AIR–BORNE RUST INOCULUM OVER WESTERN CANADA IN 1970[1]

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The amount of rust inoculum in Western Canada in 1970 was investigated by the same method used in previous years. Vaseline-coated microscope slides were exposed at six locations in Manitoba and Saskatchewan in spore traps that held the coated surface at an angle of 45° from the vertical. Care was taken to prevent contamination of the slides during preparation at Winnipeg. They were sent to the spore trap locations, except Saskatoon, in protective wooden frames wrapped in paper. After the 48-hour exposure they were returned to Winnipeg where urediospores were counted by means of a microscope. Slides exposed at Saskatoon were prepared and examined by the staff of the Canada Department of Agriculture Research Station, Saskatoon, Sask.

There was abundant rust inoculum in Western Canada in 1970. Despite the excellent stem rust resistance and moderate leaf rust resistance of the wheat varieties grown in the rust area, more spores were trapped than in any year since 1964. The influence of the oat crop on the number of spores caught is uncertain. The oat varieties grown are susceptible to stem rust and crown rust. Heavy infections of both rusts developed in late fields in Manitoba and south–eastern Saskatchewan, especially in the Red River Valley. This epiphytotic probably contributed many of the spores caught after mid–August at Winnipeg and Morden. Many of the leaf rust spores caught at Regina and Saskatoon were probably produced on susceptible Thatcher wheat in Saskatchewan.

A few leaf rust spores were caught in May (Table 1) but air–borne spores were unimportant at that time because the crop in Manitoba and south–eastern Saskatchewan was planted very late. It was June 24 before the Dominion Bureau of Statistics reported that seeding was nearly complete in Manitoba. The

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 1970

	Winnipeg		Morden		Brandon		Indian Head		Regina		Saskatoon	
Date	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	0	0	0	0	0	0	0	0			0	0
21–22	0	0	0	0	0	0	0	0	0	0	0	0
23–24	0	1	0	0	0	0	0	1	0	0	0	0
25–26	0	1	0	0	0	0	0	0	0	0	0	0
27–28	0	1	0	0	0	0	0	0	0	0	0	0
29–30	0	0	0	0	0	0	0	0	0	0	0	0
31– 1	0	0	0	0	0	0	0	0	0	0	0	0
May Total	0	3	0	0	0	0	0	1	0	0	0	0
June 2– 3	0	0	0	0	0	0	0	0	0	0	0	0
4– 5	0	0	0	0	0	0	0	0	0	0	0	0
6– 7	0	0	0	27	0	2	0	0	0	0	0	0
8– 9	2	156	5	165	0	11	0	4	1	1	0	0
10–11	0	2	0	0	0	0	0	2	0	0	0	0
12–13	0	0	1	0	0	0	0	0	0	5	0	0
14–15	0	0	0	0	0	0	0	0	0	1	0	0
16–17	0	0	0	0	0	0	0	1	0	0	0	0
18–19	0	1	0	0	0	0	0	0	0	0	0	0
20–21	0	0	0	0	0	0	0	5	0	0	0	0
22–23	4	9	0	66	1	3	0	0	0	0	0	0
24–25	0	0	0	2	0	5	0	4	0	2	0	0
26–27	5	27	2	22	2	15	0	20	2	20	0	4
28–29	0	0	0	0	1	11	0	4	0	0	0	7
30– 1	2	7	4	22	1	23	0	0	0	0	0	1
June Total	13	202	12	304	5	70	0	40	3	29	0	12

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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
July 2- 3	0	1	0	4	0	0	0	1	0	0	0	25
4- 5	0	0	0	0	0	2	0	14	2	6	0	84
6- 7	0	2	0	4	0	1	0	4	0	4	0	63
8- 9	0	1	0	1	0	0	4	22	0	2	0	19
10-11	0	1	11	50	0	1	0	1	0	1	0	20
12-13	0	1	0	0	0	O	0	0	0	13	0	0
14-15	0	1	0	8	0	1	0	12	1	16	0	9
16-17	0	16	0	0	0	0	2	48	5	18	0	15
18-19	0	5	0	0	0	*0*	0	0	0	4	0	16
20-21	223	839	5	16	2	48	0	6	2	119	0	110
22-23	401	1307	86	315	7	23	0	4	4	16	0	107
24-25	1	1	5	26	0	14	0	13	1	36	0	158
26-27	4	22	0	0	0	4	14	75	22	93	0	338
28-29	2	16	1	5	0	1	11	101	19	214	0	352
30-31	15	144	21	172	6	89	21	422	15	376	0	365
July Total	646	2357	129	601	15	184	52	723	71	918	0	1681
Aug. 1- 2	13	184	4	7	14	370	28	559	43	1249	0	784
3- 4	5	36	46	401	6	66	5	162	27	954	0	184
5- 6	59	305	156	1157	22	120	15	516	28	2180	0	167
7- 8	60	219	213	2311	60	1027	17	400	2	422	4	276
9-10	22	381			72	1678	2	109	13	641	0	376
11-12	84	509	417	5450	19	413	57	866	63	4045	24	695
13-14	345	1555	561	3696	47	1304	8	480	9	148	8	175
15-16	135	517	118	758	53	438	83	724	79	1667	36	701
17-18	575	3787	955	2941	176	1211	22	298	50	469	7	212
19-20	409	762	375	701	101	628	128	994	56	1389	17	135
21-22	203	257	371	1519	133	292	43	313	28	287	1	268
23-24	731	3453	496	3113	281	1689	82	225	233	831	21	359
25-26	2048	3764	2816	4409	1410	2400	718	1431	874	4107	91	204
27-28	414	424	255	302	814	1511	193	367	43	113	35	40
29-30	59	83	34	83	84	226	74	139	163	1039	4	19
31- 1	154	171	65	91	81	199	96	26	21	36		
Aug. Total	5316	16,407	6882	26,939	3373	13,572	1571	7609	1732	19,577	248	4595
TOTAL	5975	18,969	7023	27,844	3393	13,826	1623	8373	1806	20,524	248	6288

first spore shower occurred on June 6–9 with most spores falling in Manitoba. Spores were not caught again in quantity until June 22. Wheat leaf rust was first found on June 22 and stem rust on June 23. Leaf rust infections in early fields and stem rust infections on wild barley (Hordeum jubatum L.) could have produced some of the spores that were caught but the comparatively large number of stem rust spores suggests that inoculum was brought in from the south. Stem rust was not observed commonly on wild barley until early August. Apparently most of the large numbers of spores caught on July 20–23 were from the south but most of the large and increasing numbers of spores caught after the end of July probably originated locally.