

**2008 ANNUAL REPORT
 NEMATODE TESTING SERVICE
 DEPARTMENT OF BOTANY AND PLANT PATHOLOGY
 OREGON STATE UNIVERSITY
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 February 2011**

TABLE 1. TOTAL NEMATODE SAMPLES BY YEAR

<u>Year</u>	<u>Samples</u>	<u>Year</u>	<u>Samples</u>
1993	669	2001	1367
1994	803	2002*	1547
1995	812	2003	985
1996	657	2004	1144
1997	599	2005	674
1998	402	2006	1246
1999	976	2007	1135
2000	1014	2008	939

* I found out later that in 2002, a researcher decided to see if he could break the system. Due to the amount of work that year, I thought I was gonna die – or at least drop from exhaustion. .

TABLE 2. 2008 SAMPLES RECEIVED BY MONTH

<u>Month</u>	<u>Samples</u>	<u>Month</u>	<u>Samples</u>
Jan	11	Jul	183
Feb	9	Aug	34
Mar	49	Sep	169
Apr	73	Oct	269
May	19	Nov	40
Jun	54	Dec	29

TABLE 3. 2008 SAMPLES LISTED BY CROP

FRUITS		NURSERY AND ORNAMENTAL	
Cherry	7	Thuja	2
Blackberry	9	Calla	2
Blackcap	6	Hosta	2
Raspberry	14	Anemone	1
Prune	2	Astilbe	2
Grapes	4	Peony	4
Blueberry	<u>5</u>	Unspecified annual flowers	1
Total	47	Nursery-Sudan rotation	<u>6</u>
VEGETABLES		Total	20
Onion	1	TURF	
Beets	122	Poa golf greens	14
Swiss Chard	21	Agrostis golf greens	10
Carrot	44	Unspecified golf greens	<u>14</u>
Unspecified annual vegetables	1	Total	38
Potato	<u>26</u>	WOOD	
Total	215	Sitka spruce	5
POTATO-GRAIN ROTATION ...		Sitka spruce and western hemlock	6
	461	Western hemlock	1
PEPPERMINT		Douglas fir	<u>22</u>
	24	Total	35
OTHER FIELD CROPS		TOPSOIL	
Perennial ryegrass	1		1
Fine fescue	2	FOREST LITTER	
Rye	3		1
Wheat	41	EXTRACTION TRIAL	
Oats	2		17
Alfalfa	30	GRAND TOTAL	
Coriander	<u>3</u>		939
Total	82		

TABLE 4. 2008 SAMPLES BY LOCATION

OREGON		WASHINGTON	
Benton	4	Clark	1
Clackamas	4	Grant	28
Crook	12	Island	39
Grant	3	King	28
Jefferson	52	Skagit	51
Lane	2	Snohomish	39
Linn	7	Thurston	18
Marion	22	Whatcom	7
Polk	3	Yakima	12
Tillamook	2	Unspecified	<u>6</u>
Umatilla	44	WASHINGTON TOTAL	229
Union	26	ALASKA	17
Wasco	4	COLORADO	125
Washington	15	IDAHO	4
Yamhill	<u>4</u>	OKLAHOMA	3
OREGON TOTAL	204	VIRGINIA	2
.....		ANOTHER STATE*	<u>355</u>
		OTHER STATES TOTAL	506
		GRAND TOTAL	939

*Submitter requires complete confidentiality

TABLE 5. SPECIES IDENTIFICATION

Species identifications are based on at least two taxonomic characters.

