AIR–BORNE RUST INOCULUM OVER WESTERN CANADA IN 1971[1]

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The amount of air–borne rust inoculum in Western Canada in 1971 was assessed by exposing vaseline coated microscope slides for 48–hour periods at six locations in Manitoba and Saskatchewan. The slides were placed in spore traps which held the vaseline coated surface at 45% from the vertical. Care was taken to prevent contamination during preparation of the slides at Winnipeg. Except for Saskatoon, the slides were mailed to and from each location protected by a wooden frame and carefully wrapped in paper. After exposure, the number of urediospores caught was determined by microscopic examination of the slides at Winnipeg. Slides exposed at Saskatoon were prepared and examined by the staff of the Canada Department of Agriculture Research Station, Saskatoon, Saskatchewan.

Spores were observed on slides exposed at all locations except Saskatoon during May (Table 1). The numbers counted, although small, were larger and more consistent than is usual in May. The early appearance of urediospores probably had little influence on rust development because crops would not have emerged until the end of May and growth of susceptible wild grasses had only commenced. The relatively large number of stem rust spores caught in May as compared with leaf rust, suggests that that origin of these spores was different that that of the spores caught in June when leaf rust predominated. During June more spores were caught in Saskatchewan than in Manitoba, but in July the number of spores increased more rapidly in Manitoba. Later in the season the numbers of urediospores over the two provinces were similar. The total number of stem rust spoxes counted was considerably less than in 1970 and less than the average number caught in the previous 10 years (Table 2). Nevertheless, there was sufficient inoculum to initiate appreciable rust development on susceptible varieties and wild grasses. The total number of leaf rust spores counted was less than in 1970 but about the average for the previous 10 years. It agrees with the field observation of widespread leaf rust development on wheat and, in southern Manitoba, of crown rust on oats.

Table 1. Number of urediospores of stem rust and leaf rust per square inch observed on vaseline–coated slides exposed for 48–hour periods at three locations in Manitoba and three locations in Saskatchewan in 1971

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 19–20	9	0	0	0	0	0	0	0			0	0
21–22	0	0	0	0	0	0	0	0	3	2	0	0
23–24	0	0	0	0	0	0	0	0	0	0	0	0
25–26	1	0	0	0	5	2	1	1	0	0	0	0
27–28	0	0	1	1	0	0	0	0	2	2	0	0
29–30	2	0	0	0	0	0	0	1	1	1	0	0
31– 1	0	1	0	0	1	1	0	1	1	0	0	0
May Total	12	1	1	1	6	3	1	3	7	5	0	0
June 2– 3	1	0	0	0	1	0	0	1	1	0	0	0
4– 5	0	0	0	1	1	1	1	2	0	0	0	11
6– 7	0	0	0	2	0	1	0	0	0	0	0	0
8– 9	0	1	0	0	0	1	0	2	0	2	0	2
10–11	0	0	0	1	0	2	0	0	0	0	0	0
12–13	0	0	0	0	0	0	0	1	0	1	0	0
14–15	0	0	0	1	0	1	0	1	1	1	0	0
16–17	0	1	0	1	0	1	0	4	2	2	0	2
18–19	1	4	1	1	0	0	0	1	0	0	0	0
20–21	0	1	0	1	0	0	1	5	0	4	0	7
22–23	0	2	0	1	0	0	1	5	1	2	0	10
24–25	0	0	0	0	0	1	1	2	0	1	0	15
26–27	0	0	0	0	0	0	0	2	1	2	0	28
28–29	0	0	0	1	0	0	0	1	0	1	0	4
30– 1	0	0	0	1	0	1	1	15	0	0	0	17
June Total	2	9	1	11	2	9	5	42	6	16	0	96

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Table 1 (Cont'd.)

