

I. DISEASES OF CEREAL CROPS

WHEAT

EYE SPOT (Cercospora herpotrichoides) was found just before harvest causing damage in a few widely separated fields of Cornell 595 and Genesee winter wheat in Kent Co., Ont. The affected plants occurred in patches up to 10 ft. in diameter. The culms on such plants were weak and small, often bent at the nodes, sometimes almost at right angles, and bore smallish heads. Although the crop rotation practised in these fields was not ascertained wheat is commonly grown in the same field for 2 successive years. Rotations on these sandy loam soils are short, wheat often alternating with corn or soybeans; clover is rarely sown down with the wheat (W.G. Benedict). Shoemaker and Tyler (Plant Dis. Repr. 38 (10):710. 1954) have reported eye spot to be quite widespread in New York State. The disease was first found in Ont. in 1949 (P. D. S. 39:1) (I. L. C.).

ERGOT (Claviceps purpurea) affected volunteer rye in a field of winter wheat at Creston, B. C.; the ergot bodies would probably be noticeable in the threshed wheat (J. S. Horricks). Head infection was 8-tr., 1-2%, 1-5%/626 fields of spring wheat examined in Alta.; none was found in the Peace River area (W. P. C., J. S. H.). (cf. Ergot Survey) Ergot affected 1% of the heads of Thatcher wheat in the co-operative seed treatment trials at Ste Anne de la Pocatiere, Que. (R. O. Lachance). A few ergots were present in a sample of wheat brought in by a poultryman at Charlottetown, P. E. I. (R. R. Hurst).

ANTHRACNOSE (Colletotrichum graminicola) affected 28% of the plants in a block of Richmond winter wheat in the plots at Ottawa, Ont.; damage was tr. -sl. (R. V. Clark).

The root-inhabiting fungus, Cryptoascus graminis Robinson & Ayers (Can. J. Bot. 32:543-544. 1954) was found on the roots of 1% of the plants in a field of Cornell 595 affected by a root rot in Kent Co., Ont. The fungus was frequently parasitizing the roots of wheat plants grown in the greenhouse in soil from a wheat field affected by the root-rot complex (see under Rhizoctonia solani) (W. G. Benedict). This root parasite was first observed in P. E. I. in 1936 (P. D. S. 16:6) and was tentatively identified as an undescribed species of Cryptoascus in 1937 (P. D. S. 17:5-6). It has not previously been reported elsewhere in Canada (I. L. C.). A trace was found on the roots of Acadia in a field at Covehead, P. E. I. (R. R. Hurst).

POWDERY MILDEW (Erysiphe graminis). Infection was 2-tr. 1-sl./8 fields of spring wheat examined at Creston, B. C. (J. S. Horricks). On winter wheat in s. Alta., infection was 26-tr. 3-sl./37 fields (J. S. H.) and on spring wheat in Alta. the ratings were 44-tr. 17-sl. 3-mod.

3-sev./626 fields examined. Most infected fields were in s. Alta. with a few in the Peace River area (W. P. C., J. S. H.) (see also Rust Nurseries).

Powdery mildew was present in the plots at Ottawa, Ont. On spring wheat, infection was fairly heavy on Acadia, mod. on Cascade, and mod. but patchy on Coronation; on the winter variety Richmond infection was sl. -sev. (R. V. Clark).

HEAD BLIGHT (Fusarium spp.). Tr. infections were noted in two fields, at Chamberlain and Canwood, out of 251 fields examined in Sask. (H. W. M.). Isolations made from 4 samples yielded the following species: spring wheat-Nipawin, Sask., (tr. infection) F. avenaceum; Winnipeg, Man., (tr.) F. culmorum; (tr.) F. avenaceum; winter wheat - Sanford, Ont. (mod.) F. culmorum (W. L. Gordon). Head blight affected tr. -25%, av. 10%, of the heads of spring wheat in one variety trial and tr. -5%, av. 2% in another at Ste Anne de la Pocatiere, Que. (L. J. Coulombe). Head blight affected 50-75% of the heads in blocks of Cascade, Acadia and Coronation wheat at Ottawa, Ont. Helminthosporium sativum appeared to be the predominant pathogen (R. V. Clark).

