I. DISEASES OF CEREAL CROPS

WHEAT

EYE SPOT (Cerosporella herpotrichoides). Occasional extensive patches of lodging which in a few instances were of serious concern to the grower occurred near Alliston, Ont. (R. J. Baylis).

MOLD (Cladosporium sp.). A sample of Selkirk wheat straw from Sask. exhibited a superficial saprophytic mold in the stem cavity (P. M. Simmonds, D. B. O. Savile).

ERGOT (Claviceps purpurea) See Ergot Survey.

POWDERY MILDEW (Erysiphe graminis). In 182 fields examined in s. Alta. there were 2-tr. 9-sl. 2-mod. infections (J. S. Horricks) in addition to one report from Stoney Plain, Alta. (A. W. Henry). A mod. infection caused sl. damage in varietal test plots at Ste. Anne de la Pocatiere, Que. (R. O. Lachance).

HEAD BLIGHT (Fusarium spp.). Fusarium poae was isolated from heads of wheat from a field showing tr. infection at Macdonald, Man. (W. L. Gordon). Up to 5% of heads in 3 fields near Chatham, Ont. were affected; av. infection for Kent Co., Ont. was somewhat less than 1%. Fusarium sp. was found on dead leaves of sev. damaged winter wheat at Stayner, Ont. (S. J. Fushtey).

SPOT BLOTCH (Helminthosporium sorokinianum). Sl. infection occurred in 1/182 fields in Alta. (J. S. H.).

COMMON ROOT ROT (H. sorokinianum and Fusarium spp.) was found in 167/182 fields in s. Alta; infection was 117-tr. 46-sl. 4-mod. (J. S. H.). It was general in central and n. Alta. with infections of 106-tr. 96-sl. 9-mod. in 256 fields examined (W. P. Campbell). For Sask. crop districts 1 to 9, the disease ratings and Sept. yield estimates (in brackets) were 8.5 (23.7) 9.4 (22.5) 9.4 (22.2) 10.0 (21.7) 7.5 (26.1) 10.6 (22.5) 8.1 (23.7) 7.7 (24.4) and 9.7 (22.1 bu. / ac. Growing conditions favored large yields of grain in 1956 and near av. levels of root rot infection. The net loss from root rot is considered to be very low because growing conditions favored recovery from the initial stunting effects of the disease. The av. disease rating from 167 fields was 9.1 (B. J. Sallans). Also reported from Palmer, Sask. on seedlings (T. C. Vanterpool). Root rot caused shrunken heads of Lee in one area of a field at Sperling, Man. (J. E. Machacek). H. sorokinianum and F. equiseti were isolated from the basal parts of occasional plants that showed white heads in a field at Portage la Prairie, Man. (W. L. Gordon).

TAKE-ALL (Ophiobolus graminis). In s. Alta. examination revealed 4-sl. 2 mod. infections /182 fields (J. S. H.). In n. and central Alta. infections were 34-tr. 15-sl. 8-mod. 7-sev./256 fields. It was very serious in some fields in the Fort Vermilion area and the black soil zone (W. P. C.). It occurred in patches in a field at Spruce Valley, was quite prevalent in 4-H club plots at Deadwood and Berwyn, and was noted from Spruce Grove (A. W. Henry). Ratings for Sask. were 8-tr. 4-sl. 4-mod. 1-sev./167 fields. It occurred in all crop districts but most frequently in districts 5, 7 and 8. (B. J. Sallans). Take-all together with hessian fly and some eye spot caused lodging of extensive patches in fields of winter wheat nr. Alliston, Ont. (R. J. Baylis).

STEM RUST (Puccinia graminis). A tr. infection was reported on Ridit wheat from University plots at Vancouver, B. C. (H. N. W. Toms). Three fields of Lemhi wheat grown on irrigated land were sev. diseased. Ratings for the remaining 44/192 fields surveyed in s. Alta. were 35-tr. 6-sl. 3-mod. (J. S. H.). In central and n. Alta. infections were 19-tr. 19-sl. 5-mod. 6-sev./256 fields. The disease was centered in the Drumheller-Stettler area. It occurred predominantly on the variety Red Bobs and caused mod.-sev. damage; some late fields were not worth harvesting (W. P. C.). Av. damage was sl. in Sask. with ratings of: 73-tr. 32-sl. 11-mod. 1-sev. for 117/214 fields. The first collection was made 12 July on durum wheat. It was found as far w. as Sceptre and n. w. as far as Meota (H. W. Mead). Sev. in one field at Notre Dame du Lac, Que. and mod. in variety test plots in Que. (D. Leblond). A field of Marquis wheat showed mod.-sev. infection and a plot of Huron wheat showed tr. at Riviere Ouelle (R. O. Lachance). See Cereal Rusts in Canada in 1956.

