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PLANT-PARASITIC NEMATODE GENERA ASSOCIATED WITH CROPS IN ONTARIO IN 1970

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The number of samples processed through the Ontario Nematode Diagnostic and Advisory Service totalled 980 (Table 1) in 1970, a 20% increase over that of 1969. Excluding soil samples from nematicide trials by chemical companies, a total of 329 samples were submitted; 37% of the samples were from tobacco, 16% from forages and small grains, 16% from ornamentals, 13% from fruits, 8% from vegetables, and 10% from miscellaneous crops, as compared to 48, 12, 9, 10, 4, and 17% from these crops in 1969.

There was a trend towards a wider usage of the Service by growers and extension personnel, as evidenced by the fact that samples were submitted from 45 crops as compared to 28 in 1969. There was also a trend towards the submission of more research samples (597) and fewer service (paid) samples (383) by extension personnel in 1970, indicating that the Nematode Diagnostic Service is becoming an increasingly important tool for diagnosing or confirming diagnoses of complex soil problems affecting crop production. Since many of the indications of nematode damage are quite similar to nutritional problems, it would be helpful with certain key crops on lignt soils to collect samples for both nematode diagnosis and soil analysis.

One noteworthy and unusual series of samples was submitted by Charles Warner, Instructor at New Liskeard College of Agricultural Technology. These samples were taken from hay and pasture, corn, and mixed oats and barley fields in Nipissing, Parry Sound, and Thunder Bay Districts, respectively, in northern Ontario. Seven genera of nematodes: root-lesion (*Pratylenchus* sp.), pin (*Paratylenchus* sp.), dagger (*Xiphinema* sp.), spiral (*Helicotylenchus* sp.), stunt (*Tylenchorhynchus* sp.), root-knot (*Meloidogyne* sp.), and cyst (*Heterodera* sp.) nematodes, were extracted from the samples. Two types, the root-lesion and pin nematodes from hay samples, averaged 4400 and 2150 per pound of soil, respectively; the highest populations of these two genera were 13,100 and 6,400 per pound, respectively. These population densities are much greater than those usually found in cultivated soils in southern Ontario. These results were unexpected as it had been considered that the northern Ontario winter climate was too harsh to allow sizeable populations of nematodes to survive. Therefore, the results indicate the possibility that nematodes have deleterious effects on crop production in Canada's northern farming areas.

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Literature cited

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Table 1. Plant parasitic nematodes identified from soil samples processed by the Ontario Nematode Diagnostic and Advisory service, 1970

Crop	No. of samples	Nematode									
		Cyst lesion	Root knot	Root lesion	Spiral	Stunt	Pin	Dagger	Ring	Lance	Stubby root
Alfalfa	1						1200/1				
Apple	4	50/1**		1413/4		325/2	50/1				
Asparagus	1			3000/1		800/1	1100/1				
Barley	6	50/1		4150/5	863/4	683/3	1463/4				
Buckwheat	1			550/1			50/1				
Carrot	2		1150/1			50/1	125/2				
Cherry	10			1730/10		167/3	450/3	10/1		257/7	
Clover (red)	1				3500/1	1200/1					
Corn	15	350/3		1475/14	170/5	83/3	459/11		50/1		
Fallow	4			613/4	50/1	50/2	325/2	150/2			
Flowers (misc)	3			533/3		150/2	625/2				
Geranium	1										
Grain (mixed)	1			5000/1			1800/1				
Grasses (mixed)	7	150/1	1600/1	3800/7	300/1		2158/6	100/1			
Grass (Sudan)	1			1400/1	400/1			10/1			
Lawn	2	600/1		1100/1	200/1	525/2	100/1				
Lettuce	1										
Mums (cuttings)	3										
Mums (potted)	1										
Mushroom	2										
Oats	5	200/1	300/1	3383/3	400/1	125/2	500/3				
Onion	3					50/1					
Peach	15		300/1	2688/12	50/1	375/2	2423/11	225/2	200/1		
Pear	6			1720/5		75/2	250/3				
Potato	3			1220/3		50/1	267/3				
Rhubarb	7	2800/1		3038/4			5368/6				
Rose	21			1267/15	10/1		150/1				
Rye	24			643/18		175/10	372/9				
Shrubs (cedar)	3				5300/1						
Shrubs (Deciduous, misc)	1			700/1			50/1				
Shrubs (Evergreens, misc)	5			217/3		50/1	171/4				
Shrubs (Flowering, misc)	6		13300/2	16300/2	30/1	965/4	800/1		1275/2		163/4
Shrubs (Andorra juniper)	5			1375/2		50/1	1200/1				
Shrubs (Blue Pfitzer juniper)	1			16000/1							
Shrubs (Blue Danube juniper)	1					50/1					
Shrubs (Meyer juniper)	1			600/1							
Shrubs (Savin juniper)	1			2500/1			200/1				
Soybean	1			1750/1			50/1				
Squash	2			50/1			305/2				
Strawberry	7		450/1	558/6	50/1	300/1	50/1				
Tobacco	121	50/1	100/2	1328/80	288/4	175/18	247/43				
Tobacco*	651										
Tomato	7			2250/3		50/1	700/2				
Turnip	1										
Vegetables (misc)	4			2250/1		300/2	1200/2				
Water cress	1										
Wheat	10	1500/1	200/1	705/10	150/1	200/2	1156/9				
Total	980										

* Samples from nematicide trials - averages are not included because treatments render them invalid.

** Average number of nematodes per lb of soil/number of samples containing the nematode.