COMMON ROOT ROT (Helminthosporium sativum and Fusarium spp.). Damage was 8-tr. 2-sl./12 fields of winter wheat and 3-tr. 5-sl./8 fields of spring wheat examined about Creston, B. C. (J. S. Horricks). Damage was 12-tr. 18-sl. 6-mod. /37 fields of winter wheat, all in s. Alta. (J. S. H.) and 227-tr. 276-sl. 48-mod. 7-sev./626 fields of spring wheat examined in Alta.; the disease was general throughout the province, but the damage was not great (W. P. C., J. S. H.).

Common root rot appeared early in Sask. in 1954. In most parts of the province the percentage of plants bearing conspicuous lesions was relatively high, infection ranging from 30 to 70% by the time the plants were in the late seedling stage. This high figure indicates that an abundance of inoculum was present and that on account of the late date at which much of the crop was sown the soil was relatively warm during the seedling stages, a condition favourable for infection. The disease, however, became less prevalent as the season advanced and wet weather set in. Between the time of seedling infection and of the crop flowering, there was a general reduction in the severity of infection. The reduction resulted from the death and partial decay of infected tissue such as the coleoptile and lower leaf sheaths. Some infection still was present during the late season on the longer-lived parts of the plants. From data collected from 130 fields visited after the crop had reached the soft dough stage there was obtained for the province an average disease rating of 9.44, which is a lower figure than the 12.22 recorded for 1953. The ratings for crop districts 1, 2, 5, 6, 7, and 8 were 9.3, 9.1, 11.5, 6.2 and 6.6 respectively. The data obtained in the other three districts were inadequate for computing reliable ratings. The prematurity blight phase of common root rot was evident in 25 out of 120 fields visited at a time when it should be observable. In 14 fields 1-5% of the plants were affected; in the other 9, less than 1% showed symptoms. Specimens

showing symptoms of prematurity blight were also received from five places in Sask. (B. J. Sallans). Common root rot was sev. on wheat seedlings received from Birch Hills on July 7; the disease was present on more mature plants from Lucky Lake and from 2 fields near Prince Albert (T. C. Vanterpool).

KERNEL SMUDGE (Helminthosporium sativum and Alternaria tenuis) sev. discoloured a sample of Selkirk wheat from Stonewall, Man. (J. E. Machacek).

LEAF BLOTCH (Helminthosporium tritici-repentis). Infection was 2-tr. 45-sl. 3-mod. /251 fields examined in Sask. The disease was present in all zones and was epidemic when the crop was at the third to fourth leaf stage; it then disappeared as the weather turned drier (H. W. Mead). The perfect state (Pyrenophora tritici-repentis) was found on stubble at Sutherland and LaPorte (T. C. Vanterpool).

ROOT ROT (Lagena radiculicola). In June, during heavy rain, when the fields were muddy, a bucketful of soil was collected from the edges of 4 summer fallow fields on Regina clay, 3-12 mi. n. of Regina, Sask. After the soil was brought to the greenhouse, it was sown to wheat and kept quite moist; Lagena radiculicola developed abundantly in the fine roots of the plants. From the studies made by Vanterpool and Ledingham (Can. J. Research 2:171-194. 1930) it seems highly probable that the fungus still causes sl. damage in wet years to wheat on the heavy soils of the Regina plains (T. C. Vanterpool).

TAKE-ALL (Ophiobolus graminis). Damage was 5-tr. 3-sl. /12 fields of winter wheat and 1-tr. /8 fields of spring wheat examined about Creston, B. C. (J. S. Horricks). Take-all damage was 3-tr. 1-sl. /37 fields of winter wheat in s. Alta. (J. S. H.) and 43-tr. 42-sl. 15-mod. 4-sev. /626 fields of spring wheat examined in Alta. The disease was generally scattered through the province, but the most sev. damage occurred on the black soil e. of Edmonton (W. P. C., J. S. H.). Out of 251 fields examined in Sask., 8 were found affected in central and e.-central Sask.; damage was 3-tr. 5-sl. (H. W. M.). Affected specimens were received from Nokomis and Prince Albert (T. C. Vanterpool). A tr. infection was found in a small field at Mavillette, Digby Co., N. S.; perithecia were numerous on the crown and culms of the infected plants. First record for N. S. (K. A. Harrison, D. W. Creelman).

BASAL GLUME ROT (Pseudomonas atrofaciens). Infection was 3-tr. and 1-mod. in the 4 fields found affected in central Alta. (W. P. C.). Tr. -sl. infections were observed in 13 fields mostly located between Saskatoon and Regina (H. W. Mead).