LEAF RUST (Puccinia triticina). Infections in 182 fields examined in s. Alta. were 35-tr. 19-sl. 7-mod. 1-sev. (J. S. H.). In central Alta. ratings were 20-tr. 38-sl. 32-mod. 21-sev./256 fields. The mod. and sev. infections would reduce both yield and quality (W. P. C.). 123/214 fields in Sask. were diseased with the following ratings: 48-tr. 54-sl. 11-mod. 10-sev. and on the av. caused sl. damage. First collection was at Landis on 19 July. The distribution was much the same as for stem rust (H. W. M.). In a survey of 52 fields in Simcoe Co. Ont. most fields were mod. to sev. rusted (R. J. Baylis). Tr. infection was found on Huron and Acadia and sl. infection on Cascade Couley at Ste. Anne de la Pocatiere, Que. (R. O. Lachance). Redman and Marquis wheat in plots had 1% infection that caused sl. damage at Normandin (H. Genereux). It was reported sev. in all variety test plots in Que. (D. Leblond).

BROWNING ROOT ROT (Pythium spp.). Brown areas in wheat fields around Saskatoon, Sask. resembled those affected by browning root rot but the injury was attributed to dry weather in May and a decrease in the use of phosphate fertilizer. Samples exhibited little or no root lesioning or contained few oospores (T. C. Vanterpool).

SEEDLING BLIGHT (Rhizoctonia solani and Pythium arrhenomanes). In Sask. heavy damage was caused in greenhouse experiments to wheat grown in pots. The isolate of R. solani is the most virulent that I have attacking wheat (T. C. Vanterpool).

GLUME BLOTCH (Septoria nodorum). In s. Alta. ratings were 2-tr. 1-sl./182 fields (J. S. H.). In central and n. Alta. 64/256 fields were rated 41-tr. 19-sl. 4-mod. (W. P. C.). Sl. damage was caused by infections in 29/214 fields examined and rated as follows: 5-tr. 22-sl. 2-mod. (H. W. M.). On 10 July about 25% of the lower leaf area of Lee wheat at La Salle, Man. was lesioned. Pycnidia were abundant in the older lesions and spores of the S. nodorum type were present in leaf washings (W. A. F. Hagborg). Glume blotch was common on winter wheat in several fields at Guelph, Ont. Infection was sl. to mod. (S. J. Fushtey).

SPECKLED LEAF BLOTCH (Septoria spp.) Infection was 36-tr. 128-sl. 38-mod. 4-sev. in 206/256 fields in central and n. Alta. (W. P. C.). In s. Alta. ratings were 57-tr. 89-sl. 11-mod. 1-sev./182 fields. Several durum and winter wheat varieties were sev. diseased in Lethbridge plots (J. S. H.). Mod. to sev. leaf spot was found on young plants in 1 field in the spring and sl. to mod. infections were found in several fields near Guelph, Ont. (S. J. Fushtey). Tr. infection was found on several varieties at Ste. Anne de la Pocatiere, Que. (R. O. Lachance). Infection caused by Septoria spp. on leaves and sheaths of wheat was generally present throughout Man. A study of samples sent in from Sask. and Alta. indicated that these diseases were widespread in these provinces also. Infection was generally light and yield losses resulting from leaf destruction were probably insignificant. Three species of Septoria were present: S. avenae f. sp. triticea and S. nodorum, which were separated on spore size and shape and by pathogenicity tests on Little Club wheat, and S. tritici. In the samples examined the frequency of occurrence of the species in the order given was 38, 19, 5 for Man., 1, 3 and 0 for Sask. and 3, 2 and 1 for Alta. The finding of S. tritici in 5 wheat samples from Man. was unexpected because this species has in past years been found almost exclusively in areas where winter wheat is grown (T. Johnson).

COMMON BUNT (Tilletia caries and T. foetida). Results of the wheat bunt survey (Table 3), based on cars of wheat graded smutty in Western Canada, indicate a low incidence of the disease in Hard Red Spring and Amber Durum grades. Bunt has declined progressively in Alta. Red Winter Wheat over the last three years. Bunt was not found in the 90 fields examined in Man. (W. Popp). One field of Red Bobs was sev. infected by T. foetida at Whiskey Gap, Alta./182 examined (J. S. H.). A tr. occurred in 1/214 fields examined in Sask. (R. C. Russell). Found in only 2 fields of 600 acres surveyed in the Ottawa Valley, Ont. One field of Dawson's Golden Chaff grown from untreated seed had 5% of the heads bunted. Common bunt was detected in tr. amounts in 3/52 fields examined in Simcoe Co. (R. J. Baylis). Two fields had 0.1% infection and 1 had 2% infection near Barrie, Ont. (S. J. Fushtey).

