SPECKLED LEAF BLOTCH (Septoria secalis). Infection was 6-tr. 7-sl./27 fields examined in Alta. (T.R.D.).

STEM SMUT (Urocystis occulta). Infection was 2-sl./3 fields examined in southern Alta. (M.N. Grant).

RUST NURSERIES IN CANADA IN 1950

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In Table 2 is shown the incidence of cereal rusts and of a number of other plant diseases on varieties of wheat, oats, barley, and rye grown at 33 places in Canada in 1950. Separate tables were prepared for the rusts and powdery mildew giving the disease intensity on each variety, but the complete report, mimeographed separately in November 1950, must be consulted for this information.

Twelve varieties of wheat, six of oats, five of barley and one of rye were grown. The varieties were: wheat - McMurachy, Lee, Carleton, Little Club, Marquis, Mindum, Thatcher, Yaroslav Emmer, Norka, Redman, Exchange, Frontana; oats - Bond, Trispernia, Ajax, Vanguard, Garry, Clinton; barley - Goldfoil, Peatland, Vantage, H. 106 (Wisconsin), 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 1950.

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

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

The Cereal Rusts

Owing to a cool, wet spring the crop season in the Prairie Provinces was considerably retarded and the appearance of cereal rusts was correspondingly delayed. Leaf rust of wheat (Puccinia triticina) was not observed in Man. until 26 June. Stem rust (P. graminis) was first found on wheat on 24 July and on oats 27 July. In all three rusts, the initial outbreaks of pustules probably preceded these dates by a few days.

In the development of wheat stem rust, the feature of chief interest was the widespread occurrence of race 15B. This race is particularly adapted to durum wheats and caused severe rust on late-sown durums in southern Man., although in the rust nursery plots the durum varieties Carleton and Mindum escaped severe infection. Under field conditions, the varieties Carleton and Stewart, hitherto resistant to stem rust, were rusted as heavily as other commercial wheats. The rust resistant common wheats Thatcher, Regent, and Redman carried much lighter infection, and damage to these, if any, was slight. Stem-rust infection on wheat was either scarce or absent in western Sask. and Alta. Elsewhere in Canada the most severe stem-rust infection on wheat occurred in the nurseries at Mindemoya, Appleton, and Merrickville in Ont. It is uncertain, however, to what extent this infection represents the general situation in areas surrounding these stations. Stem rust was very scarce or absent on wheat in the nurseries in Alta. and B.C. and in the Maritime Provinces.

Leaf rust of wheat developed rather slowly, but late in the season the infection became very heavy on common wheats in Man. and eastern Sask. In western Sask. and in Alta. infection was mostly light or trace.

In most nurseries leaf rust infection was moderate or severe on wheat. The chief exceptions were in western Sask. and in Alta., where leaf rust was scarce or absent and in the Maritimes where the infection was generally light. A few comments may be made on the leaf rust reaction of some of the wheats. Exchange and Frontenac showed virtual immunity or a high degree of resistance at all stations. Although in Lee the majority of the plants were immune or highly resistant at all stations, about one-quarter of the plants showed considerable susceptibility particularly at stations in Eastern Canada and B.C. The durums Carleton and Mindum were highly resistant in the Prairie Provinces but showed only moderate resistance in several eastern nurseries and at Creston, B.C. Yaroslav Emmer displayed either immunity or high resistance at all stations, a fact of some interest in view of the present susceptibility of Hope, Redman and other wheats derived from crosses with it. Redman was wholly or moderately susceptible in the prairie region and in Ont., but it showed high resistance at the Pacific Coast and at least moderate resistance in eastern Que. and the Maritimes.

Stem rust infection became heavy on oats in the latter part of August and early September in southern Man. and considerable damage was done to late fields. The fact is reflected in the percentages of rust recorded in the Man. rust nurseries. Moderately heavy infection occurred also in several nurseries in Ont. and Que. In the nurseries located in the other provinces oat stem-rust infection was either very light or absent. It is worth mentioning that Clinton rusted rather severely in several of the nurseries in Man. and Ont. The susceptibility of this hitherto resistant variety is a consequence of the sudden widespread appearance of race 7 of oat stem rust.

Crown rust (Puccinia coronata) was not found on oats in Man. until 27 July and subsequent infection was only light to moderate. Trace to light infection occurred in eastern Sask. This rust did not occur in any nursery west of Melfort, Sask. Infection in most of the nurseries in Eastern Canada was light. The percentages recorded on the varieties Clinton and Bond, however, indicate the continued presence of race 45 and other races capable of attacking these varieties. These races became widely distributed in Canada in 1949.

Stem rust infection was not severe on barley in Man. The rust was also very light on barley varieties in the nurseries except at Mindemoya, Ont., where considerable rust was caused by P. graminis var. tritici on susceptible varieties. Rye stem rust (P. graminis var. secalis) caused light or trace infections in Man. and Sask. In the nurseries it was rather severe on Prolific rye at Merrickville and Appleton, Ont., and Fredericton, N.B., but it only caused a very light infection on the barley varieties.

Leaf rust (P. hordei) of barley was confined in the Prairie Provinces to trace or light infections in southern and central Man. In the nurseries, it was rather severe in several of the eastern ones.

Infection by leaf rust (P. secalina) was generally light and occasionally moderate on rye in Man. and Sask. with traces in Alta. The rust also occurred to a greater or less extent in most of the nurseries.

Other Diseases

Powdery mildew (Erysiphe graminis) was found on wheat in nurseries in all the provinces except Man. and Sask., but it was severe only at Kentville and Nappan, N.S. Powdery mildew of barley was absent from nurseries in Man., Sask., and the Maritime Provinces but was moderate to severe in some of the nurseries in B.C., Ont., and Que. Powdery mildew was found on oats only at Lethbridge, Alta., and on rye at Edmonton, Alta.

Observations on Septoria diseases of cereals showed the presence of Septoria nodorum on wheat at Creston, B.C., Guelph, Mindemoya and Appleton, Ont., and Fredericton, N.B. (Table 2). S. avenae var. triticea was present on wheat in many of the nurseries but was nowhere severe. S. tritici was found only at Lacombe, Alta. S. avenae occurred on oats at Agassiz, B.C., Winnipeg, Man., and in most of the eastern nurseries that were examined for its presence. S. passerinii was not found in any nursery west of Headingly, Man., but occurred in trace amounts in three eastern nurseries and was moderately heavy in one (Normandin, Que.)

Among other diseases that were noted mention may be made of a rather heavy infection of scald (Rhynchosporium secalis) on barley at Melfort, Sask.