Oat leaf yellowing

M.L. Kaufmann and I.J. *Piening*[1]

An unreported and rather spectacular oat "disease" was noticed in central Albertafor the firsttime in 1963 when shortly after the plants incertain plots came into head the leaf blades changed to a yellowish-bronze color. All plants in these plots were uniformly affected. The discoloration which was uniform over the leaf, began at the tip and spread down to the base. The sheaths were not affected. There were no lesions or leaf curling and the plants were not stunted. The visual symptoms of affected oat lines were striking when compared with adjacent normal green lines. The disease occurred in 'Glen'-'Garry' lines and in 'Garry' itself where it appeared at a slightly later stage. Symptoms were observed at both Lacombe and Acme.

There was no sign of the disease in 1964. In 1965 'Garry' and approximately 20% of all lines which contained 'Garry' as a parent showed these symptoms at two locations, whereas lines from other crosses were normal. There is substantial evidence, therefore, that this premature leaf discoloration is inherited from 'Garry'.

The causes, effects, and inheritance of this disease are not known at the present time, but there are grounds for speculationas to the causes. The lack of lesions and absence of other conditions associated with pathological diseases would tend to reduce the possibility of pathogenic bacteria or fungi. The possibility of a virus infection is not ruled out although it is unlikely because of the distribution pattern and the uniformity of symptoms within plots. The symptoms do not resemble those brought about by known nutritional deficiencies, according to soils specialists, and the distribution pattern would indicate that the disease is not caused by a soil condition per se. This leaves only climatic conditions or a combination of climatic and soil conditions for consideration. The influence of season on the disease would tend to indicate that climate plays a major role. It is suggested that the susceptible lines possess an inherited weakness that is associated with chlorophyl production or breakdown, and that this weakness maybe fostered by a combination of environmental conditions hitherto unknown.

Although 'Garry' is grown to a limited extent in central Alberta, there have been no reports of leaf symptoms similar to those described. Possibly the disease, if present, has gone undetected being confused with natural senescence. Critical and detailed surveys are necessary to determine its presence outside the experimental plots. It is suggested that this disease should be no cause for alarm, but we consider it to be of more than academic interest.

[1] Cerealist and Plant Pathologist, respectively, Experimental Farm, Research Branch, Canada Department of Agriculture, Lacombe, Alberta.

Plant-parasitesitic nematode genera associated with crops in Ontario in 1964 and 1965

J.L.Townshend[1]

Soil samples, submitted by growers to the Research Station, Vineland Station, Ontario, are examined for plant-parasitic nematodes and recommendations are given for their control. The soil, which is taken from about the roots of a crop, is processed by the Baermann-pan technique. The nematodes extracted are identified to genus, counted and recorded. The plant-parasitic genera detected in 1964 and in 1965, along with the crops with which they were associated, are compiled in Tables 1 and 2.

The root lesionnematode Pratylenchus, generally P. penetrans, continues to be the predominant plant-parasitic nematode in Ontario in distribution, numbers and damage done. Stone fruits, strawberry and tobacco suffer the most damage from this nematode. Large populations of Pratylenchus build up on clover and corn but no damage or losses have been noted in these crops. Such populations, however, pose a threat to succeeding susceptible crops.

The root knot nematode, Meloidogyne hapla occurs sporadically throughout Ontario and causes considerable damage to vegetable crops.

The dagger nematode, Xiphinema diversicaudatum, has been found on rose only in greenhouses. this nematode is quite destructive and can reduce production by 25 percent.

The cyst nematodes recorded here are Heterodera trifolii and H. avenae. The former is found on clover and latter on oats which suffer considerable damage from the nematode in certain areas in Ontario.

The pin nematode Paratylenchus is not generally harmful though it is widelydistributed and occurs in large numbers.

The samples in 1965 were processed by the recently-established Ontario Nematode Diagnostic and Advisory Service.

[1] Nematologist, Research Station, Canada Department of Agriculture.

Table 1. Plant parasitic nematodes associated with Ontario crops in 1964.

Crop	Nematode genera								
						s	M la	Hi la	
apple (2)[1]	60/2[2,3]	1020/2							
asparagus (2)	10/1								
barberry (2)	205/2	210/1					4000/1		
buckwheat (3)	540/3	187/3							
cherry, sour (10)	1248/10	303/9	25/2			173/3			300/3
cherry, sweet (8)	2760/8	2867/6	30/1						700/1
clover (3)	373/3	673/3			557/3	210/2			
corn (1)	60/1	200/1			90/1			10/1	
fallow (3)	840/2	453/3				360/1	20/1		
oats (2)	40/2	790/2	25/2		60/1	20/1		30/2	
onion (2)		10/2					60/1		
ornamentals (2)	40/1	70/1							
parsnip (1)									
peaches (9)	999/9	942/9		100/2					
pears (3)	2800/3	2680/3				120/2			
plum (2)	1860/2	1633/2				20/1		220/2	
potato (1)	340/1	50/1							
prune (1)	100/1	160/1	160/1	40/1	140/1				
raspberry (12)	808/12	364/7	18/5	10/1					
rose, field (5)	680/5	420/3			430/2	100/1	650/2		
rose, greenhouse (13)	105/2	20/1	304/13						
spruce (1)	20/1		40/1						
strawberry (18)	2006/14	368/5	160/2						
Total Samples (106)	1192/85	839/64	174/27	63/4	340/8	153/11	1126/5	102/5	250/4

1 No. of soil samples processed.
2 Av. no. of nematodes per lb. of soil.
3 No, of samples containing the nematode.

Table 2. Plant parasitic nematodes associated with Ontario crops in 1965.

Crop	Nematode genera									
						us	Me lar	Hc la		
bean (1)[1]	160/1[2 3]					80/1				
carrot (1)	20/1				60/1					
celery (1)	100/1									
cherry, sour (2)	2290/2	20/1								
cherry, sweet (16)	2277/16	332/9		100/1	100/1	100/2	1200/1		362/5	
clover (3)	3057/3	320/1				240/3	100/2			
corn, sweet (4)	1287/4	20/1	20/1							630/2
corn, hybrid (1)		120/1	180/1			180/1				
evergreen (1)	3400/1	300/1								
fallow (4)	1280/4	445/4	40/1				40/1			
grass (1)										
oats (5)	2166/5	170/3			20/1	100/1		50/1		
onion (2)	20/1									
peaches (3)	420/3	333/3				20/1		370/2		
pear (12)	782/12									
potato (3)	450/2	40/1			20/1					
rose (1)			400/1							
strawberry (19)	2133/16	623/8						300/1		
tomato (2)	1090/2	180/1								
Total Samples (90)	1640/74	398/46	160/4	100/1	50/4	145/9	360/4	273/4	362/5	315/2

1 No. of soil samples processed.
2 Av. no. of nematodes per lb. of soil.
3 No. of samples containing the nematode.