I. DISEASES OF CEREAL CROPS

WHEAT

CEPHALOSPORIUM STRIPE (Cephalosporium gramineum) was found in several fields near Perth and Colborne in e. Ont., but not in w. Ont. Symptoms matched G.W. Bruehl's description (Phytopathology 46, 178-180. 1956) (R.J. Baylis). The fungus, DAOM 58856, was the same as isolates from Wash. (R.A. Shoemaker). A similar stripe was observed on Rideau wheat at Perth in 1956 (R.J.B.). Variety G.C. 543 was nearly all striped, heads were small and 10% of plants were dwarfed in plots at Fredericton, N.B. Other varieties had 1% stripe but no dwarfing (T.C. Chiasson).

EYE SPOT (Cercosporella herpotrichoides) which was abundant in 1956 was not of any consequence this year in Simcoe Co., Ont. (R.J.B.).

ERGOT (Claviceps purpurea). Traces were found in 9/139 spring wheat and 1/57 winter wheat fields in s. Alta. (J.S. Horricks). One field/252 had trace infection in Sask. (H.W. Mead). In Man. 6/19 fields examined had trace infection (W. Popp).

ANTHRACNOSE (Colletotrichum graminicola). A culm rot caused lodging in a 1-acre field in Kings Co., N.S. Anthracnose affected 10% of the lodged culms. Gibberella sp. (KP 2365) was present on 5% of the lodged culms (C.O. Gourley).

POWDERY MILDEW (Erysiphe graminis) affected 17/139 spring wheat wheat fields in s. Alta.: 9-tr. 7-sl. 1-sev. Winter wheat was rated 5-tr. 2-sl. 2-mod./57 (J.S.H.). Powdery mildew was quite plentiful and caused some damage to winter and spring wheat at Ottawa, Ont. (R.V. Clark). Several varieties were affected moderately at Ste. Anne de la Pocatiere, Que. (R.O. Lachance).

COMMON ROOT ROT (Helminthosporium sorokinianum and Fusarium spp.) caused about 7% loss in s. Alta. spring wheat. Ratings were 67-tr. 18-sl. 8-mod. 13-sev./139 fields surveyed. Winter wheat loss was about 5% with ratings of 45-tr. 11-sl. 1-mod/57 (J.S.H.). see p10 for Sask

SPOT BLOTCH (Helminthosporium sorokinianum) was tr-sl. on most winter and spring wheat varieties at Ottawa, Ont. (R.V.C.).

LEAF BLIGHT (Helminthosporium tritici-repentis) affected 4/57 winter wheat fields in trace amounts in s. Alta. (J.S.H.).

TAKE-ALL (Ophiobolus graminis) was much less common than usual in s. Alta. A trace was found in 1/139 spring wheat fields (J.S.H.). In Sask. 1/250 fields had a trace. The low incidence of the disease is related to the low rainfall in May and June (B.J. Sallans). Take-all was more severe than usual

and accounted for considerable lodging in some fields in Simcoe Co., Ont. In thin stands which were associated mostly with late planting, considerable head blight was evident (R.J.B.).

STEM RUST (Puccinia graminis) ratings were 36-tr. 5-sl./139 spring wheat fields and 18-tr. 3-sl./57 winter wheat fields in s. Alta. (J.S.H.). In Sask. 4/252 fields had trace amounts. First pustules were observed 29 July (R.C. Russell).

LEAF RUST (Puccinia triticina) was the least serious in s. Alta. since before 1948. Ratings for spring wheat were 21-tr. 3-sl./139 and for winter wheat 13-tr. 1-sl./57 (J.S.H.). Only 25/252 fields were found infected in Sask., and the infections were tr.-sl. The first pustules were found at Saskatoon on 6 Aug. (B.J.S.). Rust was plentiful on some varieties at Ottawa, Ont. (R.V.C.). Infection was late and rust only appeared in minor amounts in most fields in Simcoe Co., Ont. (R.J.B.). Resistant varieties of winter wheat at Fredericton, N.B. had less than 1% leaf rust. The variety Fairfield had a 60% infection (T.C. Chiasson).

