On 22 May, 2 large stem rust pustules were found on the new growth of couch grass beneath stems bearing urediniospores of the previous year. Owing to the location of the pustules, coupled with the fact that they occurred a month prior to the usual appearance of stem rust derived from wind-borne spores, it seems certain that they arose from infections caused by overwintered urediniospores.

This observation of the overwintering of rye stem rust does not permit the inference that wheat stem rust likewise overwinters on its grass host. Only about 1% of the urediniospores on wild barley, Hordeum jubatum, a grass commonly infected with wheat stem rust, were germinable on 1 May and no viable spores were found in subsequent collections. The possibility exists, however, that this rust may also overwinter occasionally (T. Johnson).

A sev. infection of stem rust was found on Agropyron repens at Portage la Prairie on 9 Aug. No stem rust was present on adjacent Avena fatua or barley. The occurrence of a very heavy infection, partly as telia, on the couch grass suggested infection from overwintering (W. A. F. Hagborg).

LEAF RUST (Puccinia secalina). About half the plants showed light infection on Storm in the Univ. plots, Vancouver, B. C. (H. N. W. Toms). Infection was 2-tr./ 9 fields of rye examined in s. Alta.; first observed near Medicine Hat on 17 Aug. (P. M. Halisky). See also under Rust Nurseries.

SPECKLED LEAF SPOT (Septoria secalis). Infection was 12-tr. 4-sl. 1-mod./ 31 fields examined in Alta. (T. R. D.).

STEM SMUT (Urocystis occulta) was observed in 2 fields, infection being 2% at Lethbridge and 5% at Cardston (P. M. Halisky).

RUST NURSERIES IN CANADA IN 1951

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This report (November 1951) presents the results of the examination of varieties of wheat, oats, barley and rye, grown in 34 localities in Canada, for the presence of rusts and certain other fungous diseases. (Detailed observations on disease incidence were presented in seven tables but only the general summary given in the eighth table is here reproduced in Table 2).

Twelve varieties of wheat, six of oats, five of barley and one of rye were grown in the nurseries. The varieties were: wheat - McMurachy, Lee, Carleton, Little Club, Marquis, Mindum, Thatcher, Yaroslav Emmer, Norka, Redman, Exchange and Frontana; oats - Bond, Trispernia, Ajax, Vanguard, Garry and Clinton; barley - U. M. 43-1020, Peatland, Vantage, H. 106 (Wisconsin) and Montcalm; and rye - Prolific.

Table 2. The incidence of certain pathogenic fungi on wheat, oats, barley and rye grown at 34 localities in Canada in 1951.

