

I. DISEASES OF CEREAL CROPS

WHEAT

ERGOT (Claviceps purpurea). A trace was recorded in one field out of 103 examined in Alta. (M.W.C.).

POWDERY MILDEW (Erysiphe graminis). Infection ranged from a trace to severe in the plots at Edmonton, Lethbridge and Olds, Alta. (M.W.C.). It was severe on Regent in the variety plots, Nappan, N.S. (R.J. Baylis). Powdery mildew was moderate on winter wheat about Guelph, Ont., and was moderate to severe on Dawson's Golden Chaff at the Ont. Agr. College (J.D. MacLachlan). In the rust nursery material (q.v.) a moderate infection was recorded for Agassiz, B.C.

HEAD BLIGHT (Fusarium spp.) was very slight in winter wheat at Guelph, Ont. (J.D. MacLachlan).

LEAF BLOTCH and HEAD BLIGHT (Helminthosporium sativum) was observed in the plots of the Illustration Station, Vanderhoof, B.C. (G.E. Woolliams).

COMMON ROOT ROT (Helminthosporium sativum and Fusarium spp.). Damage was a trace in 17 fields, slight in 30, moderate in 14 and severe in 4 out of 103 examined in Alta. (M.W.C.). In winter wheat, the damage was a trace in 11 fields, slight in 2, moderate in 2 and severe in 5 out of 41 examined in southern Alta. in late July. Seedlings collected from several fields of winter wheat in late October showed lesions on the culms, crowns, sub-crown internodes, and secondary and primary roots, the lesioning varying with the field. The principal pathogens isolated were Helminthosporium and Fusarium spp. On the other hand, Ophiobolus graminis constituted 25% of the isolates obtained from the crowns of diseased mature winter wheat plants collected in late July (L.E. Tyner).

Of the 226 fields of wheat sampled on or after July 28 in Sask., all had common root rot present in varying amounts. Disease ratings based on about 100 plants from each field ranged from 2 to 32 on a scale having 40 as the maximum. The mean rating for all fields was 10.68 with a standard deviation of 5.36. This mean exceeds the 1945 mean of 9.3 and the increase is statistically significant to the 1% point. The increase in 1946 is mainly the result of a greater proportion of high disease ratings in crop districts 3 and 4, where crops have been light for the second and third year respectively. In these two crop districts, the disease ratings appear to have been cumulatively larger as the result of successive dry years. The first estimates of yields of wheat in bu. per acre for districts 1 to 9 were respectively 18.5, 19.2, 9.9, 8.7, 21.7, 12.8, 14.3, 20.4 and 12.6; the corresponding common root-rot ratings were 7.8, 6.6, 13.6, 16.7, 8.7, 10.4, 9.7, 8.5, and 7.7. A notable feature in several districts this year was the unusual degree of lesioning of the stems above ground level, particularly in the region of the first, second, and third nodes above the crowns. Common root rot together with drought appeared to be an important factor in causing a marked reduction in yields and grades in an area with a radius of 5 to 15 miles around Hawarden. Many fields were decidedly patchy in appearance as well as in yield and grade of grain (B.J. Sallans).

TAKE ALL (Ophiobolus graminis) affected scattered plants in a field of Jones Fife in the East Kootenay district, B.C., examined on July 20 (M.F. Welsh). Damage was a trace in 1 field, slight in 9, moderate in 3 and severe in 1, at Innisfail, out of 103 examined in Alta. (M.W.C.). In winter wheat damage was a trace in 6 fields, slight in 5, moderate in 3, and severe in 10 out of 41 examined in southern Alta. in late July (L.E. Tyner). Take all also caused severe damage in 2 fields of winter wheat seeded after spring wheat at Red Deer (G.B. Sanford). The disease affected scattered plants in 7 fields in the east and southeast parts of Sask. out of 196 examined (H.W.M.). Take all was less prevalent than in 1945 on winter wheat about Guelph, Ont.; a few centres were observed in plots of Dawson's Golden Chaff (J.D. MacLachlan).

STRIPE RUST (Puccinia glumarum) was prevalent on Kharkov winter wheat in the Creston area, B.C., in early July (W.R. Foster). A moderate infection was recorded in a field of Jones Fife in the East Kootenay (M.F. Welsh).

STEM RUST (Puccinia graminis) did not appear until late in the season in Alta. and was still difficult to find in most fields, even of susceptible varieties, in late August. Infection was a trace in 18 fields, slight in 14 and moderate in 3 out of 103 examined (M.W.C.). Only a trace was recorded in 5 fields in the Kamsack area and one near Leader, Sask. Rust was common, however, on second growth and on late crops. A trace infection was observed on June 10 at the University of Sask., Saskatoon, but it is probable that it was the result of spread from nearby artificially inoculated plots (H.W.M.).