STRIPE RUST (Puccinia glumarum). Infection was 1-tr. 5-sl. 1-mod. 5-sev. /12 fields of winter wheat and 1-tr. 1-sl. 1-mod. 5-sev. /8

fields of spring wheat about Creston, B. C. (J. S. Horricks).

STEM RUST (Puccinia graminis). The rust epidemic in Western Canada in 1954 is fully described in a special section under Rust Nurseries (q. v.). Only a few additional notes are included here.

Infection was 18-tr. 3-sl. on winter wheat in s. Alta. (J. S. H.). Stem rust on spring wheat was observed only once, in the Prince River district, at Whitelaw. Elsewhere in Alta., stem rust was general; it caused heavy damage about Drumheller and in an area enclosed by the Sask. boundary and a line passing through Chauvin, Vegreville, St. Paul and Lloydminster (W. P. C., J. S. H.). Stem rust was found to be general on barley in the increase plots at Saskatoon, Sask., on 22 June by Dalton Wong and myself. Next day it was found on wheat at Saskatoon by myself and in every wheat field in the district by B. J. Sallans. These reports made at least a month before the average appearance of stem rust are believed to be the earliest records for the district. Leaf rust was, of course, also observed on wheat wherever stem rust was found. (T. C. Vanterpool). Stem rust infection was recorded in the plots at Ottawa as follows: spring wheat - Coronation tr.; Cascade 10% and Acadia 75%; and winter wheat - Richmond 10% (R. V. Clark). Infections up to 25% were observed in the plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe) and up to 10% in the plots at Fredericton, N. B. (J. L. Howatt). A tr. was found in field of mixed wheat at Stanhope, P. E. I. (R. R. Hurst).

LEAF RUST (Puccinia triticina) was also epidemic in Western Canada in 1954 (see Rust Nurseries). Traces were observed in 7 out of 12 winter wheat fields about Creston, B. C., and in 12/37 in s. Alta. (J. S. Horricks). Infection was 100-tr. 141-sl. 69-mod. 27-sev./626 fields of spring wheat in Alta. Leaf rust was widespread and was noted as far to the northwest as 16 mi. n. of Fort St. John, B. C. (W. P. C., J. S. H.). Leaf rust infections ranged from 25 to 50% in the plots at Ottawa, Ont. (R. V. Clark) and mostly from 20 to 50% in the plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe). Leaf rust was generally light at the Station, Fredericton, N. B. (J. L. Howatt). Heavily rusted specimens were brought in from Mt. Herbert, P. E. I. (R. R. Hurst).

BROWNING ROOT ROT (Pythium spp.) was reported from Eaglesham and Drumheller, Alta. (A. W. Henry). The disease was found affecting wheat seedlings received from Sceptre, Sask. (H. A. H. Wallace). Plants in the late seedling stage received from Prince Albert were severely affected by root rot caused by Pythium and Helminthosporium-Fusarium. Roots were cream-coloured instead of white and in a second sample Ophiobolus was present. According to the Agricultural representative the crop looked poor (T. C. Vanterpool). A mod. infection was observed at Swan River, Man. (J. E. Machacek).

ROOT ROT (Rhizoctonia solani, Pratylenchus minyus, etc.) caused mod. -sev. damage in 65 out of 236 fields, mostly of Cornell 595, examined in Kent Co., Ont. The disease was only slightly less prevalent than in 1953 (P. D. S. 33:4-5) (W. G. Benedict).

GLUME BLOTCH (Septoria nodorum). Traces were recorded in 3 fields of winter wheat and a sl. infection in one of spring wheat about Creston, B. C. (J. S. Horricks). Only traces were observed in 3 fields of winter wheat and 4 of spring wheat in s. Alta. (J. S. H.). In the rest of Alta. the infection was 50-tr. 170-sl. 104-mod. 25-sev. (W. P. C.). Affected specimens were received from Prince Albert, Sask. (T. C. V.). No other observations seemed to have been made in the Prairie Provinces (I. L. C.). Infection was heavy in the cereal plots at Charlottetown, P. E. I., on Acadia. Mature pycnidia were present on the glumes (J. E. Campbell).