<p><i>Pratylenchus</i></p> <p>Oregon52</p> <p>Washington22</p> <p>Colorado 0</p> <p>Unstated state¹ 1</p> <p>Idaho <u>2</u></p> <p><i>Pratylenchus</i> Total <u>77</u></p> <p><i>Aphelenchoides</i></p> <p>Oregon 1</p> <p><i>Ditylenchus</i></p> <p>Oregon 2</p> <p>Washington 1</p> <p><i>Xiphinema</i></p> <p>Oregon 1</p>	<p><i>Meloidogyne</i> J2</p> <p>Oregon 11</p> <p>Washington 24</p> <p>Colorado 18</p> <p>Unstated state¹ 6</p> <p>Idaho <u>0</u></p> <p><i>Meloidogyne</i> Total <u>49</u></p> <p><i>Heterodera</i> J2</p> <p>Washington 3</p> <p><i>Heterodera</i> vulval cone</p> <p>Washington 3</p> <p><i>Trichodorus sensu lato</i></p> <p>Washington 3</p> <p>GRAND TOTAL 140</p>
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¹Client requires complete confidentiality

TABLE 6. NOTEWORTHY RECORDS

Soil numbers = nematodes/100g corrected for moisture.

Root numbers = nematodes/g fresh weight.

sl = soil. rt = roots. lvs = leaves. juv = juveniles. NPP = non-plant-parasites.

NEMATODE	CROP	STATE - or, in OREGON and WASHINGTON, COUNTY	NUMBER, PCN Number, and MONTH
<i>Aphelenchoides fragariae</i>	<i>Anemone sylvestris</i>	Yamhill, OR	30 lvs. PCN 12. Feb
<i>Aphelenchoides fragariae</i>	Alfalfa	Jefferson, OR	5 rts. PCN 127-128. Apr. With <i>Ditylenchus</i> .
<i>Ditylenchus dipsaci</i>	Alfalfa	Idaho	1-4 lvs. PCN 83-84. Apr.
<i>Ditylenchus dipsaci</i>	Alfalfa	Idaho	1-4 lvs. PCN 83-84.
<i>Ditylenchus dipsaci</i>	Alfalfa	Jefferson, OR	11 sl, 10 lvs. PCN 127-128, 140. Apr. With <i>Aphelenchoides</i>
<i>Ditylenchus dipsaci</i>	Beets	Snohomish, WA	20 lvs. PCN 222. Jul.
<i>Helicotylenchus digonicus</i>	Beets	Island, WA	163 sl; 0 rts. PCN 289-290. Jul. w/ 6 <i>Pratylenchus thornei</i>
<i>Helicotylenchus</i> sp.	Golf green	Clark, WA	8 sl. PCN 68-69. Mar . With 949 <i>Cric</i> , 114 <i>M. naasi</i> .
<i>Helicotylenchus</i> sp.	Ryegrass & wheat	Linn, OR	143 sl. PCN 842. Oct.
<i>Hemicycliophora</i> sp.	Golf green	Clark, WA	8 sl. PCN 68-69. Mar. With 949 <i>Cric</i> , 114 <i>Meloidogyne naasi</i> .
<i>Hemicycliophora</i> sp.	Golf green	King, WA	3 sl. PCN 248. Jul. w/ <i>M. naasi</i> .
<i>Heterodera</i> sp.	Beets	Skagit, OR	1 sl, 0 rts. PCN 237-238. Jul.
<i>Heterodera schachtii</i> / <i>trifolii</i> ? ⁴	Beets	Skagit, WA	4 sl, 0 rts. PCN 283. Jul. w/ 47 <i>Paratylenchus</i>
<i>Heterodera schachtii</i> / <i>trifolii</i> ? ⁴	Beets	Skagit, WA	4 sl, 0 rts. PCN 331-332. Jul.
<i>Heterodera schachtii</i> / <i>trifolii</i> ? ⁴	Beets	Skagit, WA	4 sl, 0 rts. PCN 334-335. Jul.
<i>Heterodera</i> sp.	Cherry	Wasco, OR	7-21 sl. PCN 91-93. Apr. With 18-121 <i>Prat</i> .
<i>Heterodera</i> sp.	Peppermint	Marion, OR	<1 sl. PCN 138. w/ <i>Pratylenchus</i> and <i>Paratylenchus</i> spp.
<i>Meloidogyne chitwoodi</i> / <i>hapla</i>	Alfalfa	Grant, WA	6-330 sl. PCN 667-674. Oct. With low <i>Pratylenchus neglectus</i> .