Initial infections of stem rust appeared in the field in Man. considerably later than normal. The first infections were observed as occasional pustules on barley at St. Norbert on July 18 and wheat was found infected at Morden on July 20. Stem rust was not observed on any of the stem-rust resistant varieties. However, a 15% infection developed on Marquis and Little Club at Morden and Brandon (B. Peterson). A slight infection was present in a block of Dawson's Golden Chaff (Elite) at O.A.C., Guelph, Ont. (J.D. MacLachlan). Stem rust infections of 25 to 50% were recorded on Garnet and traces to 25% on Huron at harvest time in plots at 6 places in P.E.I. (B. McLaren).

LEAF RUST (Puccinia triticina) was first seen at Edmonton, Alta., on July 18. By mid-August it was prevalent through central Alta. and quite severe in some fields at harvest. However, in southern Alta. leaf rust was only a trace to slight (M.W.C.). Leaf rust was very common in Sask. and was severe in many fields in the eastern half of the province (H.W.M.).

Leaf rust of wheat made its appearance in Man. a few days later than normal. The first infections were observed at Morden on June 23 and at Winnipeg on June 27. Owing to sub-normal rainfall during much of July, rust development was rather slow. However, by July 10 traces of leaf rust had appeared throughout the agricultural area south of the Riding Mountains. By July 18 the infection was quite general and averaged about 4%. Towards the end of July, a week or so before harvesting became general, infection

on Thatcher wheat averaged about 75% and that on Regent 55-60%. Leaf rust caused only light damage apparently due to the fact that grain crops had reached quite an advanced stage before infection became heavy. In controlled experiments at Winnipeg, naturally induced leaf rust infection reduced the yield of Thatcher by about 6%, and its bushel weight by about 0.75 lb. Leaf rust occurred on durum wheat throughout the province but only in trace amounts and caused no appreciable damage (B. Peturson).

Leaf rust was severe in a block of Dawson's Golden Chaff (Elite) at O.A.C., Guelph, Ont. (J.D. MacLachlan).

A trace of leaf rust was found on Coronation II at Aylesford, N.S. (J.F. Hickey) and a 65% infection in a field in Queens Co., P.E.I. (B. McLaren).

BROWNING ROOT ROT (*Pythium* spp.). Although soil moisture conditions were apparently favourable no browning root rot was found in 15 fields examined in east-central Alta. on June 10 (G.B. Sanford). Browning root rot was generally light and inconspicuous in Sask. when the annual survey was made in June. Some moderate patches were observed between White Fox and Meath Park, south of Prince Albert, south of Melfort, around Domremy and Hoey and south of Wilkie. Soil moisture was deficient and consequently crown-root development was delayed or inhibited; thus there was a lack of conspicuous lesioning on the roots (T.C. Vanterpool).

SPECKLED LEAF BLOTCH (*Septoria* spp.) was much less prevalent than usual in Alta. Infection was slight in 11 fields and moderate in 3 out of 103 examined (M.W.C.). A scattered light infection was observed in south-east Sask.; the disease was common and infection was slight to moderate in the northeast. Leaf injury was severe at Aylsham (H.W.M.). Neither *Septoria nodorum* nor *S. avenae* was found in Man., but the long-spored organism with spores similar to those of *S. avenae* was common on wheat as in several previous years. Infection, however, was much lighter than in 1945 and damage was probably negligible (T. Johnson). Additional records are contained in the survey of nursery material (q.v.).

SPECKLED LEAF BLOTCH (*Septoria Tritici*) slightly affected mostly the lower leaves of a block of Dawson's Golden Chaff at O.A.C., Guelph, Ont. (J.D. MacLachlan).

BUNT (*Tilletia caries* and *T. foetida*). In Table 1 are summarized the records of inspections of the Western Inspection Division at Winnipeg for the crop year 1945-46 and for the first quarter of 1946-47. (W. Popp).

