AIR-BORNE RUST NOCULUM OVER WESTERN CANADA IN 1969[1]

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Urediospores were caught on vaseline-coated microscope slides exposed in spore traps at six locations in Manitoba and Saskatchewan. The procedures were consistent with those used previously in this project. Slides were coated with vaseline, placed in protective frames, and carefully wrapped to prevent contamination at Winnipeg. They were sent to the spore trap locations, excepting Saskatoon, where they were exposed for 48-hour periods in spore traps that held them at an angle of 45 degrees from the horizontal. After exposure they were returned to Winnipeg, where they were examined by means of a microscope for the presence of urediospores. Slides exposed at Saskatoon were prepared and examined by the staff of the Canada Department of Agriculture Research Station, Saskatoon.

Small numbers of spores were caught in 1969 (Table 1). Stem rust spores (*Puccinia graminis* Pers.) were much scarcer than usual and the leaf rust (*P. recondita* Rob. ex Desm. and *P. coronata* Cda.) counts, although much larger than those of stem rust, were small when compared with former years. There was more inoculum in Manitoba than in Saskatchewan. More spores were caught at Regina than at Brandon (Table 1) but most of the Regina spores were caught during two exposures and may not be representative of actual conditions. The trapping of relatively large numbers of spores during the last half of June at Saskatoon was unexpected. The build up of inoculum at Saskatoon normally is later than at the other locations and its early appearance seems to be a local peculiarity in 1969.

Small numbers of stem rust and leaf rust spores were carried into Western Canada during May and June, but rust was not found until July 9. Light infections of leaf rust developed on commercial wheat varieties (*Triticum aestivum* L.) during the remainder of the season, but wheat stem rust was not found in farm fields and developed only in plots of susceptible varieties and on susceptible wild barley (*Hordeum jubatum* L.). It could not be found readily on wild barley in eastern Saskatchewan until early October. Heavy infections of oat crown rust developed in late oat fields in Manitoba during the first half of August and probably contributed to the number of spores caught. Oat stem rust infections were light. The number of spores trapped during late July and August parallels rust development in the field. Ten days to two weeks after the first appearance of rust in plots of susceptible varieties on July 9, the numbers of spores caught began to increase and reached a maximum about August 20.

Rust development and the number of spores trapped may have been governed largely by weather conditions in 1969. The early part of the growing season was cool and wet, but hot dry weather prevailed during much of August. Rust development seems to have been delayed by the cold weather early in the season but was encouraged by the warm weather in August.

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Table 1. Number of urediospores of stem rust and leaf rust per square inch caught on Vaseline-coated slides exposed for 48-hour periods at three locations in Manitoba and three locations in Saskatchewan in 1969

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
May	16-17	0	0	0	0	0	0	0	0	0	0		
	18-19	0	0	0	0	0	0	0	0	0	0		
	20-21	0	0	0	0	0	0	0	0	0	0	0	0
	22-23	0	2	0	0	0	1	0	0	0	0	0	0
	24-25	0	0	0	0	0	0	0	1	0	0	0	0
	26-27	1	2	0	0	0	0	0	0	0	1	0	0
	28-29	0	0	0	0	0	0	0	1	0	0	0	0
	30-31	0	0	0	0	0	0	0	0	0	0	0	0
May Total		1	4	0	0	0	1	0	2	0	1	0	0

Table 1 (Cont'd.)

Date	Winnipeg Stem rust	Winnipeg Leaf rust	Morden Stem rust	Morden Leaf rust	Brandon Stem rust	Brandon Leaf rust	Indian Head Stem rust	Indian Head Leaf rust	Regina Stem rust	Regina Leaf rust	Saskatoon Stem rust	Saskatoon Leaf rust
June 1-2	0	0	0	0	0	0	0	0	0	1	0	0
3-4	0	0	0	0	0	0	0	0	0	0	0	0
5-6	0	0	0	0	0	1	0	0	0	0	0	0
7-8	0	0	0	0	0	1	0	0	0	0	0	0
9-10	0	0	0	0	0	0	0	0	0	0		
11-12	0	0	0	0	0	0	0	0	0	0	0	0
13-14	0	0	1	0	0	0	0	1	0	0	0	0
15-16	0	0	0	0	0	0	1	0	0	0	0	0
17-18	0	1	0	1	0	0	0	0	0	0	0	2 6
19-20	0	1	0	0	0	0	0	0	0	0	0	0
21-22	0	0	0	0	1	1	0	0	0	0	0	12
23-24	0	0	0	0	1	1	1	1	1	1	0	1 2
25-26	0	0	0	0	1	0	0	0	0	0	0	26
27-28	0	0	0	0	1	0	0	0	0	0	0	1 5
29-30	0	1	0	0	0	0	0	0	0	0	0	9
June Total	0	3	1	1	4	4	2	2	1	2	0	100
July 1-2	1	0	0	0	1	0	0	0	0	0	0	1 0
3-4	0	0	0	0	1	0	0	0	0	0	0	3 0
5-6	0	2	0	0	0	0	0	0	1	1	0	4
7-8	1	1	1	2	0	2	0	1	0	0	0	7
9-10	1	1	1	1	0	0	0	0	0	0	0	1 5
11-12	0	4	2	5	2	2	0	11	1	7	0	5
13-14	1	1	0	3	0	0	0	0	0	1	0	0
15-16	0	1	1	1	1	2	0	1	0	0	0	0
17-18	0	2	0	0	0	0	5	13	0	0	0	3 0
19-20	0	1	0	0	0	1	1	2	0	0	0	5
21-22	2	6	2	8	2	17	1	6	0	1	0	9
23-24	0	5	2	3	0	3	1	4	1	1	0	22
25-26	0	5	0	4	0	12	9	1 9	0	1	0	2 9
27-28	0	0	0	8	0	11	1	9	0	0	0	5 7
29-30	0	25	1	1	1	7	0	6	0	1	0	0
July 31 - Aug. 1	0	0	1	7	0	1	1	8	0	2	0	2 4
July Total	6	54	11	43	8	58	19	80	3	15	0	247
Aug. 2-3	5	67	22	544	1	97	1	5	1	25	5	34
4-5	1	153	8	230	0	1	1	17	1	3 2	0	1
6-7	0	7	11	74	2	87	1	4	0	0	0	1 8
8-9	5	75	7	89	2	28	2	8	1	6	11	64
10-11	4	46	18	150	0	4	2	19	2	16	7	109
12-13	84	480	38	228	2	140	2	13	2	45	7	20
14-15	9	70			6	242	2	40	0	0	6	6 0
16-17	47	284	28	487	35	693	6	194	6	273	0	45
18-19	0	15	23	101	13	289	5	150	12	1343	10	70
20-21	45	449	47	621	46	292	4	100	8	100	1	27
22-23	120	1029	205	2475	28	1379	5	54	26	918	1	34
24-25	176	1270	148	2021	29	982	14	124	150	3357	4	34
26-27	135	1319	62	2070	30	932			6	202	2	62
28-29	9	137	18	421	19	300	2	41	12	133	1	1
30-31	14	205	2	69	18	263	2	24	14	504	0	18
Aug. Total	654	5606	637	9580	231	5729	49	793	241	6954	55	597
TOTAL	661	5667	649	9624	243	5792	70	877	245	6972	55	944