

Air-borne rust inoculum over western Canada in 1978¹

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The number of stem rust spores found in spore traps in western Canada in 1978 was greater than the mean of the previous ten years, but the number of leaf rust spores was smaller. The number of stem rust spores was probably increased by rye stem rust and oat stem rust which were common, rather than by wheat stem rust which was not prevalent. The number of leaf rust spores was probably reduced by unfavorable conditions for wheat leaf rust development and the increased hectareage of resistant wheat varieties.

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Le nombre de spores de rouille de la tige relevé en 1978 dans les pièges installés dans l'ouest du Canada a été supérieur à la moyenne obtenue pour les 10 années précédentes. En revanche, l'inoculum de spores de rouille de la feuille a été moindre. L'accroissement du nombre des premières s'explique vraisemblablement par la fréquence des rouilles inféodées au seigle et à l'avoine, plutôt que par celles du ble qui ont été relativement peu (seigle) abondantes. La baisse de l'inoculum de rouille de la feuille serait due à des conditions de végétation peu propices au développement de la rouille de la feuille du ble, ainsi qu'à l'extension des surfaces plantées en variétés de ble résistantes.

An estimate of the relative numbers of air-borne urediospores of the cereal rusts over western Canada in 1978 was made using the same spore trapping methods described in earlier annual reports in the Canadian Plant Disease Survey.

Relatively large numbers of spores of stem rust (*Puccinia graminis* Pers.) and leaf rust (*P. recondita* Rob. ex. Desm.) were carried into western Canada in June of 1978. They were widely distributed from Winnipeg in the east to Saskatoon in the north west (Table 1).

The numbers of stem rust spores caught in the traps were comparatively large throughout the season. The total number of spores counted in 1978 was less than in 1977 at all locations, but mean numbers of spores for the 72-hour exposures were considerably greater than the 1967-77 means for Winnipeg, Morden, Brandon, and Indian Head. Usually it is presumed that most of the spores are wheat stem rust, but in 1978 other species were probably more prevalent. The physiologic race survey showed that most of the rust on *Hordeum jubatum* L. in 1978 was rye stem rust, and oat stem rust was prevalent.

Table 1. Number of urediospores of stem rust and leaf rust per square inch (6.5 cm²) observed on Vaseline-coated slides exposed for 72-hour periods at three locations in Manitoba and three locations in Saskatchewan in 1978

Date	Winnipeg		Morden		Brandon		Indian Head		Regina		Saskatoon	
	Stem rust	leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust
June 1-4	241	331	0	0	1	1	1	2	8 ¹	9 ¹	1	1
June 4-7	4	9	1	7	0	2	0	1	1	7	1	1
June 7-10	1	7	1	10	0	1	0	5	0	5	0	0
June 10-13	2	1	0	2	1	5	2	2	1	1	2	2
June 13-16	2	22	0	0	1	0	0	0	0	1	0	9
June 16-19	0	7	0	16	0	5	0	2	0	0	0	16
June 19-22	0	5	0	3	0	1	1	2	1	4	0	4
June 22-25	1	5	0	8	0	0	0	4	1	7	1	9
June 25-28	0	2	1	2	0	3	0	0	1	3	0	12
June 28-1	1	2	0	3	4	0	0	3	1	9	0	12
June total	35	93	3	51	7	18	4	21	14	46	5	66

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Table 1. (cont.)

Date	Winnipeg		Morden		Brandon		Indian Head		Regina		Saskatoon	
	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust
July 1-4	0	1	0	0	0	0	1	2	0	2	0	17
July 4-7	1	2	1	1	2	3	1	7	0	4	1	23
July 7-10	2	2	1	1	1	5	2	2	0	7	3	22
July 10-13	4	67	2	52	8	29	2	25	3	20	1	45
July 13-16	2	5	2	24	1	19	1	8	3	43	0	13
July 16-19	0	1	1	12	1	20	1	34	0	21	0	9
July 19-22	1	8	4	28	7	13	2	46	0	25	0	14
July 22-25	12	60	27	86	4	10	1	5	2	36	1	23
July 25-28	11	29	5	51	2	22	15	127	6	147	1	13
July 28-31	15	7	11	110	24	136	4	185	3	80	0	22
July total	48	182	54	365	50	257	30	441	17	385	7	201
Aug. 31-3	23	145	11	134	8	127	5	592	1	96	1	40
Aug. 3-6	110	561	27	368	13	192	30	445	2	203	5	120
Aug. 6-9	45	331	148	1294	62	631	39	1399	25	425	4	61
Aug. 9-12	358	809	462	1540	85	484	0	0	5	476	3	51
Aug. 12-15	107	482	37	44	124	758	55	1358	81	1482	6	208
Aug. 15-18	254	758	262	1049	7	33	40	227	8	128	1	51
Aug. total	897	3086	947	4429	299	2225	169	4421	122	2810	20	531
1978 Total	980	3361	1004	4845	356	2500	203	4883	153	3241	32	798
1977 Total ²	1739	1167	1627	1489	527	806	306	687	240	3744	54	678
1978 Mean ³	38	129	39	186	14	96	8	188	6	125	1	31
1967-77 Mean ³	21	166	19	208	6	137	5	235	6	689	4	122

¹ Spores lacked carotene and seemed shrunken

² Total from June 1 to August 18.

³ Means of the numbers of spores counted on slides exposed from June 1 to August 15 expressed on the basis of 72-hour exposures. Data for 1974 was incomplete and was omitted from the 1967-77 mean,

The numbers of leaf rust spores were considerably larger than the corresponding numbers for 1977 at all locations except Regina, but the 1978 means were appreciably smaller than the 10-year means. The reduced number of leaf rust spores, which seem to be mainly wheat leaf rust, may have been caused by unfavorable weather for leaf rust development and by the increased hectareage of leaf rust resistant varieties.

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