Table 1. Wheat Bunt in Western Canada

Class of Wheat	Aug. 1, 1945 to July 31, 1946			Aug. 1 to Oct. 31, 1946		
	Cars Inspected	Cars Graded Smutty	Percentage Graded Smutty	Cars Inspected	Cars Graded Smutty	Percentage Graded Smutty
Hard Red Spring	164,405	418	0.25	57,731	228	0.38
Amber Durum	2,589	77	2.97	2,289	96	4.19
White Spring	51	1	1.96	53	0	0
Alberta Red Winter	1,106	19	1.72	1,043	68	6.52
Garnet	2,089	0	0	428	2	0.47
Mixed Wheat	109	2	1.83	27	2	7.41
All Classes	170,349	517	0.30	61,571	396	0.64

The figures for the whole grain year 1945-46 agree closely with those for the first quarter, Aug. 1 to Oct. 31, 1945. On the contrary the percentage of cars graded smutty Aug. 1 to Oct. 31, 1946, is over double the previous year. An increase occurred in the three main classes of wheat, particularly in Alberta Red Winter.

Bunt caused considerable loss in winter wheat in the Northern Okanagan district, B.C., from soil-borne infection. The varieties Redit and Hussar, which remained resistant for many years, are now affected. It is hoped the new resistant varieties Wasatch, a hard red winter variety, and Orfed, a soft white winter variety, developed in the United States may prove satisfactory (W.R. Foster). Bunt was reported on Canus at Munson and Oyen, Alta. (A.W. Henry). No bunt was observed in any of the 41 fields of winter wheat examined during early August in southern Alta. (G.B. Sanford). Infection was a trace in 7 fields, slight in 3 and heavy in 3 in Sask. Bunt appeared to be less prevalent in the southwest corner, where it is usually most commonly found in this province (R.C. Russell).

In 1946, the Line Elevators Farm Service examined 9,271 farmers' seed samples for surface-borne smuts as part of its advisory service to farmers. When the seed was found to carry more than a minimum load of spores, seed treatment was recommended. The results are summarized in Table 2, which was supplied by Dr. F.J. Greaney, Director.

Table 2. Prevalence of Surface-borne Smut in Samples of Wheat, Oats, and Barley Seed from the 1945 Crop in Western Canada.

(Line Elevators Farm Service, Winnipeg, Man.)

Crop and Province	Number of Seed Samples Examined	Percentage of Samples Carrying Smut No Smut (Clean)	Trace Only	More than Trace 1/
WHEAT				
Manitoba	191	48.2	45.5	6.3
Saskatchewan	4,853	51.6	39.0	9.4
Alberta	1,025	35.5	51.4	13.1
All Provinces	6,069	48.8	41.3	9.9
OATS				
Manitoba	26	-	61.5	38.5
Saskatchewan	1,066	9.2	46.6	44.2
Alberta	508	11.2	63.6	25.2
All Provinces	1,600	9.7	52.2	38.1
BARLEY				
Manitoba	95	-	33.7	66.3
Saskatchewan	793	4.0	31.2	64.8
Alberta	714	6.4	42.6	51.0
All Provinces	1,602	4.9	36.4	58.7

1/ Seed Treatment Recommended.

LOOSE SMUT (*Ustilago Tritici*). A trace was found in one field out of 103 examined in Alta. (M.W.C.); in 5 fields of common wheat out of 31 examined in Man.; in one field of durum wheat at Boissevain (W.L. Gordon); and in a block of Dawson's Golden Chaff at O.A.C., Guelph, Ont. (J.D. MacLachlan).

BACTERIAL BLACK CHAFF (*Xanthomonas translucens* ff. spp.) caused little damage in Man. in 1946. The most severe attack observed was at Vista, where 60% of the leaf area was destroyed in patches in a field of Thatcher (W.A.F. Hagborg).

BRITTLE DWARF. Observations on this disease of wheat in Sask. were summarized in P.D.S. 11:11. Since 1931 it has been reported from time to time. In 1946 affected plants of wheat and barley were observed scattered through the Laboratory plots, Saskatoon. Dr. A.P. Arnason, Dominion Entomological Laboratory, suggested that these plants had become affected by aphids from nearby badly infested plots of crested wheat grass. He also drew my attention to a similar trouble described on winter wheat (Parker, J.R. The western wheat aphid, Brachycolus tritici Gill. Jour. Econ. Ent. 9: 182-187. 1916). The outbreak there described was of considerable economic importance. Although the evidence suggests that the trouble is due to insect attack, the view was put forward during earlier observations that it might be caused by a virus. The serious nature of the outbreak on crested wheat grass, a widely grown forage crop in Western Canada, points to the necessity of both entomologists and plant pathologists studying its etiology (P.M. Simmonds).