Locality	Wheat					Oats				Barley					Rye		
	P. gr. tritici	P. triticina	Erysiphe graminis	Septoria nodorum	Septoria tritici	P. gr. avenae	P. coronata avenae	Erysiphe graminis	Septoria avenae	P. graminis	P. hordei	Erysiphe graminis	Septoria passerinii	Rhynch. secalis	P. graminis secalis	P. secalina	Erysiphe graminis
Saanichton, B. C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agassiz, B. C.	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	3	0
Creston, B. C.	2	4	0	0	0	2	0	0	0	2	0	2	0	0	1	0	0
Beaverlodge, Alta.	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Edmonton, Alta.	2	4	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0
Lacombe, Alta.	3	4	0	0	4	0	0	0	0	1	-	0	4	0	2	-	0
Lethbridge, Alta.	1	4	3	0	4	0	0	0	0	1	0	1	3	0	1	1	0
Scott, Sask.	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Melfort, Sask.	0	3	0	0	0	0	0	0	0	0	0	0	2	3	0	1	0
Indian Head, Sask.	2	3	0	0	0	2	0	0	0	2	0	0	0	0	2	2	0
Dauphin, Man.	2	4	-	-	-	2	0	-	-	2	0	-	-	-	1	3	-
Brandon, Man.	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0
Morden, Man.	1	2	0	0	0	1	0	0	0	1	0	0	1	0	1	-	0
Winnipeg, Man.	2	3	0	0	0	2	1	0	0	1	1	0	1	0	2	2	0
Ft. William, Ont.	0	4	0	1	0	2	0	0	4	1	1	0	1	0	1	3	0
Kapuskasing, Ont.	0	4	0	0	0	0	1	0	3	0	0	0	3	0	0	2	0
Mindemoya, Ont.	1	4	2	3	0	1	2	0	3	0	4	1	0	0	2	4	0
Guelph, Ont.	0	4	1	4	0	2	2	0	0	1	4	3	0	0	3	4	0
St. Catharines, Ont.	0	4	4	0	0	0	0	0	0	0	0	3	0	0	0	2	0
Appleton, Ont.	1	4	2	2	0	4	2	1	-	2	1	2	0	0	1	3	0
Ottawa, Ont.	3	4	3	-	0	3	3	0	3	2	2	4	0	0	2	3	0
Merrickville, Ont.	0	3	1	-	0	2	2	0	0	1	0	0	0	0	2	2	0
Kemptville, Ont.	0	4	3	-	0	2	4	0	4	2	2	4	-	0	2	3	0
Williamstown, Ont.	0	4	1	-	-	0	1	0	-	0	0	0	-	-	0	2	0
Macdonald Coll. Que.	0	3	1	0	0	0	0	0	2	0	0	4	-	0	0	2	0
L'Assomption, Que.	1	-	0	-	-	2	2	0	-	1	-	4	1	-	2	-	0
Lennoxville, Que.	0	4	0	0	0	2	1	0	4	2	2	1	0	0	2	3	0
Normandin, Que.	2	4	0	0	0	0	0	0	4	0	0	0	2	0	0	2	0
Ste Anne de la Pocatiere, Que.	0	4	0	0	0	2	2	0	2	1	2	0	0	0	1	3	0
Fredericton, N. B.	0	4	0	4	0	0	0	0	2	3	0	0	0	0	4	-	0
Kentville, N. S.	0	4	3	0	0	4	2	0	3	2	3	0	0	0	3	-	0
Nappan, N. S.	0	3	0	3	0	0	0	0	3	0	0	0	0	0	0	2	0
Pictou, N. S.	0	2	0	1	0	2	4	0	0	0	0	0	0	0	1	2	0
Charlettetown, P. E. I.	0	3	0	0	0	2	1	-	2	0	-	-	0	0	0	2	-

Note: 1 = trace; 2 = light; 3 = moderate; 4 = heavy

The Cereal Rusts

Because of severe winter weather in the rust-overwintering areas of the southern United States, rusts did not overwinter abundantly. Subsequent northward spread of cereal rusts was so delayed by early summer drought in the Dakotas, Minnesota, and southern Man. that stem rust (Puccinia graminis) on wheat, barley and oats did not become apparent in Man. until late in July. Leaf rust of wheat (P. triticina) appeared in Man. early in July, but its spread was so retarded by dry weather that a only light infection had occurred at the time of harvest in the southern parts of the province. In northwestern areas (Dauphin to Swan River) and in adjacent eastern Sask. infection by leaf rust was eventually heavy but occurred too late to cause much damage.

Race 15B of wheat stem rust (P. graminis var. tritici) survived the winter in the southern United States and later increased to such an extent that it made up most of the stem rust on wheat in Man. and eastern Sask. Most of the wheat in southern Man. escaped infection through early ripening, but further north and west there was considerable stem rust infection on Redman, Thatcher and other wheats. The heaviest concentration of infection occurred in the area from Dauphin west to Kamsack and Yorkton and south to Melville where the stand of wheat was very heavy and late. Infections were of a susceptible type and varied in amount from trace to about 15 per cent. Nowhere was infection heavy enough to cause appreciable damage. Escape from damage was, however, not due to any resistance of the wheats concerned but merely because the rust arrived too late in the season to cause any really heavy infection. Stem rust extended westwards, in diminished amounts, through northern Saskatchewan into Alberta where infection, though light, was more than usually prevalent. Though race 15B occurred to some extent in Alberta most of the infection there was caused by race 56, the common race of former years.

