

STEM RUST OF OATS IN CANADA IN 1968¹J.W. Martens and G.J. Green²Disease development and crop losses in Western Canada

Stem rust of oats caused by *Puccinia graminis* Pers. f. sp. *avenae* Eriks. & E. Hrn. did not appear in Western Canada in 1968 until most of the oat crop was approaching maturity. Small amounts were first reported on August 27, and light infections developed in late fields in south-eastern Manitoba. Overall losses were negligible.

Uniform rust nurseries

Oat stem rust was scarce in the rust nurseries grown at 33 locations in Canada (Table 1). Rust was observed in only seven of the nurseries, and infections of over 10% were recorded only at Brandon and Winnipeg, Manitoba, and Appleton, Ontario.

Identification and distribution of physiologic races

Physiologic races were identified by the methods used in previous years (1). The virulence formulas, their numbers, and equivalent physiologic race numbers appear in Table 2 with the distribution of the races identified. In Western Canada the race distribution was unchanged from 1967. Race C10 continued to predominate and small amounts of races C3 and C5 were found. In eastern Canada, race C10 occurred in small amounts. In 1967, this race was common in Eastern Canada indicating that barberry eradication had restricted the prevalence of races originating on barberry and permitted race C10 from the south to become relatively more important. The smaller proportion of race C10 in the east in 1968 does not necessarily indicate that this process has changed. It is more likely that the

Table 1. Percentage infection by *Puccinia graminis* f. sp. *avenae* on 10 oat varieties at seven uniform rust nurseries* in Canada in 1968

Locality	Bond	Trispernia	Iandhafer	Ceirch du Bach	Saia	Rodney ABDH	C. I. 3034	Rodney	Garry	C. I. 4023
Brandon, Man.	30	tr**	0	1	0	0	0	2	tr	tr
Winnipeg, Man.	30	30	20	30	tr	tr	tr	20	5	1
Glenlea, Man.	10	10	5	5	tr	tr	tr	2	tr	tr
Appleton, Ont.	60	5	5	10	0	25	1	25	30	5
Morewood, Ont.	0	tr	0	0	0	0	0	0	0	0
Macdonald College, Que.	10	0	0	5	0	5	tr	10	10	0
Lennoxville, Que.	0	0	0	0	0	tr	0	0	0	0

* No rust was observed in 26 other nurseries located at: Agassiz and Creston, B. C.; Beaverlodge, Lacombe and Lethbridge, Alta.; Indian Head, Scott and Melfort, Sask.; Morden, Man.; Verner, Williamstown, Douglas, Alfred, Kapuskasing, Guelph, Kemptville, Fort William, St. Catherines and Ottawa, Ont.; La Pocatière, L'Assomption and Normandin, Que.; Kentville and Truro, N.S.; Fredericton, N. B.; and Charlottetown, P.E. I.

** tr = trace infection.

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scarcity of oat stem rust in the great plains region of North America in 1968 restricted the spread of race C10. The predominant races in Eastern Canada in 1968 are the same as those that predominated from 1958 to 1966 and were presumed to originate on barberry.

Table 2. Distribution by provinces of physiologic races of *Puccinia graminis* f. sp. *avenae* isolates in Canada in 1968

Formula no	Race		Virulence formula (effective/ineffective host genes)		Number of isolates from:				Total Isolates	Percentage of total isolates
	Former designation	Pg grnc designation	Alphabrtical gcnc designation	Sask	Man	Ont	Que.			
c 3	7A-12A	2, 8/1, 3, 4, 9	AF/BDEH	1	5	0	0	6	3.8	
C5	6F	4, 9/1, 2, 3, 8	BH/ADEF	3	3	0	0	6	3.8	
C6	8A-10A	1, 8/2, 3, 4, 9	DF/ABEH	0	0	7	0	7	4.4	
C8	4A	3, 8/1, 2, 4, 9	EF/AEDH	0	0	21	1	22	13.9	
C9	6A-13A	8/1, 2, 3, 4, 9	F/ABDEH	0	1	37	4	42	26.6	
C10	6PF	9/1, 2, 3, 4, 8	H/ABDEF	9	41	20	0	70	44.3	
C11	8A	1, 8/2, 3, 4	DF/ABE	0	0	2	0	2	1.3	
C17	11A	1, 3, 8/2, 4, 9	DEF/ABH	0	0	3	0	3	1.9	
Total				13	50	90	5	158	100.0	

All the races found in 1968, except C3 and C5, threaten the oat varieties grown in Canada. The oat crop could be seriously damaged whenever conditions favor stem rust development.

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Literature cited

1. Martens, J. W. 1968. Stem rust of oats in Canada in 1967. Can. Plant Dis. Surv. 48: 17-19.