SPECKLED LEAF BLOTCH (Septoria spp.). Infection was 4-tr. 7-sl. /12 fields of winter wheat and 3-tr. 1-sl. /8 fields of spring wheat examined about Creston, B. C. (J. S. H.). Infection was 15-tr. 3-sl. /37 fields of winter wheat in s. Alta. and 42-tr. 229-sl. 131-mod. 99-sev. /626 fields of spring wheat in Alta. The disease was most severe in the mature crops at the time of examination. No attempt was made to determine the species of Septoria present (W. P. C., J. S. H.). Infection by S. avenae var. triticea was a trace in one and mod. in a second field in the Regina area of Sask. (H. W. Mead). Diseased specimens were received from Viscount (T. C. Vanterpool). Trace to light infections were found in the plots at Ottawa, Ont. on Richmond winter wheat and Cascade, Acadia and Cornation spring wheat (R. V. Clark). Infection was 5-45% in the wheat plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe).

COMMON BUNT (Tilletia caries and T. foetida). The date obtained from the records of the Board of Grain Commissioners for the current year is presented in Table 1. There appears to be a very slight drop in the percentage of cars graded smutty in the past year (W. Popp).

Table 1. Common Bunt in Wheat in Western Canada

Class of Wheat	Aug. 1, 1953 to July 31, 1954			Aug. 1 to Oct. 31, 1954		
	Cars Inspected	Cars Graded Smutty	Percentage Graded Smutty	Cars Inspected	Cars Graded Smutty	Percentage Graded Smutty
Hard Red Spring	188,222	233	0.12	35,713	30	0.08
Amber Durum	4,420	6	0.14	781	2	0.26
White Spring	219	1	0.46	65	0	0.00
Alta. Red Winter	205	9	4.39	232	5	2.15
Garnet	1,525	1	0.06	898	0	0.00
Mixed Wheat	156	0	0.00	63	0	0.00
All classes	194,747	250	0.13	37,752	37	0.10

A trace of bunt was found in 2 out of the 12 fields of winter wheat examined about Creston, B. C. (J.S. Horricks). A trace of bunt was found in 4/37 fields of winter wheat in s. Alta. (J.S.H.) and in 1/626 fields of spring wheat in Alta. The affected field was at Notikewin (W. P. C.). Traces of bunt were recorded in 13/186 fields in Sask. It was as usual rather scarce. (R. C. Russell). A trace of bunt was observed in one field out of 115 examined in Man. although some fields were too young for diagnosis of the disease (W. Popp).

DWARF BUNT (Tilletia contraversa or T. brevifaciens). Traces were found in 4/12 fields of winter wheat examined about Creston, B. C. (J.S. Horricks); the diagnosis was confirmed from a specimen from one field sent to Ottawa (I. L. C.).

A field survey for dwarf bunt in Ont. was again undertaken in 1954. To secure more complete coverage of the province, S. G. Fushtey and L. V. Busch surveyed the s. w. counties and I. L. Connors and A. J. Skolko the central and e. counties. Of the 400 fields examined, common bunt (T. foetida) was found in 50, dwarf bunt in 25, and both species in four. As a result of two years' observations it appears that dwarf bunt is most prevalent in the winter wheat areas in Bruce, Grey, Dufferin and Simcoe counties. It is well established in Huron and occurs in Middlesex and York. It is also known from single fields in Brant, Perth, and Victoria counties. Dwarf bunt appeared to be slightly less prevalent this year than in 1953 (I. L. Connors, S. G. Fushtey).

With a view to ascertaining what species of smut caused the "low" smut reported in Michigan in 1892 and again in 1918 the herbarium of the Michigan State College was visited in November. As a result of examination of specimens made then and after my return to Ottawa, it may be stated that dwarf bunt was present in Michigan as early as 1890. It may be noticed that the account of "low" smut given by Mr. Enos Holmes of Buchanan, Mich., and published by P. M. Harwood (Mich. Agr. Exp. Sta. Bull. 87. 1892) describes the appearance and distribution of dwarf bunt in the field as we know it to-day in Ont. Although no specimens with which Potter and Coons (Phytopathology 8:106-113. 1918) had worked were located, a specimen collected at New Carlisle, Indiana, July 1917 and preserved in the herbarium of Purdue Univ. Agr. Exp. Station proved to be dwarf bunt. It seems possible that dwarf bunt may have been present in eastern North America for a long time. If this deduction is correct it is essential to determine whether dwarf bunt is now becoming worse than formerly because the present varieties are more susceptible or the use of the combine-harvester and other changes in wheat culture particularly favour the organism. It is hoped to publish a further account of these observations (I. L. Connors).