SPECKLED LEAF BLOTCH (Septoria spp.) was present as 42-tr. 9-sl./139 spring wheat fields and 13-tr. 1-sl. 1-mod./57 winter wheat fields in s. Alta. (J.S.H.). In Sask. 55/252 fields examined were affected in tr.-sl. amounts. Over-all damage was sl. (H.W.M.). S. nodorum caused sl. infection of Ramsey wheat leaves at Brunkild, Man. A light infection on leaves of durum wheat at Morden, Man. was caused by Septoria avenae f. sp. triticea (T. Johnson). The same fungus caused considerably damage to winter and spring wheat at Ottawa, Ont. (R.V.C.).

GLUME BLOTCH (Septoria nodorum) was sl. in 5/252 fields surveyed in Sask. (H.W.M.).

DWARF BUNT - see special report.

COMMON BUNT (Tilletia caries and T. foetida) was present as tr. in 11/57 winter wheat fields in s. Alta. One field of Jones Fife near Beaver Mines had 25% of the plants affected (J.S.H.). Only 2/267 fields surveyed in Sask. had bunt, and then only in trace amounts (R.C.R.). Only 3/34 fields in Simcoe Co., Ont. showed any evidence of common bunt (R.J.B.).

LOOSE SMUT (Ustilago tritici) ratings for s. Alta. were 4-tr./139 spring wheat fields (J.S.H.). Traces were seen in 9 fields in Sask. and sl. (1-2%) infections were seen in 6/267 surveyed. The affected fields were mostly durum wheats (R.C.R.). Some varieties, Huron in particular, had considerable smut at Ottawa, Ont. (R.V.C.). The incidence of loose smut in Simcoe Co., Ont. was less than the normal trace amounts observed in this area which has been surveyed annually since 1953. (R.J.B.).

BRITTLE DWARF (virus) was observed in tr. amounts in 1/252 fields surveyed in Sask. (H.W.M.).

SEED STAINING resulted from oxidation of sap from green Russian thistle that got on the seed when the wheat was combined. The grower at Pilot Butte, Sask., would probably lose a grade for the dark seed (T.C. Vanterpool).

LEAF SPOT (? Ascochyta sorghi) affected 41/139 spring wheat fields in s. Alta. Ratings were 12-tr. 9-sl. 4-mod. 16-sev. The winter wheat rating was 2-tr./57 (J.S.H.). In C.P.D.S. Ann. Rept. 37:4. 1957 (1958) this or a similar disease was recorded on Chinook wheat in Sask. Specimens sent from Alta. in 1958 had the same yellow leaf spots as the Sask. specimens but the fungus was not mature. The structures present resembled initials of pycnidia. It is hoped that mature material will be found and the fungus identified because the disease caused considerable damage in a year when most other fungus diseases were less serious than usual (R.A.S.).

OATS

ANTHRACNOSE (Colletotrichum graminicola). Some plants in a 2-acre field lodged prematurely in Kings Co., N.S. C. graminicola was present on 10% of the lodged culms. Specimens preserved as KP 2367 (C.O. Gourley).

POWDERY MILDEW (Erysiphe graminis). Traces were found in 2/27 s. Alta. fields surveyed (J.S. Horricks).

COMMON ROOT ROT (Fusarium spp.) was found in trace amounts in 6/27 s. Alta. fields (J.S.H.).

CULM ROT (Gibberella sp.). Gibberella was present on lodged oat culms at Black Rock, N.S. (C.O.G.). The specimen KP 2364 may be significant in relation to common root rot caused by Fusarium (R.A.S.).

