PLANT-PARASITIC NEMATODE GENERA ASSOCIATED WITH CROPS IN ONTARIO IN 1969

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The Ontario Nematode Diagnostic and Advisory Service processed 786 soil samples in 1969. This is an increase of 78% or 344 more samples than were handled in 1968. The samples originated from 28 crops (Table 1) representing a cross section of plant production in greenhouses and fields throughout the province. As in previous years the majority of the samples were from the tobacco areas, with only 17% of the samples pertaining to other crops.

The marked increase in the number of samples processed by the diagnostic service during the past year was due to the submission of 530 soil samples by agricultural chemical companies, who conducted demonstration plots and field tests on proven and candidate nematicides. Although the total number of samples diagnosed in 1969 was high, the number of soil samples submitted by growers decreased to 250, a 43% decrease from the previous year. Soil samples from tobacco growers decreased from 269 in 1968 to 122 in 1969, a decrease of 55%. Similarly there was a decrease of 37% in the number of samples submitted by fruit growers.

There is no doubt that the decline in the number of soil samples submitted by growers is directly related to the recent upsurge in the practice of pre-plant soil fumigation. This is particularly true in the tobacco area, where in 1969 the acreage being treated with nematicides increased by 100% to include approximately 50% of the total acreage planted to tobacco. Pre-plant soil fumigation is also rapidly becoming a standard practice for fruit growers.

The general extraction techniques (1,2) used in previous years have been found to be satisfactory for diagnosing large numbers of soil samples. However, it has been found that accuracy can be increased by removing as much of the root tissue as possible from the soil sample, and by placing emphasis on proper mixing of the soil before removing the subsample for nematode extraction. Standardization of processing techniques and of environmental conditions under which nematode extraction occurs has increased both the capacity and quality of the diagnostic service.

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Pratylenchus spp. (root-lesion nematodes) were present in 17 of the 28 crops sampled. This genus is associated with most of the nematode problems in Ontario crops. The level of infestation of the root lesion nematode P. *penetrans* (Cobb, 1917) Filip. & Stek., 1941 in the tobacco area has remained relatively stable over the past 5 years: 1621,1055,1256,1069, and 1522 nematodes per lb of soil for the years 1965 through 1969, respectively (3,4,5,6). It is apparent that annual variation in winter kill and general weather conditions does not significantly alter the background level of the nematode population.

Paratylenchus spp. (pin nematodes) were found in 17 crops, 16 of which also contained root lesion nematodes. The average number of pin nemgtodes per pound of soil was 554, and of root lesion nematodes, 661. This close association suggests that the pin nematode may be an additional factor in crop losses due to root-lesion nematodes.

Meloidogyne hapla (northern root knot nematode) was associated with lettuce, tomatoes, wheat, rye, strawberries, sweet cherries, tobacco, roses, and vinca.

Heterodera avenae (oat-cyst nematode) was found in oats and tobacco. Although the oat cyst nematode was not found in soil samples from corn fields in 1969, information from previous years (3,4) suggests that this nematode is becoming a problem in corn production in the areas where this pest is prevalent. Only by following a specified rotation can the oat cyst nematode be controlled in this situation. Such a rotation should allow at least 5 years between oat crops, with corn not directly following oats.

Literature cited

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Table 1. Plant parasitic nematode genera associated with Ontario crops in 1969

Crop	Praty-lenchus	Paraty-lenchus	Meloido-gyne (larvae)	Xiphi-nema	Tylencho-rhynchus	Helicoty-lenchus	Hoplo-laimus	Hetero-dera (larvae)	Cricone-moides	Dity-lenchus
Asparagus (1)†										
Barley (3)	200/1**	1300/1				1750/1	50/1			
Cherries (sour) (4)	367/3	400/3								
Cherries (sweet) (4)	700/4	1350/3	10/1	50/1					50/1	
Corn (5)	380/5	283/3		500/1						
Cucumbers (2)										
Garden (1)	700/1	350/1								
Geraniums (1)										
Grapes (3)		10/1								
Greenhouse flowers (1)										
Impatiens (1)										
Lettuce (1)	30/1	10/1	30/1							
Mushrooms (4)	10/2					20/1				
Oats (3)	183/3	1100/1			50/1			483/3		
Onions (2)										10/1
Peaches (15)	1417/13	580/12		50/4	100/3				100/1	
Potting soil (1)										
Roses (15)	725/2	100/1	100/1			40/2				
Rubber plants (1)										
Rye (23)	706/16	1298/11	400/1	50/1	178/9		00/1			
Shrubs (5)	1175/4	50/2				925/2				
Squash (2)	1075/2	50/1			200/1					
Strawberries (10)	1450/9	150/2	600/1					50/1		
Tobacco (122)	1522/94	180/32	250/3		194/31	100/1	75/2			
Tobacco R* (530)										
Tomatoes (6)	103/3	1200/1	1150/3	70/2		925/2				
Vinca (1)			1000/1							
Wheat (19)	493/14	1000/10	263/4	155/2	163/12					
Total samples (786)										

† Number of soil samples processed.
* Samples from nematicide trials - averages are not included because chemical treatments render them invalid.
** Average number of nematodes per lb of soil/number of samples containing the nematode.