1. DISEASES OF CEREAL CROPS

WHEAT

LEAF SPOT (Ascochyta sorghi). Trace infections were recorded in 3/17 spring wheat fields surveyed in s. Alta. (J.S. Horricks, T.G. Atkinson). Test plots in s.-w. Sask. showed slight amounts of the disease and a specimen was also submitted from that area (R.D. Tinline).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was rated 2-tr. I-mod. 1-sev./17 spring wheat fields and I-tr. 3-sl.5-mod. 1-sev./21 winter wheat fields in s. Alta. (J.S.H., T.G.A.). The disease was comparatively sev. in Sask. for a year of good crops. Average disease ratings for crop districts 1-9, respectively, were 10.68; 12.07; 13.37; 17.42; 9.32; 11.50; 9.15; 11.48; and 9.27 for a provincial average of 11.57 (B. J. Sallans).

CULM DISCOLORATION (Bipolaris sorokiniana). Infection was sev. in a field at Carman and 1% in another at Culross, Man. The organism was isolated from both samples (W.A. F. Hagborg).

HEAD DISCOLORATIONS (Bipolaris sorokiniana, Alternaria spp. and others). Surface-sterilized samples from Man. yielded B. sorokiniana, Alternaria spp., some non-sporulating mycelium and some no organism. Both physiologic melanism and melanism induced by infection appeared to be present. Discolored heads in 8 samples ranged from 0-30% (W.A.F.W.)

ERGOT (Claviceps purpurea) was 10-tr./174 common wheat fields in Sask., the infections occurring in the eastern areas and 2-tr. 1-2%/17 durum wheat fields (R.D.T.). An infected sample of Selkirk wheat was collected at Melfort, Sask. (G. Fleischmann). No ergot was observed in wheat fields in Man. (W.A.F.H.).

YELLOW LEAF BLOTCH (Drechslera tritici-repentis) was present in slight amounts in 2/174 fields in Sask. (R.D.T.).

POWDERY MILDEW (Erysiphe graminis). One/17 spring wheat fields was moderately infected and 2/21 winter wheat fields showed slight infection in s. Alta. (J.S.H., T.G.A.). It was sl. on both spring and winter wheat in the Ottawa, Ont. area (R.V. Clark).

PREMATURITY BLIGHT (Fusarium spp.) was tr. at Jensen, 1% at Hirsch and 3% at Carlyle, Sask. (B. J.S.).

TAKE-ALL (Ophiobolus graminis) was present in plots at Regina and in samples received from Maidstone and Wakaw, Sask. It was not seen in the 174 fields of the regular survey in the province (B. J. S.). It caused mod. -sev. damage in winter wheat plots at Macdonald College, Que. (H. Genereux).

BASAL GLUME ROT (Pseudomonas atrofaciens) was observed in 1 field in s. -e. Sask. (R.D.T.). The organism was isolated from samples received from Edgerton, Alta. and Hamiota, Man. From the Hamiota sample it was recovered from leaves, glumes and kernels (W.A.F.H.).

STEM RUST (Puccinia graminis) wats present throughout Alta., Sask. and Man. but did little damage. It occurred in rust nurseries from Lethbridge Alta. to Quebec City, Que. with the heaviest infections occurring from Melfort, Sask. to Fort William, Ont. (G. J. Green). Stem rust incidence was extremely low in c. Alta. due to the rapid ripening of the crop and the late arrival of inoculum. (W. P. Skoropad). It was rated 2-tr. 3-sev./17 spring wheat fields in s. Alta. (J.S.H., T.G.A.) and 2-sev. 5-mod. 11-sl. 71-tr./174 fields in Sask. The 5 mod. infections were in the variety Lee (B. J. S.).