LOOSE SMUT (Ustilago tritici). Infection in spring wheat was 2-tr./8 fields about Creston, B. C. (J.S.H.) and 5-tr. 2-1%/626 fields in Alta. (W. P. C., J.S.H.). In Sask. loose smut was seldom seen except

in Lee or durum wheat; it was recorded in 6/186 fields; av. infection was tr. - (R. C. Russell). In Man., loose smut is rapidly increasing in Lee, in some fields of which 12% of the heads were affected in 1954, compared with 5% in 1953 and 3.5% in 1952. The av. infection in 115 fields of wheat was 1.3% (W. Popp). Loose smut affected 1.5% of the heads in a field at the Station, Ste Anne de la Pocatiere, Que.; the seed had been treated by the hot water method (R. O. Lachance).

BLACK CHAFF (Xanthomonas translucens). Diseased specimens were received from Livelong and Prince Albert, Sask. (T. C. Vanterpool).

STREAK MOSAIC (virus) was more prevalent than in the previous 2 years in s. Alta. in areas where winter wheat is grown extensively. Infection in winter wheat surveyed in May and June was 36-tr. 19-sl. 38-mod. 29-sev./124 fields and in spring wheat examined in June and early July it was 10-tr. 4-sl. 4-mod. 7-sev./34 fields. Losses in yield were substantial in all fields where the disease was recorded as mod. or sev.; 18 of the sev. diseased crops observed were worked up in the spring and the fields summerfallowed or sown to a spring grain. Several other abandoned crops were reported by district representatives and farmers. The later surveys showed that mosaic was also a serious problem in spring wheat that was grown close to diseased winter wheat.

The sev. and widespread incidence of wheat streak mosaic in the 1953-54 winter wheat crop is attributed to several factors that favoured the multiplication and spread of the virus and its vector, Aceria tulipae. Many spring wheat crops were late maturing in 1953 and while they were still immature provided a source of infection for winter wheat sown in adjacent fields. Also many fields harboured volunteer wheat that was not eliminated before winter wheat was sown in the same or adjacent fields. These immature plants afforded excellent breeding grounds for the vector as well as the virus. Unusually warm weather during September and October favoured spread of the disease to and its increase on winter wheat.

Although I was unable to inspect personally the limited winter wheat acreage near Shaunavon in s. w. Sask., Dr. J. E. Andrews of Lethbridge accompanied by Mr. S. McBean of Swift Current did examine a number of fields. They found streak mosaic in one field where it was causing mod. -sev. damage. From samples brought to Lethbridge the diagnosis was confirmed (J. T. Slykhuis).

POOR EMERGENCE (? chemical injury). A field of spring wheat was observed at Strathmore where emergence was very poor. When the grain was dug up the kernels bore extremely thickened sprouts 1/2-1 in. long and up 1/4 in. in diameter. The seed had been treated with Mergamma C. When the same wheat was treated with Ceresan M there was a good stand of normal seedlings. It would appear that damage was caused in some way by the Mergamma (W. P. Campbell).

OATS

ERGOT (Claviceps purpurea) was found in 4 numbered varieties under test at St. Charles de Caplan, Que. (D. Leblond).

ROOT ROT (Fusarium spp.). Damage was 1-sl./6 fields examined about Creston, B. C., and 9-tr. 4-sl./302 fields in Alta. (J. S. Horricks, W. P. Campbell).

LEAF BLOTCH (Helminthosporium avenae). Infection was 1-tr. 2-sl./6 fields examined about Creston, B. C., and 6-tr. 10-sl./302 fields in Alta.; all but one field was in s. Alta. (J. S. H., W. P. C.). A sl. infection was observed on a block of Abegweit at Ottawa, Ont. (R. V. Clarke) and on a field of the same variety at North Lake, Kings Co., P. E. I. (J. E. Campbell). Infection was tr. -sl. in the plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe).

Seedling blight was sev. in a field of Cartier at North River, Queens Co., P. E. I., on 17 June. The affected seedlings formed yellow patches in the field. The seed was not treated (J. E. Campbell). Although an Alternaria was isolated from the seed, it is unlikely that it was the primary pathogen (I. L. C.).