FROST INJURY AT HEADING TIME. Frost occurred a few nights in July, particularly the nights of July 23 and 24 in districts east and northeast of Saskatoon, Sask. Temperatures around 28°F. for 2-3 hours were sufficiently low to form ice in shallow containers and to blacken potato crops. It is known that potatoes blacken if exposed to temperatures of 26°F. for one hour and presumably exposure to a slightly higher temperature for a longer time has the same effect. On the other hand, wheat in flower can withstand for short periods without noticeable injury temperatures lower than the critical temperature for potatoes. On July 27, a survey was undertaken with Mr. A. Blackstock, Supervisor of District Representatives for northeast Saskatchewan, to determine the extent of the injury. Frost injury to potatoes was watched for and where the damage appeared severe, cereal crops were examined closely. Enquiries were also made to facilitate location of damaged crops. In general, injury was sporadic in the area surveyed, although further to the north and west reports of severe damage were received. In most districts damage was confined to low areas. At Hendon, many of the heads were shrunk, bleached, or dull yellow in the low spots in a rolling field, whereas the wheat on the higher ground was uninjured. Injury had taken place in the early flowering stage. The yield was probably reduced 3-5%. Potato foliage was completely blackened. A field of oats believed injured was examined, but damage could not be established. At Nora severe damage to barley was seen: the heads were bleached almost white and were dry; the young kernels were distinctly discoloured, and much of the foliage of red-root pigweed and annual sow thistle was also frozen. Near Shipman, wheat was severely damaged; several acres on low land were killed. Wheat beyond the flowering stage was virtually uninjured and many barley fields nearing maturity escaped damage. Damage was estimated to be 15% in wheat and it was probably severe in some oat fields.

Severe reductions in yield and grade are usually the result of frost in August; damage was reported to have been heavy this year from frosts in late August in the northern districts (P.M. Simmonds).

OATS

ROOT ROT (Colletotrichum graminicola) caused a trace of damage in a field at Thorsby, Alta.; anthracnose on the above ground parts of the plants was not observed (M.W.C.).

COMMON ROOT ROT (Fusarium spp.). A trace of damage was found in 2 fields out of 41 examined in Alta. (M.W.C.). Infection was slight in 5 and moderate in 40 out of 46 fields sampled in Sask. (B.J. Sallans).

LEAF BLOTCH (Helminthosporium Avenae). Infection was slight in 20 fields and moderate in one out of 41 examined in Alta. (M.W.C.); slight on Alaska and moderate on Erban in seed blocks at O.A.C., Guelph, Ont. (J.D. MacLachlan). Infection was slight in 21 fields, moderate in 4 and severe in 1 out of 33 examined in July in the Montreal district, Que. In the Quebec Seed Board plots leaf blotch was usually a trace except at St. Prosper and Frampton. At the former place, infection was severe on Mabel, Beaver and Banner, and moderate on Ajax and two unnamed varieties (T. Simard). A slight infection was found at Stewiacke, N.S. (D. Creelman).

BLIGHT and ROOT ROT (Helminthosporium victoriae). A popular, illustrated account of this new blight and root rot of oats, as it occurs in Iowa, has been published by H.C. Murphy (That new oat disease. Iowa Farm Science 1(4): 3-5. Oct. 1946). The disease is destructive on varieties of oats carrying Victoria resistance to crown rust. The organism was named and described by Frances Meehan and H.C. Murphy in Science 104 (2705): 413-414. Nov. 1, 1946. The disease occurs in several other states including New York. Fruiting specimens were obtained through the kindness of Dr. John Niederhauser, Cornell University. The spores are more cylindrical than most graminicolous species of the Eu-Helminthosporium type, but germination is typically by a single polar germ tube at each end of the spore (I.L. Connors).

HALO BLIGHT (Pseudomonas coronafaciens). Infection was a trace in 2 fields in Alta., and trace to slight in the plots at Olds and Lethbridge (M.W.C.). A slight infection was recorded at Saskatoon, Sask. (R.C. Russell, W.A.F. Hagborg). A patchy infection, causing death of some plants, was reported on oats after summerfallow at Tisdale (T.C. Vanterpool). Halo blight was observed in 16 fields out of 18 examined in Man. The leaf area destroyed varied from a trace (8 fields) to 20% (2 fields); most of the fields were sown to varieties resistant to halo blight (W.A.F. Hagborg).

CROWN RUST (Puccinia coronata). A scattered light infection was observed in eastern Sask. (H.W.M.). In 1946, crown rust of oats was first observed in Man. in the Red River Valley on July 17. Although its development and spread were rather slow it was present in trace amounts throughout most of the agricultural area by the end of the first week in August. Generally this rust caused little or no damage, except in some very late fields where it attained an intensity of about 10% (B. Peturson). In seed blocks at O.A.C., Guelph, Ont., infection was slight to moderate on Alaska, trace to slight on Beaver and a trace on Erban (J.D. MacLachlan). In August, crown rust was slight in 4 fields, moderate in one and severe in one out of 7 examined in the Montreal district, Que. The source of infection in the severely infected field was a nearby buckthorn hedge (T. Simard). In some

places in the Quebec district, crown rust was very severe even on early varieties or on early-sown fields (D. Leblond). A 25% infection was recorded on Brighton in the plots, Queens Co., P.E.I. (B. McLaren).