Table 3. Common Bunt in Wheat in Western Canada

Class of Wheat	Aug. 1, 1955 to July 31, 1956			Aug. 1, 1956 to Oct. 31, 1956		
	Cars Inspected	Cars Graded Smutty	% Graded Smutty	Cars Inspected	Cars Graded Smutty	% Graded Smutty
Hard Red Spring	180,007	186	0.10	51,140	51	0.10
Amber Durum	8,116	2	0.02	2,829	1	0.04
White Spring	95	0	0.00	53	0	0.00
Alta. Red Winter	1,144	11	0.96	775	4	0.52
Garnet	1,073	0	0.00	135	0	0.00
Mixed Wheat	102	0	0.00	22	1	4.54
All classes	190,537	199	0.10	54,954	57	0.10

DWARF BUNT (Tilletia contraversa). Tr. amounts of what appeared to be dwarf bunt in 2 fields of Karkov wheat; one nr. Lethbridge and the other nr. Cardston, Alta. However, when spores of these samples were germinated they behaved like those of common bunt (M. W. Cormack, R. J. Baylis). One field near Stayner, Ont. had 0.5% infection (S. J. Fushtey). Tr. infections were found in 20% of 52 fields totaling 1500 acres inspected in Simcoe Co. The most sev. infection was 1%, observed nr. Stayner within 1 mi. of the extremely heavy infection reported last year. No dwarf bunt was found in 600 acres surveyed in the Ottawa Valley (R. J. Baylis). Six/12 Ontario samples were found to contain spores of T. contraversa. The samples were from Ailsa Craig, Middlesex Co., Zurich, Huron Co.; Kincardine, Bruce Co.; Tilbury and Chatham, Kent Co.; and Alma, Wellington Co. (R. E. Wight).

LOOSE SMUT (Ustilago tritici). Tr. infection was found in 5/182 fields examined in s. Alta. (J. S. H.). One field had a 1-2% infection and 8 fields carried a tr. in 214 examined in Sask. (R. C. Russell). In Man. 22/90 fields were affected. The amount of smut ranged from 0-10% and compared with the 1955 av. of 1.2%, there was a sl. decrease in the amount of loose smut, apparently as a result of fewer fields of Lee wheat, a very susceptible variety (W. Popp). Loose smut was found in 17/52 fields examined in Simcoe Co., Ont., and in tr. amounts not exceeding 1%, in all fields examined (600 acres) in the Ottawa Valley (R. J. Baylis) One field of Huron wheat had 3% infection at Ste. Anne de la Pocatiere, Que. (R. O. Lachance).

BLACK POINT (various fungi). Only 2 lots of durum wheat from Foremost, Alta. were affected (J. S. H.).

BASAL GLUME ROT (Pseudomonas atrofaciens). Tr. infection was found in 1 field in central Alta./256 examined (W. P. C.). Tr. infections were found in 1 field at Shipman (n. -central Sask.) and in 1 field at Yorkton (e. -central Sask.)/22 examined (H. W. Mead).

BLACK CHAFF. A bacterial striping of the culm that resembles black chaff occurred at Spruce Grove and Edmonton, Alta. (A. W. Henry).

STREAK MOSAIC (virus) caused sl. infection in winter wheat plots at Lethbridge, Alta. Most stands of winter wheat that might have harbored the mite vector and virus suffered sev. winter injury (J. S. H.)

HEAD DISCOLORATION (physiological). This abnormality was found in 3 fields of Rescue wheat: 1-tr. 1-sl. 1-mod./182 fields examined in Alta. (J. S. H.). Several bronzed heads of Chinook wheat were sent in from Kindersly, Elbon, and Richlea, Sask. during Sept. (T. C. Vanterpool).

HEAT CANKER and CHLOROTIC BANDING (high temperature). Reported from Lumsden, Browning, Prince Albert, Rosthern and N. Battleford, Sask. Recovery was usually high. If the high temperature coincides with the day of emergence of deep-seeded grain there may be considerable damage. Over half the plants in one field of deep-sown Rescue were killed by high temperature (T. C. V.). About 40% of the primary leaves of a field at Culross, Man. were either cut off by necrosis or bore a chlorotic band across the leaf. Evidently the damage had occurred at the soil line during the high temperatures of 9-11 June (W. A. F. Hagborg).