<i>Meloidogyne hapla</i>	<i>Astilbe</i>	Washington, OR. ¹	1254 rts. PCN 16. Feb.
<i>Meloidogyne naasi</i>	<i>Agrostis</i> sp. golf green	King, WA.	877 sl, 55 rts. PCN 4-5. Jan. w/ <i>Tylenchorhynchus</i> , <i>Subanguina</i>
<i>Meloidogyne naasi</i>	<i>Agrostis</i> sp. golf green	King, WA.	1238 sl, 14 rts. PCN 19-20. Feb. w/ <i>Paratrichodorus</i> , <i>Subanguina</i>
<i>Meloidogyne naasi</i>	<i>Agrostis</i> sp. golf green	King, WA.	529 sl, 3 rts. PCN 74-75. Apr. w/ 4 <i>Paratrichodorus</i>
<i>Meloidogyne naasi</i>	<i>Poa</i> sp. golf greens	King, WA.	111-531 sl, 0-51 rts. PCN 2, 3; 6, 7. Jan. w/ 0-1 <i>Paratrichodorus</i>
<i>Meloidogyne naasi</i>	<i>Poa</i> sp. golf greens	King, WA.	341 sl, 9 rts. PCN 17-18. Feb. w/ <i>Subanguina</i>
<i>Meloidogyne naasi</i>	<i>Poa</i> sp. golf greens	King, WA.	758 sl, 2 rts. PCN 72-73. Apr. w/ 2 <i>Paratrichodorus</i>
<i>Meloidogyne naasi</i>	Golf greens	Washington, OR	335-512 sl; 1-38 rts. PCN 8-11. Jan. w/ 0-1866 <i>Mesocriconema</i>
<i>Meloidogyne naasi</i>	Golf green	Clark, WA.	114 sl; 0 rts. PCN 68. Mar. w/ 949 <i>Mesocric.</i> , 8 <i>Hemicycliophora</i>
<i>Meloidogyne naasi</i>	Golf green	King, WA	11-15 sl, 81-116 rts. PCN 246-249. Jul. w/ <i>Hemicycliophora</i>
<i>Meloidogyne naasi</i>	Golf green	Clackamas, OR	3-32 sl; 0-10 rts. PCN 354-357. Jul. w/ low to high <i>Pratylenchus crenatus</i>
<i>Meloidogyne naasi</i>	Beets	Island WA	35 sl, 13 rts. PCN 383-384. Jul. If you find this, you get one free drink at the Beanery.
<i>Meloidogyne naasi</i>	Beets	King, WA	11-15 sl, 81-116 rts. PCN 246-249. Jul.
<i>Meloidogyne</i> sp.	<i>Hosta</i>	Washington, OR	27 rts. PCN 13. Feb.
<i>Meloidogyne</i> sp.	<i>Astilbe</i>	Washington, OR	240 rts. PCN 14. Feb.
<i>Mesocriconema</i> sp.	Golf greens	Washington, OR	0-1866 sl. PCN 8-11. Jan. w/ 335-512 <i>Meloidogyne naasi</i>
<i>Mesocriconema</i> sp.	Golf greens	Clark, WA	949 sl. PCN 68-69. Mar. With 114 <i>M. naasi</i> .
<i>Mesocriconema</i> sp.	<i>Thuja</i> sp.	Washington, OR	1, sl. PCN 70. Apr. w/ 8 <i>Prat</i> ; 15 NPP.
<i>Paratrichodorus allius</i>	Wheat	Grant, WA	0-7 sl, PCN 675-682. Oct. w/ <i>P. neg.</i>
<i>Paratrichodorus allius</i>	Alfalfa	Grant, WA	0-7 sl. PCN 667-674. Oct.
<i>Paratrichodorus allius</i>	Alfalfa	Grant, WA	0-3 sl. PCN 683-690. Oct.
<i>Paratrichodorus</i> sp.	<i>Poa annua</i> golf green	King, WA	0-2 sl. PCN 17, 18. Feb. w/ <i>M. naasi</i>
<i>Paratrichodorus</i> sp.	<i>Poa annua</i> golf green	King, WA	0-1 sl. PCN 2, 6. Jan. w/ <i>M. naasi</i>
<i>Paratrichodorus</i> sp.	Golf green	Clark, WA	2 sl. PCN 68. Mar. w/ <i>Mesocriconema</i> , <i>Hemicycliophora</i> , <i>Helicotylenchus</i>
<i>Paratrichodorus</i> sp.	<i>Poa</i> golf green	King, WA	2 sl. PCN 72. Apr. w/ 758 <i>M. naasi</i>
<i>Paratrichodorus</i> sp.	<i>Agrostis</i> golf green	King, WA	4 sl. PCN 74. Apr. w/ 529 <i>M. naasi</i>
<i>Paratrichodorus</i> sp.	Onion	Grant, WA	405 sl. PCN 358. Jul.