LEAF RUST (Puccinia recondita) was mod. -sev. throughout C. Alta. (W.P.S.). It first appeared 50 miles e. of Lacombe, Alta. on 24 July. By 6 Aug. it was observed at Lacombe where it became sev. and by 16 Aug. began to develop 50 miles w. of Lacombe. Infection averaged 20% in 3 fields w. of Red Deer, Alta. (B. Berkenkamp). Ratings were 3-tr. 2-sl. 1-mod/17 spring wheat fields in s. Alta. (J.S.H., T.G.A.). Infections on bread wheats in Sask. were 3-tr. 41-sl. 14-mod. 110-sev./174 fields. Durum wheats showed 2-tr./17 (B. J. S.). Leaf rust infections, accompanied by hot, dry weather caused reductions of yield and quality of wheat in Man. Infections were sev. in Sask. in early Aug. but only late-seeded fields suffered much damage. It occurred in some nurseries in all provinces (D. J. Samborki). It was sl. -mod. late in the season on spring and winter wheat in the Ottawa, Ont. area (R. V. C.).

STRIPE RUST (Puccinia striiformis) was unusually common on winter wheat in the s. -w. corner of Alta. during the fall of 1963. Some early-sown fields were undoubtedly damaged by the high levels of infection (J. S. H., T. G. A.).

GLUME BLOTCH (Septoria nodorurn) was 7-sl./174 fields in Sask., occurring in the s. -e. and n. -w. areas of the province (R. D. T.).

SPECKLED LEAF BLOTCH (Septoria spp.) S. tritici was 1-tr./21 winter wheat fields surveyed in s. Alta. (J.S.H., T.G.A.). It was 6-sl./174 bread wheat and 1-sl. 2-sev./17 durum wheat fields in Sask. (R. D. T.). S. avenae f. sp. triticea was fairly prevalent in the Ottawa, Ont. area (R. V. Clark).

COMMON BUNT (Tilletia caries, T. foetida) is at an all-time low level in Sask. None was found in 174 fields surveyed, due partly to the resistance of Selkirk and partly to the efficient use of fungicides on about 60% of the wheat acreage (B. J.S.).

LOOSE SMUT (Ustilago tritici) was 1-tr./174 bread wheat and 9-tr. 1-1%/17 durum wheat fields in Sask. (B. J.S., R.D.T.). Average infection was 1%in 15/21 fields of durum in Man. None was found in common wheat (J. Nielson).

BACTERIAL BLACK CHAFF (Xanthomonas translucens). Infection averaged sl. in 7/174 fields in Sask. It was most prevalent in the southeast but I sev. affected specimen was seen from the northeast part of the province (R.D.T.).

BARLEY YELLOW DWARF (virus) was 6-tr. 1-sl./21 winter wheat fields in s. Alta. (J.S.H., T.G.A.).

STREAK MOSAIC (virus). The most sev. outbreak of wheat streak mosaic ever to occur in s. Alta. developed on winter wheat in the fall of 1963. Infection was especially sev. in the Claresholm, Barons, Granum, Lethbridge, Wrentham and Warner areas. In contrast, no sev. affected crops were found in the Spring Coulee, Cardston, Glenwood or Pincher Creek districts. Losses are expected to be heavy (R.G. Atkinson, J.T. Slykhuis). It was rated I-tr. I-sl. I-mod. 3-sev./17 spring wheat fields in s. Alta. (J.S.H., R.G.A.).

STRIATE MOSAIC (virus). One field of durum wheat in Man. was 7% infected and another showed a trace of the disease. No striate mosaic was found in 10 common wheat fields examined (W.A.F.H.).

CHEMICAL INJURY. Severe herbicide damage was seen in a field at Carlyle, Sask. (B. J. S.).

DROUGHT. A prospective yield of 40 bu./acre was reduced to a probable 25 bu. of shrunken grain nr. Weyburn. Sask. (B. J. S.).

LEAF BANDING (low temperatures). A specimen received from n.-e. Sask. exhibited leaf banding, probably caused by low temperatures (R. D. T.).

SPLOTCH (physiological) was sev. in I field of durum wheat in s.-e. Sask. (R.D. T.).