HALO BLIGHT (Pseudomonas coronafaciens). Infection was 80-tr. 101-sl. 34-mod. 6-sev./302 fields examined in Alta.; most sev. affected fields were in central Alta., where the rainfall was very heavy (W. P. C., J. S. H.). A sl. infection was found in 5 out of 6 fields examined in Man. (W. A. F. Hagborg). Halo blight was fairly prevalent on blocks of Abegweit and Beaver at Ottawa, Ont. (R. V. Clark).

STRIPE BLIGHT (Pseudomonas striafaciens) infected a few plants of Abegweit and 10% of the Banner in blocks at Ottawa, Ont. (R. V. Clark).

CROWN RUST (Puccinia coronata). For its occurrence in Western Canada see under Rust Nurseries. Infection was 50-tr. 53-sl. 27-mod. 3-sev./302 fields in Alta.; the affected fields were mostly in e. central Alta. (W. P. C.).

A sl. infection was noted in a field at St. Catharines, Ont. (T. R. D.). A 10% infection was recorded on Abegweit and 50% on Beaver at Ottawa (R. V. Clark). Crown rust was extremely heavy on oats forming a border about a 5-acre field of gladiolus at Bethany, Shefford Co., Que. An adjacent field of oats was likewise heavily rusted. Stem rust was also present (J. A. Parmelee). Infection ranged up to 75% in the plots at Ste Anne de la Pocatiere; very few of the lines under test showed marked resistance to crown rust (L. J. Coulombe). A mod. infection was also noted at St. Gedeon, Lake St. John Co. (D. Leblond). Little rust was observed at Fredericton, N. B., except in fields sown late (J. L. Howatt).

Only tr. infections were recorded at Kentville, N.S.; up to 5% of rust was noted in fields near Bridgewater, Lunenburg Co. (D.W. Creelman). Crown rust was mod. on oats about Charlottetown, P.E.I., apparently being somewhat heavier than usual; infection on the buckthorn was very light (J.E. Campbell).

Phanerogamic specimens of several oat species were collected 13 Oct. 1953 from the Forage Plants nursery at Ottawa, Ont., by L. Jenkins. After the specimens were identified by D.R. Lindsay, the rust infection on each collection was estimated as follows: Crown rust - Avena brevis 1927-5628 and 1927-5785, nil; A. longiglumis 1927-5514, tr.; A. sativa v. orientalis 1927-5630, light; A. sterilis ssp. trichophylla 1927-5639, nil; A. strigosa 1927-5631, mod.; 1927-5640, heavy; and 1927-5768, mod.-heavy. Stem rust - A. brevis, mod.-heavy and heavy; A. longiglumis, light; A. sativa v. orientalis mod.; A. sterilis ssp. trichophylla, light; and A. strigosa, mod. (D.B.O. Savile).

STEM RUST (Puccinia graminis). The epidemic in Western Canada is described under Rust Nurseries. Infection was 56-tr. 46-sl. 37-mod. 20-sev./302 fields; the affected fields were mostly in e. - central Alta. Stem rust was also widespread on wild oats (Avena fatua) in the same area and often very severe, attacking even the pedicels and glumes (W.P. Campbell, J.S. Horricks).

Stem rust infections up to 65% (Ajax) were observed in the plots at Ste Anne de la Pocatiere, Que. (L.J. Coulombe). Stem rust caused some loss of yield at Woodstock, N.B., where much of the crop was sown late (S.R. Colpitts). Infection was a trace up to 10% (Ajax) in the plots at the Fredericton Station (J.L. Howatt). A 30% infection was recorded near Bridgewater, N.S. (D.W. Creelman).

SPECKLED LEAF BLOTCH (Septoria avenae). Infection was 17-tr. 109-sl. 41-mod. 5-sev./302 fields examined in Alta. (W.P.C.). A light infection was reported at Melville and Jansen, Sask. (H.W. Mead). The disease was heavy on leaves of Beaver and much lighter on Abegweit in blocks of these varieties at Ottawa, Ont. (R.V. Clark). In the variety test at Ste Anne de la Pocatiere, Que., infection ranged from 15 to 70% (L.J. Coulombe). Infection was also sev. in a field of Beaver at the Station (H. Genereux) and at St. Charles de Caplan (D. Leblond). Speckled leaf blotch was sev. in some varieties under test at the Station, Fredericton, N.B. The glumes were also often frequently attacked. In sev. affected varieties, the culms were injured, causing the crop to lodge (J.L. Howatt). The disease caused mod. damage to a field at Berwick, N.S. (D.W. Creelman). Speckled leaf blotch was general in P.E.I., causing rot of the culms especially of Abegweit. The foundation seed plot of this variety at the Station, Charlottetown, was heavily infected; about 80% stem infection and 15% stem break were recorded (J.E. Campbell).