<i>Paratylenchus</i> sp.	Beets	Skagit, WA	47 sl; 0 rts. PCN 283-284. Jul.
<i>Paratylenchus</i> sp.	Beets	Skagit, WA	48 sl, 0 rts. PCN 286-187. Jul.
<i>Paratylenchus</i> sp.	Beets	Skagit, WA.	184 sl, 0 rts. PCN 331-332. Jul.
<i>Paratylenchus</i> sp.	Beets	Skagit, WA	565 sl; 1 rts. PCN 334- 335. Jul.
<i>Paratylenchus</i> sp.	Beets	Snohomish, WA	121 sl; 0 rts. PCN 337- 338. Jul.
<i>Paratylenchus</i> sp.	Carrots	Jefferson, OR	50-338 sl. PCN 359-366. Jul.
<i>Paratylenchus</i> sp.	Carrots	Jefferson, OR	23-346 sl. PCN 367-374. Jul.
<i>Paratylenchus</i> sp.	Carrots after bluegrass.	Jefferson, OR	379-1182 sl. PCN 761-770. Oct. w/ <i>Prat.</i>
<i>Paratylenchus</i> sp.	Peppermint	Linn, OR	204-1490 sl; 0 rts. PCN 79-82. w/ <i>Pratylenchus pen-cren-neg.</i>
<i>Paratylenchus</i> sp.	Peppermint.	Marion, OR	260-41,821 sl; 1-13 rts. PCN 130-137. Apr. w/ 39-657 <i>Pratylenchus</i> sp.
<i>Paratylenchus</i> sp.	Peppermint.	Marion, OR	538 sl; 3 rts. PCN 138-139. Apr.
<i>Paratylenchus</i> sp.	Peppermint	Union, OR	393-919 sl; 163-3213 rts. PCN 189-192. Jun.
<i>Paratylenchus</i> sp.	<i>Hosta</i>	Washington, OR	163 rts. PCN 13. Feb . w/ 27 <i>Meloidognye</i> sp.
<i>Paratylenchus</i> sp.	Peony	Alaska	715-2032 sl. PCN 421-423. Aug.
<i>Paratylenchus</i> sp.	Flowers, annual	Alaska	133 sl. PCN 425. Aug.
<i>Paratylenchus</i> sp.	Vegetables, annual	Alaska	204 sl. PCN 426. Aug.
<i>Paratylenchus</i> sp.	Range	Marion, OR	328 sl; w/ <i>P. cren.</i> PCN 522. Sept.
<i>Pratylenchus crenatus</i>	Calla	Tillamook, OR	105 sl, 495 rts. PCN 160-161. May.
<i>Pratylenchus crenatus</i>	Swiss chard	Snohomish, WA	26 sl, 15 rts. PCN 228-229. Jul.
<i>Pratylenchus crenatus</i>	Swiss chard	Snohomish, WA	74 sl, 0 rts. PCN 231-232. Jul.
<i>Pratylenchus crenatus</i>	Beets	Snohomish, WA	72 sl, 3 rts. PCN 271- 272. Jul.
<i>Pratylenchus crenatus</i>	Beets	Skagit, WA	138 sl, 14 rts. PCN 334-335. Jul.
<i>Pratylenchus crenatus</i>	Golf greens	Clackamas, OR	187 sl, 154 rts. PCN 356-357. Jul.
<i>Pratylenchus crenatus</i>	Fine fescue	Marion, OR	15 sl, 266 rts. PCN 427, 428. Aug.
<i>Pratylenchus crenatus</i>	Range	Marion, OR	91 sl. PCN 522. Sept. With pin.
<i>Pratylenchus crenatus/ thornei</i>	Was oats; now wheat	Yamhill, OR	83 sl. PCN 156. May.
<i>Pratylenchus crenatus/ neglectus</i>	Beets	Skagit, WA	54 sl, 81 rts. PCN 265-266. Jul.
<i>Pratylenchus crenatus/ neglectus/thornei</i>	Crimson clover after tall fescue	Yamhill, OR	84 sl. PCN 217. July.
<i>Pratylenchus neglectus</i>	Wheat	Grant, WA	66-260 sl. PCN 675-682. Oct.
<i>Pratylenchus neglectus</i>	Alfalfa	Grant, WA	6-22 sl. PCN 683-690. Oct.
<i>Pratylenchus neglectus/ crenatus</i>	Beets	Skagit, WA	54 sl, 82 rts.