TIP DIEBACK (cause unknown) was mod. in 2 spring wheat fields nr. Pincher Creek, Alta. (J.S.H., T.G.A.).

NODE ELONGATION AND STEM BREAK (2, **4-D** injury suspected). Slight injury was noted at Rouleau, Saskatoon and 2 other localities in Sask. Stem break makes the condition potentially serious. All affected fields had been sprayed with 2, 4-D (T, C. Vanterpool).

OATS

KERNEL DISCOLORATION (Bipolaris sorokiniana). Ontario-grown oats from the Board of Grain Commissioners (1962 crop) were infected (W.A.F. Hagborg).

LEAF BLOTCH (Prechslera avenacea) occurred as traces in 2/48 Sask. fields surveyed (R.D. Tinline). Infection was heavy on Roxton at the Exp. Farm, St. John's West, Nlfd. (G.A. Nelson).

HALO BLIGHT (Pseudomonas coronafaciens) was trace in 1/48 fields in Sask. It occurred in the s.-e. part of the province (R.D.T.). All 8 fields observed in Man. were infected with the percentage of leaf area destroyed ranging from 0-25%. A sample was also received from Melfort, Sask. All were of the non-toxin type. A sample of the toxin-producing type was collected at Vankleek Hill, Ont. by G. Fleischmann (W.A. F. H.). Trace-sl. infections occurred in the Ottawa, Ont. area (R.V. Clark).

CROWN RUST (Puccinia coronata). Infection was rated 8-tr. 16-sl. 2-mod./50 Sask. fields (B. J. Sallans). Mod-sev. infections occurred in all fields south of Winnipeg, Man. with infections ranging from 30-90%. Infection was mild north of Winnipeg and west as far as Swift Current, Sask. Losses were light except in late-sown fields where they were very heavy, Races virulent on Rodney and Garry increased alarmingly in western Canada and threaten the value of the oat breeding program in which the Landhafer and Santa Fe sources of resistance play a predominant role. In eastern Canada crown rust was sev. in the buckthorn areas at Merrickville, Appleton and Williamstown, Ont. (G. Fleischmann). It was sev. late in the season in the Ottawa, Ont. area but damage was light (R.V.C.). Incidence was low on oats in P.E.I. (G. W. Ayers).

STEM RUST (Puccinia graminis) was rated 5-tr. 6-sl. in 50 fields surveyed in Sask. (B. J.S.). In early Aug. infections of 10-20% were common on Rodney in Man. It was lighter to the west with tr. infections occurring in s.-w. and n.-c. Sask. It occurred in nurseries in all provinces but the Atlantic provinces with heavy infections recorded from Brandon, Man. to Fort William, Ont. (G. J. Green). Late infections caused considerable damage in the Ottawa, Ont. area (R.V.C.).

SPECKLED LEAF BLOTCH (Septoria avenae f. sp. avenae). Trace - sl. amounts were seen in 7/48 Sask. fields surveyed. The infections occurred in the west and s.-w. parts of the province (R.D.T.). It was rated 4-tr. 2-sl./11 fields in Man. (G. J. G.) and appeared later than usual, eventually becoming heavy, in the Ottawa, Ont. district (R. V. C.).

COVERED SMUT (Ustilage avenae, U. kolleri). One/50 Sask. fields had 5% smutted heads (B. J.S.). No covered smut was seen in 35 fields surveyed in Man. (J. Nielson).

RED LEAF (barley yellow dwarf virus) was seen in 2/48 fields in Sask., both in the n.-w. part of the province (R.D.T.). It occurred in 10/14 Man. fields affecting tr. -30% of the culms. It was most prevalent in very late fields and occurred in patches (W.A.F.H.). It was not as sev. as in other years in the Ottawa, Ont. area where it was found in scattered areas (R.V.C.).

GRAY SPECK (manganese deficiency) was sev. on Eagle oats in a field w. of Lacombe and caused up to 5% damage in 2/4 fields w. of Red Deer, Alta. It was most noticeable on peat soils or on mineral soils near peat (B. Berkenkamp).