LEAF BLOTCH (Helminthosporium avenae) was present as tr. in 6/27 s. Alta. fields surveyed (J.S.H.). In Quebec Seed Board plots ratings were tr.-sl. except for mod. amounts in Ferme Neuve and Bon Conseille (D. Leblond). Fundy oats in plots at St. John's West, Nfld. had blotches on 100% of leaves but damage was not assessed (O.A. Olsen).

CROWN RUST (Puccinia coronata) was sev. at Merrickville, Kemptville and Richmond, Ont. Garry and Rodney were susceptible. Other areas had tr.-sl. infection (R.V.C.). Only traces were present in Quebec Seed Board plots except at Riviere Ouelle where infection was sl.-mod. (D.L.).

STEM RUST (Puccinia graminis f. sp. avenae) was sev. at Appleton, and late in the season, at Ottawa, Ont. Infection was slight in other areas. Clintland and Garry were very susceptible. Race 13A was prevalent (R.V.C.).

SPECKLED LEAF BLOTCH (Septoria avenae) affected 10/27 s. Alta. fields surveyed but in trace amounts (J.S.H.). In Sask. a trace was found in 1/21 fields surveyed (H.W. Mead). Out of 16 fields examined in Man. 5 had a trace of infection and 11 were free from it (G.J. Green, T. Johnson). Plots at Ont. Agr. Coll., Guelph were severely infected by mid-July and many leaves were completely diseased long before harvest. The culms were severely blackened about 6 in. above the ground. Considerable lodging occurred. Some of the panicles were discolored. The grain was light in weight but yield was not taken. A grain sample from Simcoe Co., had 1-2% badly discolored kernels which were found to contain Septoria (S.G. Fushtey). At Ottawa this disease was commonly found and caused considerable damage to nearly all commercial varieties (R.V.C.). Quebec Seed Board plots all had moderate infection except at Ste. Victoire and Notre Dame du Lac where it was severe and Caplan where damage was particularly heavy (D.L.). A 30% infection caused sl. damage in Roberval Co., Que. (L.J. Coulombe). Perithecia were abundant on over-wintered Abegweit stubble at Charlottetown, P.E.I. and were starting to discharge ascospores on 20 June (J.E. Campbell).

LOOSE SMUT (Ustilago avenae) was not found in any of the 25 fields surveyed in Sask. where this disease is usually scarce (R.C. Russell). One field at St. Jean, Que. had 2-5% infection (R. Crete).

COVERED SMUT (Ustilago kolleri) was found as tr. in 1/27 fields surveyed in s. Alta. (J.S.H.). Covered smut was recorded in relatively few (4/25) fields surveyed in Sask. but these all showed from 10 to 50% of the heads smutted. The average damage was unusually high, 3%, which is 3 times the amount for 1957 (R.C.R.).

HALO BLIGHT (Pseudomonas coronafaciens) was present as tr. in 1/21 fields surveyed in Sask. (H.W. Mead). A slight infection of Abegweit caused very slight damage at Charlottetown, P.E.I. (J.E.C.).

STRIPE BLIGHT (Pseudomonas striafaciens) severely affected Rodney seedlings at Morden, Man. The organism was isolated and found to be pathogenic (H.A.H. Wallace, W.A.F. Hagborg).

RED LEAF (Cereal yellow dwarf virus). A trace was found in 1/27 fields surveyed in s. Alta. (J.S.H.). Red leaf was especially troublesome in experimental plots and affected all plants in some areas near Ottawa, Ont. Anaverage of 20% of plants were affected (R.V.C.). A sample from Fredericton, N.B. had 80% infection (T. Chiasson, R.A.S.). In Annapolis Co., N.S., 5-10% of leaves in a 20-acre field were colored red (K.A. Harrison).

BLAST (Non-parasitic) ratings for s. Alta. were: 14-tr., 1-sl./27 fields surveyed (J.S.H.). In n. Alta., ratings were 6-sl./10 (W.P. Skoropad). In Quebec Seed Board plots ratings were sl. to mod. (D.L.). Damage was moderate in a field in Queens Co., P.E.I. Several acres were severely affected. Late seeding may have contributed to the blast development (D.B. Robinson).

