Air-borne rust inoculum over western Canada in 1975[1]

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There was less air-borne inoculum of ***Puccinia graminis*** and ***P. recondita*** over western Canada in 1975 than usual. Rust was widespread in the south but the late arrival of a small quantity of primary inoculum and unfavorable weather restricted rust development early in the season and reduced the number of urediospores found in spore traps.

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En 1975, il y avait moins de spores de ***Puccinia graminis*** et de ***P. recondita*** que d'habitude en suspension dans l'air au-dessus de l'ouest du Canada. La rouille était répandue dans le sud, mais l'arrivee tardive d'une faible quantite d'inoculum primaire et le mauvais temps ont restreint le developpement de la rouille au debut de la saison et reduit le nombre d'urediospores dans les pieges a spores.

An estimate of the amount of air-borne rust inoculum over western Canada in 1975 was made using the same methods described in earlier reports of this study published annually in the ***Canadian Plant Disease Survey.***

Urediospores of ***Puccinis graminis*** and ***P. recondita*** appeared on the slides later than usual (Table 1) despite widespread rust infections to the south. Leaf rust was first observed in the field on June 27 at Winnipeg about 10 days later than normal, suggesting that a spore

Table 1. Number of urediospores of stem rust and leaf rust per square inch (6.5 cm^2) observed on Vaseline-coated slides exposed €or 48-hour periods at three locations in Manitoba and three locations in Saskatchewan in 1975

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 27-28	0	0	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	0	0	0	0	0	0	0	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	0	0	0	0	1	0	0	0	0
8- 9	0	0	0	0	0	0	0	0	0	0	0	0
10-11	0	0	0	0	0	0	0	0	0	0	0	0
12-13	0	0	0	0	0	0	0	0	0	0	0	0
14-15	0	0	0	0	0	0	0	0	0	0	0	7
16-17	0	0	0	0	0	0	0	1	0	0	0	0
18-19	8	0	1	2	1	3	0	0	0	1	0	0
20-21	0	1	0	0	1	0	0	0	0	0	0	0
22-23	0	2	0	0	0	0	0	1	1	0	0	0
24-25	0	9	39	49	0	11	0	39	0	2	0	6
26-27	0	4	5	35	0	11	0	0	1	2	0	0
28-29	0	0	1	5	0	2	0	0	0	0	0	11
30- 1	0	0	1	1	0	0	0	2	4	2	0	13
June total	8	16	47	92	2	27	0	44	6	7	0	37

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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 2- 3	0	1	0	1	0	1	0	1	0	2	0	0
4- 5	0	0	1	1	0	2	0	0	0	7	0	12
6- 7	0	6	-	-	0	2	0	11	0	15	0	19
8- 9	0	0	1	6	0	1	0	2	0	2	0	10
10-11	0	1	0	2	0	2	0	0	0	4	0	18
12-13	0	1	0	4	0	4	0	3	0	1	0	9
14-15	1	4	1	45	0	0	0	24	0	11	0	28
16-17	0	15	1	33	0	1	1	4	1	20	0	1
18-19	0	2	1	10	0	2	1	16	0	11	0	14
20-21	0	6	0	11	0	0	0	1	0	38	0	2
22-23	0	1	4	14	0	8	0	5	0	47	0	20
24-25	0	32	2	98	0	28	0	16	0	19	0	7
26-27	1	35	4	208	0	35	0	8	0	46	0	26
28-29	40	322	20	473	0	130	0	75	1	298	2	15
30-31	14	38	0	9	0	0	0	0	0	5	11	103
July total	56	464	35	915	0	216	2	166	2	526	13	284
Aug. 1- 2	0	56	1	27	4	71	0	5	0	4	12	120
3- 4	7	38	38	43	0	20	0	20	0	8	20	65
5- 6	87	544	52	558	6	54	2	66	7	307	35	217
7- 8	2	8	0	14	0	2	0	0	0	19	3	78
9-10	40	102	13	96	2	33	0	21	0	79	52	151
11-12	69	41	15	30	22	68	0	0	0	0	42	238
13-14	50	2	39	34	0	5	0	13	0	12	33	249
Aug. total	255	791	158	802	34	253	2	125	7	429	197	1118
1975 total	319	1271	240	1809	36	496	4	335	15	962	210	1439
1974 total	17	151	15	290	12	185	12	223	36	500	21	861

Table 2. Average number of urediospores of stem rust and leaf rust observed on slides exposed for 48-hour periods at six locations from July 1 to August 15 for the years 1965 to 1975

Year	Winnipeg		Morden		Brandon		Indian Head		Regina		Saskatoon		Average	
	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust
1975	14	57	9	82	2	21	1	13	1	43	10	64	6	47
1974"	1	4	1	7	1	5	1	5	1	12	1	47	1	13
1973	16	249	4	136	1	242	2	629	2	1449	7	179	5	481
1972	16	277	24	696	16	645	12	1515	23	6566	3	528	16	1705
1971	38	497	14	404	4	114	5	125	5	172	7	87	12	233
1970	56	252	73	649	12	235	8	173	12	480	2	197	27	331
1969	5	41	5	62	1	29	1	8	1	6	2	24	3	28
1968	3	225	5	219	1	47	1	24	1	23	1	15	2	92
1967	9	81	6	122	1	16	1	8	2	11	0	12	3	42
1966	23	145	17	239	4	11	13	702	6	618	3	1296	11	502

Table 2. Cont.

Year	Winnipeg		Morden		Brandon		Indian Head		Regina		Saskatoon		Average	
	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust
1965	20	331	74	951	43	659	364	2810	892	7526	92	3690	248	2661
1965–74 average	19	210	22	348	8	200	41	600	94	1686	12	608		

* July 1 to August 5

shower had occurred about June 15 but was not detected by the spore traps in Manitoba. The small amount of primary inoculum, its late arrival, and unfavorable weather for rust development in July seems to have reduced the amount of rust in western Canada early in the season and the numbers of spores on the slides (Table 2).

The averages presented in Table 2 are usually indicative of the amount of rust in western Canada each year but they can be misleading. The averages indicate that there was little stem rust development in 1974 and 1975 but in these years stem rust was common to the south and in western Canada by the end of August on susceptible *Hordeum* jubatum L. and on susceptible varieties in experimental plots. During the 11 year period 1965 to 1975 stem rust resistant varieties were grown in the main rust area of Manitoba and southeastern Saskatchewan, but prior to 1968 Thatcher, which is susceptible to race 15B of stem rust, was widely grown farther west in Saskatchewan. The planting of Thatcher could account for the relatively large numbers of stem rust spores caught at Saskatchewan locations in 1965. Thatcher is very susceptible to leaf rust as well but it was replaced after 1967 by Manitou and later by Neepawa, which were resistant to leaf rust. The planting of these varieties could account for the small numbers of leaf rust spores present in the years 1967 to 1969. In 1970, races with increased virulence on Manitou and Neepawa appeared and caused moderately severe infections which resulted in increased numbers of spores from 1970 to 1973. In 1974 and 1975 weather conditions were unfavorable for leaf rust development.