MELANISM (physiological) of the peduncles occurred almost entirely in lodged portions of 2 heavily fertilized fields of Selkirk wheat; 1 at Rosser and 1 at Winnipeg, Man. Isolations yielded a mixed flora of saprophytic fungi and bacteria. Yield reduction was small and insignificant based on the weight of grain from 100 heads (W. A. F. Hagborg). A specimen sent in from Brandon, Man. yielded H. sorokinianum from discolored nodes (W. L. Gordon).

FROST INJURY Samples showing longitudinal cracking of the kernel cheek were collected Aug. 19, Sept. 5-7 (T. C. Vanterpool).

LEAF SPOT (cause unknown). Leaf spot was found in 18/182 fields at the following rates: 5-tr. 6-sl. 7-mod. (J. S. H.).

OATS

ERGOT (Claviceps purpurea) was reported on New Garry oats from Durham Co. Ont. (S. J. Fushtey). See also Ergot Survey.

POWDERY MILDEW (Erysiphe graminis). A tr. infection causing negligible damage was reported in 3/3 fields near Berwick, Kings Co., N.S. (D. W. Creelman).

COMMON ROOT ROT (Fusarium spp.). Infection was 5-tr. 2-sl. in 7/212 fields in n. Alta. (W. P. C.). In s. Alta. ratings were 3 tr-/23 fields (J. S. H.). Root rot caused by F. culmorum was found in a low area along the margin of a field at Fortier, Man. F. equiseti was also isolated (W. L. Gordon).

LEAF BLOTCH (Helminthosporium avenae). In the 23 fields examined infection was 5-tr. 6-sl. in s. Alta. (J. S. H.). It was also prevalent in 1 field at Royal Park, Alta. (A. W. Henry). Mod. infection was observed in fields which would be harvested late at Riviere Ouelle, Que. (R. O. Lachance). The disease was prevalent in the E. Townships and sl. in variety test plots in Que. (D. Leblond).

CROWN RUST (Puccinia coronata). A tr. infection in 4 fields in e. central Saskatchewan out of 22 fields examined (H. W. M.). Present in tr. amounts in Quebec test plots; most prevalent at Ste. Victoire and Ste. Anne de la Pocatiere. Abegweit was the most susceptible variety (D. Leblond). Slight damage was caused by tr. infections in Annapolis, Kings and Lunenburg Counties, N.S. (D. W. Creelman). Tr. to sev. infection caused sl. -sev. damage in 10 fields examined in Queens and Kings Counties, P. E. I. (R. R. Hurst).

STEM RUST (Puccinia graminis). Infections were 18-tr. 6-sl. in central Alta. /212 fields examined in n. and central Alta. (W. P. C.) In s. Alta. 1-tr. /23 fields examined (J. S. H.). In Sask. infections were 8-tr. 6-sl. 1-sev. in 15/22 fields and caused sl. damage (H. W. M.). On the average, present in Que. in tr. amounts in test plots. Sev. infection noted at St. Simion and mod. -sev. at Ste. Victoire, mod. at Maskinonge and Notre Dame du Bon Conseil. Shefford was the most susceptible variety (D. Leblond). One field had 10% infection which caused sl. damage at Bridgetown, N.S. (D. W. Creelman). Sl. infection was general in P. E. I. except on late-sown oats which were mod. -sev. infected (R. R. Hurst).

SPECKLED LEAF BLOTCH (Septoria avenae). Infection was 6-tr. 8-sl. in 14/212 fields in Alta. (W. P. C.). Slight damage was caused in 5/30 fields in Sask. (H. W. M.). Several varieties in Ste. Anne de la Pocatiere, Que. carried sl. -mod. infection; the disease was general throughout e. Que. (R. O. Lachance).

Generally mod. infection in test plots. Abegweit and New Garry had less infection but the difference in susceptibility between varieties was slight. Infection was lower in the E. Townships (sl.) and higher in the Gaspe (sev. at St. Charles de Caplan) (D. Leblond). Infection was general and ranged from 20 to 75% in individual fields in Kings Co., N.S. Helminthosporium avenae was not specifically noted but conceivably was present too (D.W. Creelman). Speckled leaf blotch was particularly prevalent about Ottawa, Ont., and Fredericton, N.B., and caused a great deal of damage to the oat crop. The disease was less sev. at Guelph, Ont., Caplan, Que., and Nappan, N.S., and least sev. at Harrow, Ont., Ste. Anne de Bellevue and Ste. Anne de la Pocatiere, Que., and Charlottetown, P.E.I. (R.V. Clark).