STEM RUST (Puccinia graminis) did not develop until late in the season in Alta. and was very scarce. Infection was a trace in 6 fields and slight in 1 out of 41 examined. A heavy primary infection was found in the plots at Lacombe on Aug. 14 (M.W.C.). In Sask., infection was scattered and light on the main crop, but it was fairly abundant on late crops or ones with second growth (H.W.M.). The first occasional pustules of stem rust of oats in 1946 were observed on July 17, in the central part of the Red River Valley, Man. From that date rust increased gradually and by the beginning of August, about a week before the main oat crop ripened, infection had spread throughout the province and generally averaged from 1 to 10%. Early-sown oats apparently ripened before the rust increased appreciably and were reduced only slightly or not at all in yield. A small percentage of the oat crop ripened late and became quite heavily rusted. Some fields carried average infections in excess of 30% and suffered appreciable losses due to rust attack. The races that attack the new varieties Vanguard, Exeter, and Ajax, were very prevalent and late stands of these varieties suffered yield reductions (B. Peterson). A slight infection was found in an Alaska seed block, O.A.C., Guelph, Ont. (J.D. MacLachlan). A slight infection was present in 2 fields out of 7 examined in the Montreal district, Que. A few barberry bushes were seen at Vankleek Hill, Ont. and near Carillon, Que. Hundreds of bushes were found growing in pasture land in the Frelighsburg district; spread of rust from the bushes to nearby cereals was not established (T. Simard). Stem rust infection was severe on Mabel and Banner and moderate on Beaver and Ajax in the Q.S.B. plots at St. Prosper; generally it was a trace or absent (T. Simard). In the Quebec district, infection was late, but quite severe, on some late varieties or late-sown grain (D. Leblond).

A field of Ajax oats growing adjacent to barberry bushes was severely rusted at Upper Woodstock, N.B. Elsewhere the rust was nil (S.F. Clarkson). A 50% infection was recorded on Erban in plots at New Perth, P.E.I. (B. McLaren).

SPECKLED LEAF BLOTCH (Septoria Avenae). A trace was found in 3 fields in Alta. (M.W.C.). In July infection was moderate in 3 fields and slight in 13 out of 33 examined in the Montreal district, Que. (T. Simard). In the Q.S.B. plots infection was usually a trace, but slight to moderate infections were present in some, notably at East Broughton. In the Quebec area, infection was slight and appeared before leaf blotch (D. Leblond).

SMUTS (Loose Smut, Ustilago Avenae, and Covered Smut, U. Kollerii). Covered smut was found occasionally on Vanguard and Victory at Prince George and Houston, B.C. (G.E. Woollians). Smut was a trace in 4 fields and slight in 2 out of 41 examined in Alta. (M.W.C.). Smut was recorded in 14 fields out of 54 examined in Sask. with an average infection of 1%. Fewer fields were infected than in 1945. Most of the smut appeared to be covered smut (R.C. Russell). A trace of smut was

recorded in 2 fields and an 8% infection in one out of 10 examined in Man. (W.L. Gordon). Smut was found in 2 fields out of 33 examined in July in the Montreal district, Que. (T. Simard). It was general but light in the Quebec area (D. Leblond).

BLAST (non-parasitic) was reported as follows: trace in 12 fields, 5% in 21, 10% in 3, and 20% in one out of 41 examined in Alta.; trace to slight in plots at Olds and Lethbridge (M.W.C.); present in most fields, causing slight damage in Sask. (H.W.M.); slight in 4 fields and moderate in one out of 33 examined in July in the Montreal district, Que. (T. Simard); trace to heavy in the Q.S.B. plots through Que. (D. Leblond).

BARLEY

ERGOT (Claviceps purpurea) was noted as follows: trace in Titan at Lacombe, Lethbridge, and Pincher Creek, Alta. (M.W.C.); light infection at Saskatoon, Sask.; affected heads received from Moosomin (H.W.M.); reported to be on the increase on smooth-awn barleys in Ont. (J.E. Howitt); a trace in 2 fields in the Montreal district, Que., and on two selections at the L'Assomption Station (T. Simard).