SMUTS (Loose Smut, Ustilago avenae and Covered Smut, U. kolleri) infected 58/302 fields examined in Alta. ; infection was tr. -30% av. 1.1% in fields examined (W. P. C. , J.S.H.). Covered smut was found in 13/29 fields examined in Sask. causing an av. infection of about 2%. No loose smut was observed this year (R.C. Russell). In the 74 fields of oats examined in Man. loose smut infection was 0-6%, av. 0.3% and that of covered smut 0-20%, av. 0.6%, an average of 0.9% for the two smuts. The oat smuts have not been very prevalent in recent years except for a heavy infection in an occasional field (W. Popp). Loose smut infection was 1-10% and that of covered smut 5-15% in the fields examined in Kamouraska Co. , Que. Some smut, particularly loose smut, was present in every field, but covered smut when present was more prevalent than usual (R.O. Lachance). A crop of Banner in Chicoutimi Co. from well-cleaned seed grown on the farm but not treated showed 20% loose smut (L. J. Coulombe). A tr. of loose smut was noted in Ajax and Erban at Grand Falls, N.B. (S.R. Colpitts).

RED LEAF (virus). What is believed to be red leaf affected a few plants of Abegweit and Beaver in blocks of these varieties at Ottawa, Ont. (R.V. Clark).

STREAK MOSAIC (virus). A trace was found in one field of oats in s. Alta. (J.S. Horricks).

BLAST (non-parasitic). Damage was 5-sl./6 fields about Creston, B. C. and 75-tr. 87-sl. 57-mod. 26-sev./302 fields examined in Alta. Wherever the varieties were identified, blast was most sev. in Victory (W. P. C. , J.S.H.). Blast was only noted in 3 out of 29 fields examined in Sask. ; in general oats made good growth and in consequence damage from blast was sl. (H. W. Mead). Blast caused in general little damage to the varieties under test at Ste Anne de la Pocatiere, Que. ; the highest percentage was 13.4 in Victory (L. J. Coulombe).

BLACKBIRD INJURY. Examples of injury were received from 4 places in Sask. Its relative prevalence on oats this year suggests that the natural food of the blackbird may have been scarce; native fruits matured late and insects were scarce. The blackbirds squeeze the oats between their bills when the grains are in the milk. Sterility results. Beak marks may be observed diagonally or horizontally across the glumes (T. C. Vanterpool).

BARLEY

ERGOT (Claviceps purpurea). A sl. infection was found in 14/351 fields examined in Alta. ; one affected field was in the Peace River area and the others in e.-central Alta. (W. P. C.). See also Ergot Survey for occurrence in Sask. and Man.

POWDERY MILDEW (Erysiphe graminis). A sl. infection was seen in one field near Fort St. John, B. C. (W. P. C.). Traces were observed in the Station plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe) and Charlottetown, P. E. I. (R. R. Hurst).

A new feed barley named Brant developed at the Ontario Agricultural College, Guelph, has out yielded all named varieties in a uniform test of 25 barley varieties conducted by the Cereal Division during 1954 at 14 points in Eastern Canada. The new variety is resistant to powdery mildew (D. G. Hamilton).

HEAD BLIGHT (Fusarium spp.). Affected heads were received from Hirschel, Sask. (T. C. Vanterpool). Up to 12% of the heads were affected in the plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe).

STRIPE (Helminthosporium gramineum). Infection was 7-tr. 28-sl. 14-mod. 2-sev./351 fields examined; most of the affected crops were in central Alta. (W. P. C., J. S. H.). A tr. of stripe was seen in one field at Yorkton, Sask. (H. W. Mead).

SPOT BLOTCH (Helminthosporium sativum). Infection was 1-tr. 1-sl./3 fields about Creston, B. C. Spot blotch was only observed in s. Alta.; infection was 6-tr. and 1-sl. (J. S. Horricks). Spot blotch was reported by Dr. D. G. Hamilton to be generally heavy on barley in the Ottawa district. In the samples submitted the straws were bent at the nodes and the nodes were dark coloured and frequently decayed. (Mary E. Elliott).