LOOSE SMUT (Ustilago avenae). One field sl. infected out of 23 examined in s. Alta. (J.S.H.). Quite rare in Sask.; only 1/30 fields infected and this caused negligible damage (R.C. Russell). 4/94 fields had tr. amounts in Man. (W. Popp). Affected 4-5% of plants in 1/2 acre field in Que. (L. Cinq-Mars). One field in Kings Co., N.S. had 5% infection (D.W. Creelman). Tr. amounts present in 10 fields in Prince and Queens Counties, P.E.I. (R.R. Hurst).

COVERED SMUT (Ustilago kolleri). Infections in Alta. ranged from tr. to 24% in 28/212 fields; av. infection, 0.7% (W.P.C.). In Sask. infection ranged from tr. to 4% in 10/30 fields and caused 1% damage in the affected fields (R.C. Russell). 14/94 fields examined in Man. had up to 5% smutted heads, av. 0.2% (W. Popp). Only Shefford oats were smutted in the test plots along the Lower St. Lawrence and in the Gaspé, Que. (D. Leblond).

HALO BLIGHT (Pseudomonas coronafaciens). In n. and central Alta. the infections were 85-tr. 79-sl. 16-mod. 2-sev. for 182/212 fields (W.P.C.). Ratings of 2-tr. 2-sl. for 4/23 s. Alta. fields were also reported (J.S.H.). Infection was tr. on 10% of primary leaves in 1/10 fields examined in Man. The low-disease rating probably was related to the high temperature in June (W.A.F. Hagborg).

BLAST (non-parasitic) occurred in 164/212 fields at the following rates: 69-tr. 71-sl. 20-mod. 4-sev. in n. and central Alta. (W.P.C.) and at 3-tr. 16-sl. 3-mod. in 22/23 fields in s. Alta. (J.S.H.). A sample of Rodney oats from Turtleford, Sask. showed blast (T.C. Vanterpool). A survey of 22 fields gave readings of 40-sl. 2-mod. 1-sev., resulting in sl. damage in Sask. (H.W.M.). Sl. to mod. in the test plots in Que.; mod. at Lake St. John and Lower St. Lawrence, mod.-sev. in the Gaspé. Abegweit and MC5740 were most affected (D. Leblond).

CHLOROTIC BANDING (associated with extreme heat). Reported in several fields of oats in Alta. following a period of extreme heat early in the season (J.S.H.). Reported from Nipawin, (w. Sask.) where it resulted in a reduced stand (T.C. Vanterpool).

BIRD INJURY caused by blackbirds was reported from Carrot River and Moosonin, Sask. (T. C. V.).

RED LEAF (?virus). A slight infection in most fields examined in Kamarouska Co., Que., but the cause of disease was not determined (R. O. Lachance).

BARLEY

ERGOT (Claviceps purpurea). See Ergot Survey.

POWDERY MILDEW (Erysiphe graminis). Infections were 2-tr., 2-sl., 1-mod./42 fields surveyed in Alta. (J. S. H.). Sl. infection was noted on lower leaves in 1 field at Poplar Point, Man. (W. L. Gordon). Also on 6-rowed barley at Morden, Man. and 2-rowed varieties at Winnipeg (H. A. H. Wallace). Mod. in winter barley plots at Ont. Agr. Coll., Guelph (S. J. Fushtey). Present in tr. amounts in variety test plots in Que. Sl. to mod. at St. Hyacinthe and Ste. Anne de Bellevue (D. Leblond).

HEAD BLIGHT (Fusarium spp.). F. poae was isolated from occasional infected spikelets from a sl. infected planting of Vantmore barley at Ericksdale, Man. (W. L. Gordon). From a sl. general infection in a field at Farmystele the isolations were H. sorokinianum (chiefly), Fusarium acuminatum and F. poae (W. L. Gordon). Average infection was sl. in variety test plots in Que. Brant and M. C. 6940 were most affected. The disease was most severe at Grandes Bergeronnes in the Lake St. John region (D. Leblond).

STRIPE (Helminthosporium gramineum). Recorded only as 2-tr. 1-sl./42 fields in Alta. (J. S. H.).

SPOT BLOTCH (Helminthosporium sorokinianum). Alta. survey reports 1-tr. 7-sl./42 fields (J. S. H.). One sl. infection in a field at Langhum, Sask. out of 22 examined (H. W. M.). H. sorokinianum caused a very poor barley crop at the Charlottetown Exp. Farm, P. E. I. (R. V. Clark).

COMMON ROOT ROT (H. sorokinianum and Fusarium spp.). Infection was general throughout Alta. 76-tr. 130-sl. 31-mod. 2-sev./289 fields examined (W. P. C.). J. S. Horricks reports 12-tr. 20-sl. 5-mod./42 fields in s. Alta. An av. disease rating of 11.2 was obtained from an examination of 19 fields in Sask. All 19 fields had some root rot present (B. J. Sallans). Seedling blight was mod. in 1 field at Horndean, Man., chiefly H. sorokinianum but Fusarium poae also was isolated (H. A. H. Wallace, W. L. Gordon).