LATE HEAT CANKER. Chlorotic banding of cereals is caused by temperatures of 80°-95°F. on clear days in late May (Vanterpool, T.C. Sci. Agr. 29. 334-339. 1949). Unlike this disorder the sample of oats received 7 July, had constrictions at ground level which were like those formed in late heat canker of flax. The damage probably occurred on 26, 27 June when temperatures were 87-95°F. and the sky was cloudless. Thin, late-seeded stands were more susceptible to damage. Damage was sev. at Biggar, and sl. at Indian Head and Weyburn, Sask. (T.C. Vanterpool).

LODGING (Wind and drought) occurred at Indian Head, Weyburn and Carruthers, Sask. The wind caused some soil erosion shortly after germination and dried out the remaining soil. Crown roots were weakened and did not reach sub-soil moisture. Many crown roots died and the lack of support made the plants susceptible to lodging. One field would not mature and was cut for fodder (T.C.V.).

BARLEY

ERGOT (Claviceps purpurea). Two fields were rated tr./62 in s. Alta. (J.S. Horricks). Trace occurred in 1/62 Sask. fields (H.W. Mead). Traces were found in 1 field at Pipestone and 1 at Rapid City, Man./10 examined (W. Popp).

POWDERY MILDEW (Erysiphe graminis) was rated 2-tr. 1-sl./62 in s. Alta. (J.S.H.). Some varieties, including Montcalm and Parkland, were heavily infected at Ottawa, Ont. (R.V. Clark). Quebec Seed Board plots had only trace amounts except at Lennoxville where mildew was moderate (D. Leblond).

STRIPE (Helminthosporium gramineum) was found in trace amounts in 1/62 s. Alta. fields examined (J.S.H.).

SPOT BLOTCH (Helminthosporium sorokinianum) was rated 3-tr. 2-sl./62 fields in s. Alta. (J.S.H.). In Sask. ratings were 3-sl. 4-mod./45 (H.W.M.). Infection was tr. in 1/5 fields examined in Man. (G.J. Green). Some varieties were affected at Ottawa (R.V.C.). Moderate damage was observed at Notre Dame du Lac, Que. (D.L.). Fort barley had tr. infection in Roberval Co., Que. (L.J. Coulombe). Parkland and Montcalm had sl. infection in plots at Charlottetown, P.E.I. (J.E. Campbell). Several varieties at St. John's West, Nfld. had sl. infection (O.A. Olsen).

COMMON ROOT ROT (Helminthosporium sorokinianum and Fusarium spp.). In s. Alta. ratings were 29-tr. 11-sl. 1-sev./62 fields (J.S.H.). Detailed ratings ranged from 0 to 28.3 in Sask. The average rating for the 43 fields examined was 12.9 and the average damage was slight. (B.J. Sallans).

NET BLOTCH (Helminthosporium teres) in s. Alta. affected 40/62 fields. Ratings were 17-tr. 21-sl. 2-mod. (J.S.H.). The average damage in Sask. was moderate. Ratings were 4-sl. 3-mod. 2-sev./45 (H.W.M.). Moderate infection was seen near Fort Whyte and tr.-10% of the leaf area was affected in fields examined between Portage la Prairie and Gladstone, Man. (W.A.F. Hagborg). Net blotch was quite common at Ottawa, Ont. (R.V.C.). Quebec Seed Board plots had sl. infection except at Caplan where disease was mod.-sev. (D.L.).

LEAF RUST (Puccinia hordei) was tr. in the Quebec Seed Board plots except at Maskinonge where it was mod.-sev. (D.L.).

STEM RUST (Puccinia graminis). A trace was found in only 1/62 fields examined in s. Alta. (J.S.H.). Only found on very late plants in plots at Ottawa, Ont. It caused no appreciable damage to the crop (R.V.C.).