POWDERY MILDEW (Erysiphe graminis) was recorded in seed blocks at O.A.C., Guelph, Ont. as follows: moderate on Wong, moderate to severe on Galore, severe on Barboff and very severe on O.A.C. 21 (J.D. MacLachlan). Infection was severe in one field in the Montreal district, Que. In the Q.S.B. plots, appreciable amounts of mildew were recorded at St. Hyacinthe and Wotton; infection was moderate to severe on O.A.C. 21, and moderate on Montcalm, M.C. 8129, M.C. 8229 and Byng (T. Simard, D. Leblond).

SPOT BLOTCH (Helminthosporium sativum) infections were recorded as follows: moderate in a field at Canal Flats, B.C. (M.F. Welsh); moderate on Wong, Barboff, and Galore in seed blocks at O.A.C., Guelph, Ont. (J.D. MacLachlan); traces on some varieties in the Q.S.B. plots in Que. (D. Leblond). Slight infection in the odd field in the Montreal district (T. Simard).

COMMON ROOT ROT (Helminthosporium sativum and Fusarium spp.). Damage was a trace in 4 fields and slight in 3 out of 33 examined in Alta. (M.W.C.). Of 37 fields examined in Sask., 1 was slightly, 29 moderately and 7 severely affected. The disease ratings for barley were 27% higher than those for wheat (B.J. Sallans).

HEAD BLIGHT (Fusarium spp. and Helminthosporium sativum). A slight infection was recorded in several fields in the Montreal district, Que. (T. Simard).

NET BLOTCH (Helminthosporium teres). A slight infection was recorded in 5 fields out of 33 examined in Alta. (M.W.C.). Infection was a trace in 4 fields, slight in 8 and severe in 1 out of 37 examined in Sask. (H.W.M.). Net blotch was recorded in 4 fields in Man.; infection was severe in 2 fields in mid-August, but it was a trace to slight in the other 2 in mid-July (W.L. Gordon). Traces of net blotch were present in the Q.S.B. plots in Que.; a slight infection was also noted in 8 fields out of 13 examined in the Montreal district in July (T. Simard).

STRIPE RUST (Puccinia glumarum) moderately affected a field at Canal Flats, near Windermere, B.C. (M.F. Welsh).

STEM RUST (Puccinia graminis). A trace was found late in the season in 2 fields in Alta. (M.W.C.). A very light infection was recorded in 6 fields out of 37 examined in Sask. (H.W.M.). Stem rust infections developed slowly on barley varieties, and shortly before harvest infections, although general throughout southern Man., were present only in trace amounts (B. Peterson). Slight to moderate infections were present in a few fields in the Montreal district, Que.; the same was true in the Q.S.B. plots at L'Assomption, but elsewhere infection was nil or a trace (T. Simard, D. Leblond).

LEAF RUST (Puccinia Hordei Otth). According to John A. Stevenson and Aaron G. Johnson (U.S.D.A. Pl. Dis. Reporter 30(10): 372. 1946) the barley leaf rust pathogen should be called Puccinia Hordei Otth. 1871, of which P. anomala Rostr. 1878 and P. simplex (Koern.) Erikss. & Henn. 1894 are synonyms. P. Hordei Fuckel was published in 1873, not in 1860 as given by Arthur (Manual) and others. Thus, P. Hordei is not a later homonym of Fuckel's binomial. Although Eriksson and Henning were the first to recognize the specific identity of the barley leaf rust fungus, the name they selected is a later homonym of P. simplex Peck, and therefore unavailable under the present Rules (I.L. Connors).

A very light infection was seen in one field in Sask. (H.W.M.). From observations made on barley varieties from the rust nurseries, it was concluded that leaf rust occurred only in trace to light amounts during 1946 in Canada (W.J. Cherewick). Infection was moderate to severe on Wong in a seed block at O.A.C., Guelph, Ont. (J.D. MacLachlan). A slight infection was recorded in one field in the Montreal district, Que.; infection was slight to moderate on Velvet in Q.S.B. plots at L'Assomption with traces elsewhere in Que. (T. Simard and D. Leblond).

SCALD (Rhynchosporium Secalis). Infection was a trace in 2 fields, slight in 5, moderate in 2 and severe in 2 out of 35 examined in Alta.; infection ranged from slight to severe in the plots at Lacombe (M.W.C.).

SPECKLED LEAF BLOTCH (Septoria Passerinii). Infection was slight in 3 fields out of 33 examined in Alta. (M.W.C.). The disease was widely distributed in Man. in 1946, heavy infections occurring in several localities (T. Johnson). Speckled leaf blotch was most noticeable in the Q.S.B. plots at Normandin and Frampton, Que., where infection was slight on some varieties (D. Leblond). A trace was found in 1 field in the Montreal district (T. Simard).