NET BLOTCH (Helminthosporium teres). Infection was 57-tr. 97-sl. 58-mod. 44-sev. in 256/289 fields in Alta. (W. P. C.). Heavy infections occurred at Radway and Spruce Grove (A. W. Henry). Net blotch was about half as common as scald in central and n. Alta. Late-sown barley was most sev. affected. Scald had defoliated many barley fields earlier in the summer and may have reduced the prevalence of net blotch (W. P. Skoropad). It also occurred as 5-tr. 14-sl. 9-mod. 1-sev. in 29/42 fields in s. Alta. (J. S. H.). An increase in this disease has been noted for the last few years in Sask. Ratings were 1-sl. 9-mod. 6-sev. for 16/22 fields. It occurred in all barley-growing areas (H. W. M.). Also reported from Prince Albert, Watson and Stony Beach, Sask. (T. C. Vanterpool). Net blotch was present in tr. amounts in 6/6 fields in Man. (W. A. F. Hagborg). Sl-mod. infection was found on winter barley in Ont. Agr. Coll. plots. Mod.-sev. infection occurred in a field of volunteer barley at Guelph, Ont. (S. J. Fushtey). Sl. in variety test plots in Que. except at St. Pierre where it was prominent (D. Leblond).

TAKE-ALL (Ophiobolus graminis). Only 1 field with sl. infection n. of Ft. St. Jean, out of 19 fields examined in B. C., 270 fields in central and n. Alta. were all unaffected by take-all (W. P. C.).

STEM RUST (Puccinia graminis). Infection was 5-tr. 4-sl. for 9/42 fields in s. Alta. (J. S. H.); and 1-tr. 1-sl. n. of Drumheller for 2/289 fields in central Alta. (W. P. C.). Tr. infection occurred at North Battleford, (n. w. Sask.) and LaFleche, (s. e. Sask.); 22 fields were examined in Sask. (H. W. M.). In Que. tr. infections occurred in most variety test plots. M. C. 7940 was most susceptible, especially at St. Jacques, Que. (D. Leblond).

LEAF RUST (Puccinia hordei). A small plot of Olli barley was 1% infected and slightly damaged at Normandin, Que. (H. Genereux). Variety test plots in Que. averaged tr. infection. Montcalm and Parkland were most affected. The disease was most prominent about Ste. Anne de la Pocatiere (D. Leblond).

BROWNING ROOT ROT (Pythium spp.). A crop of Vantage barley near Ryley, Alta., was affected (A. W. Henry).

SCALD (Rhynchosporium secalis). In s. Alta. it was reported 5-tr. 11-sl. 1-mod. 1-sev. in 18/42 fields (J. S. H.), whereas in central and n. Alta. 181/289 fields were diseased. Barley scald was unquestionably the most serious foliage disease in 1956 in central and n. Alta. It appeared when most of the barley was in the three-leaf stage and spread rapidly under favourable weather conditions. Cool night temperatures with heavy dew persisting till late morning were common during the summer. Barley in the Lacombe-Edmonton area was affected most severely, in some cases to the extent that malting varieties were reduced to feed grades. Very few barley fields were

free of the disease in this area. In the Peace River and Ft. Vermilion regions, where barley is becoming rapidly the major cereal crop, the occurrence of scald was somewhat patchy. Some fields were free of the disease while others were affected in tr. to sev. amounts. Scald was found in about 60% of the fields inspected. The above indicates how closely this disease follows intensive barley cropping (W. P. Skoropad). Most severe infections centered in the black soil zones, becoming more prevalent in the Peace River area as barley becomes a more important crop (W. P. C.). Of 22 fields examined in Sask. 2 at Swift Current had mod. infection and 1 at Melfort had tr. (H. W. M.).

SPECKLED LEAF BLOTCH (Septoria passerini). A tr. was reported in 3/42 fields in s. Alta. (J. S. H.). In central and n. Alta. 6-tr. 46-sl. 25-mod. 10-sev. infections were recorded for 87/289 fields (W. P. C.). Speckled leaf blotch was present mainly on the mature crop and in general it appeared to have caused little damage. It was considerably less prevalent in the more northerly barley regions of Alta. (W. P. Skoropad). In Sask. the damage was mod. with the following infection ratings: 3-sl. 5-mod. 1-sev. for 9/22 fields (H. W. M.). Also reported as 1-tr. at Watson and 1-sev. at Rowletta, Sask. (T. C. Vanterpool). In Man., speckled leaf blotch was widespread but probably caused little damage. Infections were abundant in s. Man. early in the season. The epidemic did not develop rapidly and at harvest infection was light compared with 1955. (P. D. S. 35:13). The ratings were 3-tr. 4-sl. 7-mod. 1-sev./15 fields (G. J. Green). Slight in variety test plots in Que.; most prominent at St. Pierre (D. Leblond).