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 2- 3	9	56	0	0	0	1	1	6	5	16	0	41
4- 5	0	2	0	0	1	4	3	0	0	1	0	19
6- 7	0	6	0	2	1	9	1	5	0	1	0	11
8- 9	0	8	0	2	1	6	0	4	2	13	0	8
10-11	0	10	0	1	1	7	0	2	2	8	0	4
12-13	2	5	0	15	0	5	0	8	0	2	0	12
14-15	2	4	0	12	0	6	0	17	0	4	0	31
16-17			5	112	0	5	0	8	14	33	0	27
18-19	0	2	2	5	0	7	0	0			0	54
20-21	5	40	13	45	3	7	0	0	0	0	0	60
22-23	9	33	5	98	0	1	0	2	0	2	0	3
24-25			4	28	13	120	1	8	0	0	0	45
26-27	1	14	3	59	1	22	0	12	0	6	0	54
28-29	1	18			1	12	0	4	1	7	0	52
30-31	3	72	36	445	5	79	4	68	3	76	0	90
July Total	32	270	68	824	27	291	10	144	27	169	0	511
Aug. 1- 2	26	284	0	2	6	91	9	139	1	164	24	185
3- 4	39	510	54	1,389	6	389	2	249	44	1,328	33	291
5- 6	370	3,485	70	1,429			22	920	15	1,085	15	101
7- 8	229	2,100			25	335	2	201	4	260	0	98
9-10	44	816	33	1,580	11	890	26	312	6	100	0	73
11-12	23	2,445	22	1,510	4	155	19	116	4	155	16	236
13-14	2	34	35	1,350	3	252	11	670	13	350	60	415
15-16	158	1,510	1	68	63	2,200	23	155			9	568
17-18	11	104	6	147	4	392	2	350	15	1,370	5	233
19-20	2	12	9	76	11	284	2	26	35	1,540	3	109
21-22	618	1,740	2	23			167	2,281	84	5,030	44	825
23-24	444	765	61	4,060	109	3,040	21	342	18	246	1	14
25-26	18	21	188	855	6	218	19	93	30	87	25	211
27-28	64	86	82	422	11	378	27	106	91	2,290	17	288
29-30	525	709			69	1,005	65	113	63	1,121	36	105
31- 1	102	66	13	134	33	99	88	261	122	580	16	104
Aug. Total	2,675	14,687	576	13,045	361	9,728	505	6,934	545	15,706	304	3,856
TOTAL	2,721	14,967	646	13,881	396	10,031	521	7,123	585	15,896	304	4,463

Table 2. Total numbers* of urediospores caught in spore traps at six locations in Western Canada from 1961 to 1971

Year	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
1961	88	153	109	212	24	80	27	71	37	101	8	246
1962	782	1,563	2,236	6,282	1,640	2,972	789	1,874	3,000	4,840	198	2,498
1963	2,544	13,685	2,477	26,612	1,722	15,210	1,597	39,785	2,008	69,681	5,571	80,657
1964	12,872	15,041	18,578	14,780	16,439	12,797	3,798	6,918	8,632	42,129	132	531
1965	4,943	9,811	5,362	25,978	2,698	16,091	10,559	66,730	31,635	227,576	1,927	77,502
1966	3,830	7,356	1,843	14,805	737	5,019	469	17,339	724	86,525	526	37,989
1967	2,498	8,997	918	6,974	72	1,107	34	454	70	473	117	344
1968	234	7,623	381	8,393	46	1,480	45	728	317	1,145	10	493
1969	661	5,667	649	9,624	243	5,792	70	877	245	6,972	55	944
1970	5,975	18,969	7,023	27,844	3,393	13,826	1,623	8,373	1,806	20,524	248	6,288
Average 1961-70	3,443	8,886	3,958	14,150	2,701	7,437	1,901	14,314	4,847	45,996	879	20,794
1971	2,721	14,967	646	13,881	396	10,031	521	7,123	585	15,896	304	4,463

* Expressed as spores per square inch of slide except for Saskatoon from 1961 to 1964, where numbers are spores per slide.