COVERED SMUT (Ustilago Hordei). Infection was a trace in 3 fields and slight in 2 out of 33 examined in Alta. In the plots at Lacombe, it was slight on Newal and absent or a trace on the other varieties (M.W.C.). Covered smut was recorded in 9 fields out of 42 examined in Sask., apparently indicating an increased infection over 1945 (R.C. Russell).

Loose or covered smut was recorded in 14 out of 19 fields examined in Man.: trace in 10, slight in 3 and severe in 1 (10.5% infection) (W.L. Gordon).

LOOSE SMUT (Ustilago nuda or U. nigra). Infection was a trace to severe in fields visited at Prince George, Smithers, Houston, Vanderhoof and Fort Fraser, B.C. (G.E. Woolliams). Infection was a trace in 6 fields, slight in 3 and severe in 3, on Newall, out of 33 examined in Alta. It varied from a trace to moderate in the plots at Lacombe (M.W.C.). Loose smut was recorded in 6 fields out of 42 in Sask.; the disease was less prevalent than in 1945 (R.C. Russell). A slight infection was present in 3 fields out of 4 examined in the Montreal district, Que. (T. Simard). Loose smut was observed on many farms in P.E.I.; in one field near Charlottetown, 15% of the heads were affected (R.R. Hurst).

BACTERIAL BLIGHT (Xanthomonas translucens f.sp.) slightly affected one field at Wolsely, Sask. (H.W.M.). All 13 fields examined in Man. were uninfected (W.A.F. Hagborg).

RYE

ERGOT (Claviceps purpurea) slightly affected rye in the University plots, Saskatoon, Sask. A trace to slight infection occurred in most fields inspected in Sask.; it was most prevalent near the edges of the fields (H.W.M.). It was observed in a field at York, P.E.I. (R. Bagnall).

POWDERY MILDEW (Erysiphe graminis). A slight infection was seen on a heavy crop of fall rye at Bowsman out of 3 fields inspected in Man. (W.L. Gordon).

STEM RUST (Puccinia graminis) was not observed in Man. in 1946 on rye, but evidence was obtained from field collections of stem rust on barley that traces of the Secalis variety occurred on barley in a few localities (B. Peturson).

LEAF RUST (Puccinia secalina). A 2% infection was observed in one field in southern Man. (B. Peturson) and a trace at Starrs Point, N.S. (J.F. Hockey).

BACTERIAL BLIGHT (Xanthomonas translucens ff.spp.) affected 2 out of 4 fields examined in Man.; 15% of the leaf area was destroyed in a field at Coulter (W.A.F. Hagborg).

SURVEY OF NURSERY MATERIAL FOR PLANT DISEASES IN 1946

T. Johnson, B. Peturson and W.J. Cherewick

In Table 3 are summarized the results of examinations of material from 30 uniform rust nurseries across Canada in 1946. The examinations were made at the Winnipeg Laboratory by the writers, who wish to express their gratitude to their co-operators at the various Experimental Farms and Stations.

12.

Twelve varieties of wheat, 9 of oats, and 3 of barley were grown in the nurseries. The varieties were as follows: Wheat - Apex, McMurachy, Regent, Carleton, Little Club, Marquis, Spelmar, Thatcher, Vernal, Norka, Regent x Canus, Warden x Hybrid; oats - Bond, Erban, Trispermia, Ajax, Vanguard, White Russian, S-811, Victory x R.L. 1272, Clinton; barley - Goldfoil, Heil's Hanna, Plush. Varieties grown commercially in Canada are underlined.

Rust damage, in most places in Canada, was light in 1946. In the main rust area, Man. and eastern Sask., initial infections developed later than usual and spread of rust was slow owing to dry weather in the first part of July. In this area stem rust of wheat produced only light infections on susceptible wheat and barley varieties and was not found on rust-resistant wheats. Leaf rust of wheat spread rapidly towards the end of July and in early August Thatcher bore about 75% infection and Regent 50% or more. Damage was, however, light because the crop was approaching maturity before infection became heavy. Oat stem rust developed rather rapidly in early August and some of the late-sown oats in Man. became heavily rusted. Crown rust infection in Man. was light and occurred only in trace quantities in eastern Sask. A very light infection of dwarf leaf rust of barley occurred in the Red River Valley.