COVERED SMUT (Ustilago hordei) occurred in 22/289 fields in central and n. Alta.; infections ranged from tr. to 15% and averaged nearly 0.2% (W. P. C.); and 2-tr./42 fields in s. Alta. (J. S. H.). In Sask. 4/22 fields averaged 0.3% infection and none exceeded 2% (R. C. Russell). 52/138 fields surveyed in Man. had a maximum infection of 15%, and av. infection of 0.7%. This was a marked increase and was noticed especially in the n. part of Man. (W. Popp). In Que. 15/15 fields had covered smut. Maximum infection of 15% occurred in 2 fields (R. O. Lachance).

LOOSE SMUT (Ustilago nuda). Vantage barley in University plots showed tr. infection at Vancouver, B. C. (H. N. W. Toms). Loose smut was recorded in 120/289 fields in central and n. Alta.; infection ranged from tr. to 20, and averaged almost 1% (W. P. C.). In s. Alta. 5/42 fields were rated tr. (J. S. H.). In Sask. average infection was 0.7% and ranged from tr. to 5% in 13/22 fields examined (R. C. Russell). 106/138 fields surveyed in Man. had true loose smut (U. nuda). The mean infection was 1.0% and the maximum was 15% and represents a slight increase from 1955 (W. Popp). False loose smut (U. nigra) was present in 8/138 Man. fields at 0-4%, av. 0.1% (W. Popp). In a 17-acre field of Fort barley at the Experimental Farm, Normandin, Que., 8% infection of loose smut was observed; another small field showed a 5% infection (H. Genereux).

Fort barley that had not been given hot-water treatment showed 3% infection at Ste. Anne de la Pocatiere (R.O. Lachance). In the variety test plots in Lake St. John region all varieties were sl. affected except Parkland which was unaffected (D. Leblond).

BACTERIAL STREAK (Xanthomonas translucens). Reported as 2-tr./42 fields in s. Alta. (J.S.H.). It was found in 75% of fields examined before the end of the growing season and was fairly uniformly distributed through central and n. Alta. The incidence of the disease was considerably higher than in the previous few years (W.P. Skoropad). Infection was 3-tr. 4-sl. 3-mod. in 10/12 fields examined in Man. (W.A.F. Hagborg).

FALSE STRIPE (virus). Traces only were reported in 2 fields, at New Norway and Worsley, in a survey of 289 fields in Alta. (W.P.C.). (W.P. Skoropad observes that false stripe of barley, although not yet very common in Alta. appears to have increased in comparatively alarming proportions in the last few years. It has been found right across Alta. and perhaps most commonly at experimental institutions (cf. H.A.H. Wallace, P.D.S. 35:15, 1955). Symptoms usually appear late and the plants are not stunted severely.). In s. Alta. ratings were 1-sl. 1-mod./42 fields (J.S.H.). One sl. infection was noted at Weyburn, Sask. in a survey of 22 fields (H.W.M.). In Man. a tr. was found at Domain and the disease was transmitted to barley seedlings in the greenhouse. A field of Garton's barley at Fortier had 16% infected culms based on five 50-culm random samples (W.A.F. Hagborg).

A special report of a barley leaf disease survey in the Prairie Provinces was prepared by H.A.H. Wallace and is summarized below. It is based on observations made in 90 fields in Man., 158 fields in Sask. and 63 fields in Alta. and at Prairie experimental farms from July 25 to Aug. 10. Leaf spots caused by Helminthosporium spp. (mostly H. teres and some H. sorokinianum) were present in nearly all fields. Infection was sev. in 1/2 the Sask. fields and 1/4 of the Alta. and Man. fields, and heavier in the n. parts of the provinces. Scald (Rhynchosporium secalis) was mod. in Alta. and light in n.w. Sask. Speckled leaf blotch (Septoria passerini) affected half the fields in each province causing sl. damage in Sask. and sl.-mod. damage in Alta. and Man.

Variety tests of 6-row barleys were made at the following 5 places: Winnipeg, Brandon, and Morden, Man., Indian Head and Melfort, Sask. The 2-row varieties were tested at the following 6 places: Edmonton, Lacombe, and Lethbridge, Alta.; Tisdale and Saskatoon, Sask.; Winnipeg, Man.