Coarse grains were little affected by rust this year in the Prairie Provinces. A scattering of stem rust on barley was caused partly by wheat stem rust and partly by rye stem rust (P. graminis var. secalis). Oats were rusted only lightly by stem rust and very lightly by crown rust. Race 8 was the most common stem-rust race on oats but race 7, widespread for the first time last year, was also fairly common.

Judged by the amount of wheat stem rust in the eastern nurseries, that rust was of little importance in Eastern Canada this year -- stem rust was found on wheat in only 5 out of 20 nurseries east of Man. Rye stem rust was more common; it occurred in 13 of the 20 nurseries. Stem rust, which occurred on barley in 11 of the 20 eastern nurseries was, in most cases, rye stem rust. A moderately heavy infection of barley by rye stem rust occurred at Fredericton, N. B., where a still heavier infection by this rust had occurred in 1949. In that year the presumably stem-rust resistant barleys Vantage and H. 106 carried 60% and 40% infection respectively. In 1951 the infection was lighter - Vantage 5% and H. 106 20% while Peatland and U. M. 43-1020 each showed 10% infection and the susceptible Montcalm 30%. Rye stem rust was also responsible for a moderate infection of barley at Kentville, N. S.

Leaf rust of wheat was heavy on susceptible wheats in most of the eastern nurseries. The varieties Lee, Exchange, and Frontana everywhere maintained the high resistance they have shown in former years, as did also the variety Yaroslav Emmer. Carleton carried 30-40% rust in several eastern nurseries and at Lethbridge, Alta., but the reaction was of a resistant type. The reaction of Redman varied greatly in eastern nurseries -- from high resistance in some nurseries to full susceptibility in others.

Oat stem rust (P. graminis var. avenae) was light or absent in nurseries in Western Canada, but a rather heavy infection developed in several of the eastern nurseries. The variety Garry was resistant everywhere, but Clinton showed light rust infection in several eastern nurseries, chiefly owing to the presence of race 7.

Crown rust (P. coronata var. avenae) was not found in any nursery west of Winnipeg and appreciable infection was limited to the five eastern nurseries at Guelph, Kemptville, and Ottawa, Ont., Ste Anne de la Pocatiere, Que., and Pictou, N.S. Except at Pictou, there appeared to be relatively less infection by race 45 and similar races (virulent to Bond and Clinton) than last year.

Leaf rust of barley (P. hordei) was very scarce in Western Canada. Heavy infection by this rust was limited to the eastern nurseries at Guelph and Mindemoya, Ont. and Kentville, N.S.

Leaf rust of rye (P. secalina) was widely distributed, being recorded in 24 of the 29 nurseries examined for its presence.

Other Diseases

Mildew (Erysiphe graminis) was found on wheat in the nurseries west of the Great Lakes only at Lethbridge, Alta., but it occurred in nine nurseries in Ont., and Que. and in one (Kentville, N.S.) in the Maritimes. On barley it was found at Creston, B.C., Lethbridge, Alta., and in nine nurseries in Ont. and Que. On oats it occurred only, in trace quantity, at Appleton, Ont.

Rather heavy glume blotch (Septoria nodorum) occurred at Guelph and Mindemoya, Ont., Fredericton, N.B., and Nappan, N.S., and lighter attacks were noted at Fort William and Appleton, Ont., and Pictou, N.S. Speckled leaf blotch of wheat (S. tritici) was confined to the two Alberta nurseries at Lethbridge and Lacombe, where heavy infection developed. Speckled leaf blotch of oats (S. avenae), which is annually present in Eastern Canada, was more than usually prevalent in 1951. Its presence was recorded in 13 of the 20 eastern nurseries. In nine of these nurseries infection was considered to be moderate or severe. A moderate infection of scald (Rhynchosporium secalis) developed in four western nurseries, Beaverlodge and Edmonton, Alta., and Scott and Melfort in Sask.