<i>Pratylenchus neglectus/penetrans</i>	Carrots	Jefferson, OR	sl 11-81. 359-366. Jul.
<i>Pratylenchus neglectus/penetrans</i>	Carrots	Jefferson, OR	sl 4-132. 367-375. Jul.
<i>Pratylenchus neglectus/penetrans</i>	Cherry	Unknown, WA	1-20 sl. PCN417-419. Aug.
<i>Pratylenchus neglectus/penetrans/thornei</i>	Was wheat; will be peppermint	Jefferson, OR	157-175 sl; 63-777 rts. PCN 208-211. Jun.
<i>Pratylenchus neglectus/thornei</i>	Wheat	Umatilla, OR	1-909 sl. PCN 164-177. Jun.
<i>Pratylenchus penetrans/crenatus/neglectus</i>	Peppermint	Linn, OR	102-135 sl; 4-150 rts. PCN 79-82. Apr. w/ 1490 <i>Paratylenchus</i>
<i>Pratylenchus penetrans/crenatus/neglectus</i>	Cherry	Wasco, OR	18-121 sl. PCN 91-93. Apr. With <i>Heterodera</i> .
<i>Pratylenchus penetrans/crenatus/neglectus; vulnus?</i>	Peppermint	Union, OR	52-1812 sl. 163-3213 rts. PCN 189-192. Jun. With <i>Paratylenchus</i> .
<i>Pratylenchus penetrans/neglectus</i>	<i>Thuja</i> sp.	Washington, OR	8 sl; 0 rts. PCN 70-71. Mar.
<i>Pratylenchus thornei</i>	Beets	Island, WA	6 sl, 0 rts. PCN 289-290. Jul.
<i>Pratylenchus thornei/crenatus</i>	Pasture	Benton, OR	15 sl. PCN 15. Feb.
<i>Pratylenchus thornei/neglectus</i>	Wheat	Wasco, OR	360 sl. PCN 157. May.
<i>Pratylenchus vulnus, probably.</i>	Peppermint	Union, OR	1812; w/ <i>pen, cren, neg.</i> PCN 189. June.
<i>Pratylenchus</i> sp.	Wheat	Union, OR	305-1915 sl. PCN 484-494. Sept.
<i>Pratylenchus</i> sp.	Carrots after bluegrass	Jefferson, OR	35-305 sl. PCN 761-770. Oct. w/pin.
<i>Pratylenchus</i> sp.	Carrots after bluegrass	Jefferson, OR	9-23 sl. PCN 771-780. Oct. w/pin.
<i>Subanguina radiculicola</i> ³	<i>Agrostis</i> sp.	King, WA	0 sl; 1 rts. PCN 4-5. Jan.
<i>Subanguina radiculicola</i> ³	<i>Agrostis</i> sp.	King, WA	0 sl; 9 rts. PCN 20. Feb.
<i>Subanguina radiculicola</i> ³	<i>Poa</i> sp.	King, WA	0 sl; 3 rts. PCN 6-7. Jan.
<i>Subanguina radiculicola</i>	Golf green	King, WA	Rts. Direct exam; no count. PCN 663, 663. October.
<i>Tylenchorhynchus</i> sp.	Carrots	Jefferson, OR	6-40 sl. PCN 367-374. Jul.
<i>Xiphinema americanum</i>	Range	Marion, OR	2 sl. PCN 522. w/ <i>Prat</i> , pin. Sept.
<i>Xiphinema</i> sp.	Pasture	Benton	FU: PCN 15

