
	La Crosse	17	0	1693	116	82.4	11.8	5.9	0.0	0.0	17.6
	Monroe	15	0	0	0	100.0	0.0	0.0	0.0	0.0	0.0
	Pepin	53	0	5833	111	92.5	5.7	0.0	0.0	1.9	7.5
	Pierce	32	0	2308	129	87.5	6.3	3.1	3.1	0.0	12.5
	St. Croix	57	0	2893	140	86.0	5.3	7.0	1.8	0.0	14.0
	Trempealeau	49	0	13900	1091	57.1	22.4	8.2	4.1	8.2	42.9

* District averages are calculated from individual sample data, not from county averages.

** Risk category based on silt or clay soil type. Risks are higher in sand with lower egg counts.