The named 6-row varieties were susceptible to leaf spot (H. teres with with some H. sorokinianum) and the "4635" hybrids were resistant at all 5 stations. Of the 2-row barleys Canadian Thorpe and Freja were most resistant.

Scald (Rhynchosporium secalis) was serious only at Melfort, Sask. where Vantmore and "Meteor" hybrids showed resistance. Rivale, a 2-row variety was very resistant to scald which was present at all Alta. stations and sev. at Tisdale, Sask.

Speckled Leaf Blotch (S. passerini) was present at all 6-row test stations and "Meteor" and "53" hybrids were consistently resistant. Piroline was the most resistant 2-row barley.

Bacterial Streak (Xanthomonas translucens) was found at all 6-row barley test stations. The standard named varieties showed more resistance than some hybrids. It was recorded on 2-row varieties only from University of Saskatchewan.

Root Rot. 25 varieties were rated at Winnipeg, Morden, and Brandon 60 days after seeding. Varieties from one source rarely differed appreciably in rating. The varieties from North Dakota, Macdonald College and Guelph showed considerable resistance while Sask. and Alta. varieties were fairly susceptible in Man. The early varieties Edda, Olli and Br. 3902 were all susceptible. In malting barleys O.A.C. 21 was resistant; Montcalm, Parkland, A.M. 570 intermediate; and Olli was mod. susceptible. Vantmore had some resistance. Husky was mod. susceptible and Vantage susceptible. Herta, the only 2-row variety in the test, was mod. susceptible. (H.A.H. Wallace).

RYE

BLACK MOLD (Cladosporium herbarum) was found on Tetra Petkus rye heads sent in by growers to Botany Dept., Ont. Agr. Coll. (S.J. Fushtey).

ERGOT (Claviceps purpurea). Tr. infection was found on Storm rye in University plots, Vancouver, B.C. (H.N.W. Toms). A trace was reported in 1 field in Kings Co., N.S. (D.W. Creelman). See also Ergot Survey for reports from Western Canada.

POWDERY MILDEW (Erysiphe graminis). Sl. infection on Storm rye caused negligible damage at University plots, Vancouver, B.C. (H.N.W. Toms).

COMMON ROOT ROT (Helminthosporium sorokinianum and Fusarium spp.). Two fields had tr. infection out of 6 examined in s. Alta. (J.S.H.). and 4/8 had sl. infection in central Alberta (W.P.C.).

STEM RUST (Puccinia graminis). In s. Alta. infection was 1-mod./6 fields examined (J.S.H.). Trace infection was found in 1 field at Carlyle and in one nr. Swift Current, Sask. in examination of 5 fields (H.W.M.).

LEAF RUST (Puccinia secalina). Tr. infection occurred on Storm rye in University plots, Vancouver, B.C. (H.N.W. Toms). One sev. diseased field was found in 6 examined in s. Alta. (J.S.H.) and 2-sl. and 1-tr. infections were found in 3/8 fields in central Alta. (W.P.C.). Tr. infection was found in 2/5 fields at Carlyle and s. of Swift Current, Sask. (H.W.M.).

SCALD (Rhynchosporium secalis). One field at Beaver Lodge had tr. infection in 8 examined in Alta. (W.P.C.).

SPECKLED LEAF BLOTCH (Septoria secalis). Infections were 2-sl. 2-mod. in 4/8 fields examined in Alta. (W.P.C.).

BACTERIAL BLIGHT (Xanthomonas translucens). A trace was reported from 1/6 fields examined in Alta. (J.S.H.).

CEREAL RUSTS IN CANADA IN 1956

T. Johnston, G.J. Green, B. Peturson and D.J. Samborski

The complete report was issued as Report No. 12 by the Plant Pathology Laboratory, Winnipeg, Man., in February 1957. Of the 15 tables in the original report only the first is reproduced as Table 4 in this condensation. Figure 3 is adapted from the map in the same report.

Cereal Rust Development in Western Canada in 1956

In 1956, several factors favorable to cereal rust development operated throughout Western Canada. Seeding was delayed, rainfall was frequent and above normal, heavy dews were frequent, and the prevailing temperatures were favorable for rust development. Despite these favorable factors, very little rust occurred on cereals in the Prairie Provinces and there was almost no rust damage.

The low incidence of cereal rusts can be attributed largely to two factors: the scarcity of spores in the air and the culture of rust resistant cereal varieties over large areas in the north central parts of the United States and in the eastern part of the Prairie Provinces.

The low incidence of air-borne rust spores in May and June was conditioned largely by drought in Texas and adjoining areas. Despite rather