Outside the Prairie Provinces the only cereal rust that produced a generally severe infection was leaf rust of wheat. This rust developed a heavy or moderately heavy infection on susceptible varieties in all but four of the rust nurseries, the exceptions being Smithers, B.C., and Beaverlodge, Alta., where no rust was observed, and Kentville, N.S., and Charlottetown, P.E.I., where infection was light. The stem-rust resistant wheats Regent and Rodman (Regent x Canus) showed little or no resistance to leaf rust in the Prairie Provinces and northern Ont. but displayed a good deal of leaf-rust resistance at most stations outside of this region.

Local outbreaks of stem rust of wheat and oats occurred in Eastern Canada. Some of these were possibly heavier than is indicated as, for the most part, the plants were harvested before maturity. Some outbreaks of oat stem rust were definitely traceable to barberry.

Fungi other than rusts probably caused little damage to cereals except possibly in isolated instances, as at certain points in Ontario where powdery mildew of wheat and barley was abundant.

Readings for each disease were made on all varieties and separate tables were prepared for the intensity of infection of the rusts and powdery mildew. These tables were included in the original report as issued by us, but are omitted in this summary. In Table 3 the severity of each disease on the more susceptible varieties is shown.

It should be stated, in conclusion, that the record of diseases of fungal origin is by no means complete. Other diseases, such as net blotch of barley and leaf blotch of oats, occurred in certain localities but were not recorded owing to lack of time.

Table 3. Incidence of certain pathogenic fungi on wheat, oats, and barley grown at 30 localities in Canada in 1946

Locality	Wheat						Oats				Barley			
	P. gr. Triticum	P. triticina	E. graminis	S. nodorum	S. Avenae f.	S. Triticum	P. gr. Avenae	P. coronata	E. graminis	S. Avenae	P. graminis	P. Hordei	E. graminis	S. Passerinii
Saanichton, B.C.	0	4	0	0	0	0	2	0	0	0	0	1	0	0
Smithers, B.C.	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Agassiz, B.C.	0	4	3	0	0	0	2	0	1	0	0	3	3	0
Creston, B.C.	2	4	0	0	0	0	0	0	0	0	3	1	0	0
Beaverlodge, Alta.	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Edmonton, Alta.	0	3	2	0	1	0	0	0	0	0	0	0	0	0
Lacombe, Alta.	2	4	0	0	0	0	1	0	0	0	1	0	0	0
Scott, Sask.	0	3	0	1	1	0	1	0	0	0	0	0	0	0
Melfort, Sask.	1	4	0	0	0	0	0	0	0	0	0	0	0	0
Indian Head, Sask.	3	4	0	0	2	0	3	0	0	0	1	0	0	0
Brandon, Man.	2	4	0	0	2	0	2	2	0	0	2	0	0	3
Winnipeg, Man.	3	4	0	0	2	0	2	1	0	0	3	3	0	2
Morden, Man.	2	4	0	0	2	0	2	1	0	0	1	1	0	2
Fort William, Ont.	1	4	0	0	2	0	3	0	0	1	1	0	0	0
Kapuskasing, Ont.	2	4	0	0	1	0	3	2	0	2	1	0	2	0
St. Catharines, Ont.	2	4	2	0	0	0	2	1	0	0	0	0	1	0
Guelph, Ont.	3	4	2	0	0	1	2	1	0	0	2	1	4	-
Kemptville, Ont.	3	4	1	0	1	0	2	4	0	1	3	0	3	0
Ottawa, Ont.	3	4	2	0	3	0	2	3	0	1	1	1	3	0
Manotick, Ont.	2	4	1	0	0	0	-	-	-	-	1	0	1	0
Macdonald College, Que.	2	4	1	0	2	0	1	1	0	1	1	1	1	0
Lennoxville, Que.	2	4	0	0	3	0	3	2	0	1	1	2	1	0
Ste. Anne de la Pocatiere, Que.	3	4	0	0	1	0	2	1	0	0	1	0	0	0
Normandin, Que.	2	4	1	3	1	0	2	1	0	3	1	0	0	0
L'Assomption, Que.	3	4	2	0	1	0	2	1	0	0	2	0	1	0
Fredericton, N.B.	1	3	0	1	0	0	4	4	0	0	3	0	0	0
Kentville, N.S.	0	2	0	3	0	0	2	1	0	1	0	0	0	0
Pictou, N.S.	3	4	1	0	1	0	3	4	0	0	1	2	1	0
Lower South River, N.S.	2	4	1	0	0	0	3	3	0	0	0	0	1	0
Charlottetown, P.E.I.	0	1	0	0	1	0	2	0	0	0	1	0	0	0

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