SCALD (Rhynchosporium secalis) affected 38/62 s. Alta. fields. Infections were 21-tr. 17-sl. (J.S.H.). In n. Alta. ratings were 4-tr. 20-sl. 15-mod. 5-sev./50 fields surveyed (W.P. Skoropad). In Sask. damage was only a trace. Ratings were 2-tr. 2-sl./45 (H.W.M.). Only winter barley varieties were affected at Ottawa, Ont. and damage was tr.-sl. (R.V.C.).

SPECKLED LEAF BLOTCH (Septoria passerinii) was rated 3-tr. 1-sl./62 fields in s. Alta. (J.S.H.). In Sask. the average infection was tr. Five fields/45 surveyed had tr.-sl. infection (H.W.M.). Seven/9 Man. fields examined were infected; 5-tr. 1-sl. 1-mod. (G.J. Green). All varieties grown at Ottawa, Ont. had tr.-sl. amounts of infection (R.V.C.).

COVERED SMUT (Ustilago hordei) was found in 2/62 s. Alta. fields and then only in tr. amounts (J.S.H.). In Sask. 47 fields were surveyed. Average damage was 0.6%. Ratings were 7-tr. 3-1%, 1-8%, 1-14% which was about the same amount as observed in 1957 (R.C. Russell).

LOOSE SMUT (Ustilago nuda) was tr. on 7/50 n. Alta. fields (W.P.S.) and 6-tr. 1-sl./62 s. Alta. fields (J.S.H.). Combined data including false loose smut (U. nigra) gave average damage of 1% for Sask.; 31/47 fields were infected. Ratings were 16-tr. 15 from 1-6%. In addition one field at Nippawin which was not included in the systematic survey had 20% of the heads smutted with U. nuda (R.C.R.).

BACTERIAL STREAK (Xanthomonas translucens). Two/62 Alta. fields had tr. infections (J.S.H.). A trace was found in 1/45 Sask. fields (H.W. Mead). Mod.-sev. infection was observed on some varieties at Ste. Anne de la Pocatiere, Que. (D.L.).

BARLEY STRIPE MOSIAC (virus) was recorded as tr. in 1/62 s. Alta. fields (J.S.H.). It was also observed on 1% to 5% of the plants of several varieties of barley including Freja, Heines-Hanna and Opal B grown in plots at the Central Experimental Farm, Ottawa. Compana, a two-rowed variety, was more heavily infected, with about 75% of the plants in one plot showing symptoms (J.T. Slykhuis).

STERILITY (Drought). Montcalm barley from Rosetown and Saskatoon, Sask. exhibited bleached, sterile spikelets on the lower half inch of the spike. The disorder was evident just after emergence and caused some loss when the heads broke off in the wind. Drought and severe heat prior to emergence were the probable causes (T.C. Vanterpool).

RYE

ERGOT (Claviceps purpurea). A trace was found in 1/21 fields surveyed in Sask. (H.W. Mead). Four fields were examined in Man. Ratings were tr.-1% at Carman, tr. and 0-10% of heads affected at Swan River and no infection at Roblin (W. Popp). Traces were observed in plots at Ottawa, Ont. (R.V. Clark). A 5% infection occurred in a rust nursery at Ste. Anne de la Pocatiere, Que. (R.O. Lachance). Plots at Charlottetown, P.E.I had trace infection (J.E. Campbell). In York Co., N.B. a 2-acre field that was cleared from forest in 1957 and is isolated from the nearest crop by trees for at least 1/2 mile had 10% of the heads infected with from 1 to 6 sclerotia (R.H. Bagnall).

POWDERY MILDEW (Erysiphe graminis) was observed in sl.-mod. amounts in plots in Ottawa, Ont. (R.V.C.).

COMMON ROOT ROT (Fusarium spp. and Helminthosporium sorokinianum was found in trace amounts in 3/5 s. Alta. fields examined (J.S. Horricks).