Notes, Table 6

1. This means Washington County, Oregon. There is no corresponding Oregon County, Washington, nor is there a Washington County in the State of Washington.

2. I erroneously but tentatively identified some *Pratylenchus neglectus* as *P. scribneri* based on a statement that the isthmus of the latter species is shorter than the body width at the isthmus. After becoming suspicious about this character, I could find no other mention of isthmus length alone or compared to body width in descriptions of any other *Pratylenchus* species or in any other descriptions of *P. scribneri* except the one on the allegedly authoritative web site in which I initially found it. The latter finding renders the character suspect, and the former renders it useless. I was sucked in. I believe these errors have been corrected and amended.

3. A golf course in King County, Washington submitted samples from specific greens every month of *Subanguina radiccicola* was recovered intermittently from both soil and roots of *Agrostis* sp. and from roots only of *Poa annua*. *Subanguina radiccicola* numbers are reported only for dates on which they were greater than zero. The reader of this statement is entitled to one drink of his or her choice at the Corvallis Monroe Street Beanery.

4. *Heterodera schachtii* and *H. trifolii* look almost exactly the same in most respects as both second stage juveniles and cysts, and they are notoriously hard to separate. I identified these three soil recoveries of *Heterodera*s as *H. schachtii*. This identification was challenged by the Washington Department of Agriculture (WDA). Subsequently, I discussed these identifications with Ekaterina Riga (WSU nematode professor at that time) and sent her my notes and drawings from the identification process.

WDA arranged a telephone conference. Those included were WDA people, Ekaterina, and Zafar Handoo. By the time I was able to read my e-mail⁵, the meeting organizers had quit trying to contact me. They had their telephone conference without me, and I don't think Dr. Riga mentioned any of the input I had sent her. It seemed ironic that while arranging a telephone conference, they neglected to incorporate the telephone as a means of contact.

As a result of this conference, WDA sent samples to Zafar Handoo, the USDA national authority on nematode identification. The notes and drawings I'd sent to Ekaterina Riga were not included with the samples sent to Dr. Handoo. He identified the *Heterodera* in the WDA samples as *H. trifolii*. Dr. Handoo is the final arbiter. He identified the *Heterodera* from WDA as *H. trifolii*.

However, I am still not convinced that I did not find *Heterodera schachtii*. I observed molar-shaped bullae in the vulvar region, among other characters, in some of the cysts I scrutinized. I think the notes and drawings I had sent to Dr. Riga would have suggested that these might be mixed populations of the two *Heterodera* species. Therefore, I am not satisfied that the *Heterodera* in the samples that I received were not *H. schachtii*.

5. If I had read e-mail consistently, I would not have had time to do this job. I had little to no time to assimilate e-mail while being the Extension Nematologist. The sources of most of this e-mail were general OSU entities, College of Science, College of Agricultural Sciences, OSU Extension Service, and, to a lesser extent, Botany and Plant Pathology. Very few e-mail messages had anything to do with nematology⁵.

6. I don't like ending this report on a negative note, literally and figuratively. I deeply enjoyed most parts of being Extension Nematologist. I hereby extend my best wishes to those who continue the quest of hunting the wily worm.