RED LEAF (physiological). Oat foliage throughout the lower Fraser Valley, B. C. was chlorotic with accompanying red leaves in the older foliage. A blast of part of the majority of inflorescences accompanied the condition. Attempts to transmit the condition using 3 known vectors of BYDV gave negative results (H.N. W. Toms).

YELLOW LEAF (physiological) was widespread in early June in 12 counties in s.-w. Ont. Plants made a good recovery by harvest. No pathological agents could be isolated or transmitted, Temperature and other environmental factors seemed involved (F. J. Zillinsky, J. T. Sylkhuis).

BARLEY

SPOT BLOTCH (Bipolaris sorokiniana) was 2-tr. 1-sl./8 fields surveyed in s. Alta. (J.S. Horricks, T.G. Atkinson). It was rated 3-sl. 8-mod I-sev. /12 fields in Man., being more sev. in the southern part of the province (W. C. McDonald). Spot blotch was tr. -mod, on spring barley in the Ottawa, Ont. area (R, V, Clark) and mod. on barley throughout P.E.I. (C. B. Willis).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.). Ratings were 2-tr. 3-sl./8 fields examined in s. Alta. (J.S.H., T.G.A.) and the average rating in 51 Sask. fields was 13.2, somewhat higher than the rating for wheat (B. J. Sallans). Damage was quite extensive on Herta near Charlotteown, P. E.I. Infection was rated at more than 50% (C. B. W.).

ERGOT (Claviceps purpurea) was found in sl. amounts in 6/54 Sask. fields, occurring in the central and northern areas (R.D. Tinline). More infection was noted in **P.E.I.** than in any previous year (G. W. Ayers).

NET BLOTCH (Drechslera teres). Incidence in c. Alta. was low in the northern sector and high in the southern sector. This could be correlated with the wetter spring in the south (W.P. Skoropad). All barley fields examined w. of Red Deer, Alta. after 21 Aug. were infected (B. Berkenkamp). Ratings were 4-tr. 2-sl./8 in s. Alta. (J.S.H., T.G.A.). In Sask. infections were 16-tr.-sl. 23-mod.-sev./54 fields. Severity increased from **south** to north (R.D. T.). It was 2-sl. 5-mod. 5-sev. /12 Man. fields. There was a very heavy epidemic from Winnipeg north-west to Melfort, Sask. (W. C. McD.). A very sev. infection was present in many of the test plots at Portage la Prairie, Man. (W.A.F. Hogborg).

POWDERY MILDEW (Erysiphe graminis) was rated I-tr. 1-mod. /8 fields surveyed in s. Alta. (J.S.H., T. G.A.). In the Ottawa, Ont. area it was sl. and late on spring barley and tr. -sl. on winter barley (R.V. C.),

HEAD BLIGHT (Fusarium sp.). Infections up to 5% caused sl. damage on Herta in Prince and Queens counties, P.E.I. (C. B. W.).

STEM RUST (Puccinia graminis). Most of the stem rust on barley in nurseries across Canada was presumed to be Puccinia graminis tritici. Exceptions occurred at Creston, B. C. and at Appleton and Williamstown, Ont. where rye stem rust, Puccinia graminis secalis, was present (G. J. Green). Three/8 field in s. Alta. showed trace infections (J.S.H., T.G.A.). It was rated 16-tr. 10-sl. 6-mod. 3-sev./51 Sask, fields (B. J.S.). Spring barley showed tr-mod. infections late in the season in the Ottawa, Ont. area (R. V. C.).

LEAF RUST (Puccinia hordei) was 3-tr. I-sl. I-mod. /51 fields surveyed in Sask. (B. J.S.). It was sl. and late on spring barley and tr. on winter barley in the Ottawa, Ont. area (R. V. C.).