STEM RUST (Puccinia graminis). A trace was found in 1/5 s. Alta. fields (J.S.H.).

LEAF RUST (Puccinia secalina). In variety tests at Fredericton, N.B. Imperial rye had the most severe infection, 30%, other varieties had 5% infection but no variety was immune (T.C. Chiasson).

SCALD (Rhynchosporium secalis) was found as tr. in 1/5 fields examined in s. Alta. (J.S.H.).

SPECKLED LEAF BLOTCH (Septoria secalis) was present in slight amounts in 1/5 s. Alta. fields (J.S.H.).

Cereal Diseases in Central Alberta

W.P. Campbell and W.P. Skoropad

Some interesting data were recorded from plots containing several varieties of barley, wheat and oats at 17 locations in northern and central Alberta. At most locations the same varieties were grown, but deletions and additions account for the differences at some stations. Where some pattern of disease severity seemed evident a comment was added. In addition, when the data indicated a severe infection a comparison was made between the varietal reaction.

Seven varieties of barley were grown at most stations. Some had six and some had eight or nine.

Scald (Rhynchosporium secalis) ratings at the various locations were Athabasca, 1-tr./7; Barrhead, 2-tr./7; Edmonton, 1-tr. 1-sl./8; Vegreville 1-tr./8; Wainwright, 0/8; Forestburg, 1-tr./8; Castor, 3-tr./6; Metiskow, 0/6; Acme, 5-tr. 3-sl./8; Evansburg, 1-sl. 2-mod. 4-sev./7; Fallis, 3-sl. 2-mod. 2-sev.7/; Bluffton, 2-sl. 3-mod. 3-sev./8; Bently, 1-mod. 7-sev./8; Cheddarville 7-sev./7; Leslieville, 3-sl. 1-mod. 3-sev./7; Olds 1-tr. 2-sl. 2-mod. 4-sev./9; Airdrie, 1-mod. 7-sev./8.

Scald was severe at the stations west of a line joining Calgary and Edmonton. East of this line scald was not serious in the test plots. Vantage was the least affected by scald and Traill was the second least affected (R.A.S.).

Net Blotch (Helminthosporium teres) ratings were Edmonton, 2-tr. 2-sl. 2-mod. 2-sev./8; Evansburg 2-tr. 4-sl. 1-mod./7; Fallis, 5-tr. 2-sl./7; Bluffton, 4-tr. 3-sl. 1-mod./8; Leslieville 2-tr. 1-sl. 1-mod./7.; Olds, 3-tr. 4-sl. 1-mod./9; Acme, 2-tr. 4-sl. 1-mod./8; other locations had only trace amounts.

The disease distribution was not so clear-cut as with scald but the stations in the western section had more net blotch than the plots in the eastern section (R.A.S.).

Speckled Leaf Blotch (Septoria passerinii) ratings were Edmonton, 7-mod. 1-sev./8; Fallis, 2-tr. 5-sl./7; Vegreville, 7-sl. 1-mod./8; Wainwright, 3-tr. 3-sl./7; Bentley, 2-tr. 4-sl. 2-mod./8; Olds, 5-sl. 1-mod./9; Acme, 2-tr. 3-sl. 3-mod./8. The other stations had 0 to trace amounts.

Root Rot (Helminthosporium sorokinianum and Fusarium spp.) ratings were Barrhead, 3-tr. 1-sl./7; Vegreville 6-tr. 2-sl./8; Wainwright 2-tr. 5-sl./7; Bluffton, 5-tr./8; Forestburg, 4-tr. 1-sl./7; Castor, 3-tr. 2-sl./6; Athabaska, 2-tr. 4-sl. 1-mod./7; Metiskow, 6-sl./6. Root rot was not recorded at the other stations except Bentley, 3-tr./8.

The stations that had the diseased plants were chiefly in the eastern section. This is in contrast to the other barley diseases which were more severe in the western section (R.A.S.).