SCALD (Rhynchosporium secalis) was practically non-existent in the northern sector of c. Alta. but its incidence was high further south, particularly around Lacombe (W. P. S.). It was prevalent west of Red Deer, Alta.. and averaged 5-15% in 6/6 fields; examined (B. Berkenkamp). It was 1-tr./8 s. Alta. fields (J.S.H., T.G.A.) and 3-sl./54 fields in Sask., occurring in the south of the province (R.D.T.).

SPECKLED LEAF BLOTCH (Septoria passerinii) caused minor damage in plots at Lacombe, Alta. and averaged 5-15% infection in 3/3 farmers' fields surveyed in the area (B.B.). Ratings in Sask. were 7-sl./54 fields, occurring in the central areas (R.D.T.). In Man. it was rated 9-tr. I-mod. 1-sev./12 fields (W. C. McDonald).

COVERED SMUT (Ustilago hordei) was rated 2-tr./8 fields in s. Alta. (J.S.H., T.G.A.) and in Sask. was 5-tr. 3-sl, 1-mod./54 fields. The greatest amounts were found in the n. -w. areas of the province (B. J. S., R. D. T.). Eight/57 fields in Man. showed infections ranging from tr.-3% (J. Nielson).

LOOSE SMUT (Ustilago nuda, U. nigra). Infection in s. Alta was I-tr./8 fields (J. S. H., T. G.A.) and in Sask. was 3-tr. /54 fields (B. J. S., R.D.T.). In Man. 22/57 fields were infected with U. nigra with rates from tr-3% and 25/57 with U. nuda at rates from tr.-7% (J.N.). Loose smut was tr. -sl. in spring barley in the Ottawa, Ont. district (R.V.C.).

BACTERIAL BLIGHT (Xanthomonas translucens) was mod. throughout c. Alta. (W.P.S.). Infection averaged 5% in 4/5 fields at Lacombe, Alta. (B.B.) and was rated 1-tr./8 s. Alta. fields (J. S. H., T.G.A.). Slight infections were seen in 2/54 fields in Sask., occurring in the s. -w. part of the province (R.D.T.). Infection was sev. on Pannier barley in the International Test at Winnipeg and a few introduced varieties were apparently killed by bacterial blight in plots at Portage la Prairie, Man. The organism was isolated (W. A. F. Hagborg, H.A.H. Wallace).

ASTER YELLOWS (virus). An estimated 1-2% infection occurred in plots at Morden, Winnipeg, Brandon and Portage la Prairie, Man. Montcalm and O.A. C. 21 appeared more susceptible than other varieties, Infection was apparently sev. in late-summer fields at Portage la Prairie and Poplar, Man. but aphids were so abundant that it was difficult to ascertain the amount of damage by aphids alone. Trace infections were seen in 2 other Man. fields (W.A.F.H., H.A.H.W.).

STREAK MOSAIC (virus). Infection was rated 2-tr./8 fields in s. Alta. (J.S.H., T.G.A.).

TIP DIEBACK (cause unknown) was tr. in I field mr. Pincher Creek, Alta. (J.S.H., T.G.A.),

NODE ELONGATION AND STEM BREAK (2, 4-D injury) caused sl. damage in herbicide-treated fields at 4 localities in Sask. See note under wheat (T. C. Vanterpool).

RYE

ERGOT (Claviceps purpurea) was sev. on rye west of Red Deer, Alta. Only traces were seen in other areas (B. Berkenkarnp). One field each of spring and fall rye had more than 2% ergot-infected plants in s. Sask. (R. D. Tinline).

STEM RUST (Puccinia praminis) occurred sporadically in rust nurseries in all areas except in the Maritime provinces. Infection was heavy at Creston, B. C. and at Appleton and Williamstown, Ont, (G, J. Green), It was tr. in 1 of 2 Sask. fields examined (B. J. Sallans).

LEAF RUST (Puccinia recondita). Moderate infections caused only sl. damage to Tetrapetkus at St. John's West, Nlfd. (G.A. Nelson).

SCALD (Rhynchosporium secalis). Light infections were observed on Tetrapetkus at St. John's West. Nfld. (G.A.N.).