HEAD BLIGHT (Helminthosporium sativum) was unusually prevalent in the Lacombe area, Alta.; infection was 25-tr. 37-sl. 7-mod./351 fields examined (W. P. C., J. S. H.). Affected plants were received from Cupar, Sask. (T. C. Vanterpool).

COMMON ROOT ROT (Helminthosporium sativum and Fusarium spp.). Damage was sl. in the 3 fields examined about Creston, B. C. (J. S. Horricks). Common root rot was general throughout Alta., damage being 67-tr. 153-sl. 46-mod. 10-sev./351 fields examined (W. P. C., J. S. H.). In Sask. infection was 2-sl. 12-mod. 3-sev./17 fields examined; the av. disease rating was 16.4, compared with 18.8 in 1953 (B. J. Sallans).

NET BLOTCH (Helminthosporium teres) was most serious in Alta. in the black soil areas particularly about Lacombe. Infection was 28-tr. 128-sl. 68-mod. 41-sev./351 fields examined in Alta. (W. P. C., J. S. H.). About Creston, B. C., infection was 1-tr. 1-sl./3 fields examined (J. S. Horricks). Net blotch occurred in all barley areas in Sask.; infection was 10-sl. 1-mod. 1-sev./24 fields examined (H. W. Mead). Net blotch was unusually sev. and widespread by the end of June in barley fields about Saskatoon (T. C. Vanterpool). In Man. in one

survey, infection was 1-tr. 1-sl. 5-mod. 2-sev./37 fields examined (G. J. Green); in another net blotch infected a tr. to 2% of the leaf area in 8 out of 11 fields examined (W. A. F. Hagborg). Net blotch was fairly heavy in the plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe) and at St. Charles de Caplan (D. Leblond). A 50% infection was noted on Fort barley in a field at the Normandin Station (H. Genereux). Net blotch was general in P. E. I. in 1954 (J. F. Campbell).

TAKE-ALL (Ophiobolus graminis). Most of the affected fields observed were in the area about Fort St. John and Dawson Creek, B. C.; damage was tr. -sl. (W. P. Campbell).

STRIPE RUST (Puccinia glumarum). A tr. infection was found in one field in s. Alta. (J. S. H.).

STEM RUST (Puccinia graminis) infection was 25-tr. 12-sl. 11-mod. and 2-sev. in the fields found affected in Alta.; these fields were all s. and e. of Edmonton extending s. to the international boundary (W. P. C., J. S. H.). In Sask. stem rust infection was much less severe on barley than on wheat. In general losses were sl. but occasionally they were mod. (H. W. M.). As already noted under wheat, stem rust was found on Hannchen and other barley varieties in the plots at Saskatoon on 22 June. This appears to be the earliest date on record of the appearance of stem rust in this district (T. C. Vanterpool). Only a tr. of rust was noted on barley at Ste Anne de la Pocatiere, Que. (L. J. Coulombe). The 1954 epidemic in Western Canada and the occurrence of stem rust in Eastern Canada are discussed more fully under Rust Nurseries.

LEAF RUST (Puccinia hordei). Traces of leaf rust were observed in 2 fields in s. Alta. (J. S. H.). Sl. infections were recorded in 4 fields in Sask. (H. W. M.). Only a trace was found on two varieties in the plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe). A mod. infection was recorded at St. Urbain, Charlevoix Co. (D. Leblond). Leaf rust was prevalent this year on barley varieties at the Station, Fredericton, N. B.; infection was 5-80% (J. L. Howatt). Leaf rust was heavy on Charlottetown 80 in a field near Charlottetown, P. E. I. (R. R. Hurst).

SCALD (Rhynchosporium secalis). Infection was 30-tr. 53-sl. 33-mod. 35-sev./351 fields examined in Alta.; the disease was most sev. in the Lacombe area (W. P. C., J. S. H.). Out of the 24 fields observed, infection was a tr. in a field at Birch Hills and sl. in one at Stewart Valley, Sask. (H. W. M.). Infection was 3-tr. 1-sl. 1-mod. 1-sev./37 fields examined in Man. (G. J. Green). A 40% infection was observed on Sanalta barley in the plots of the co-operative seed treatment trials at Ste Anne de la Pocatiere, Que. (R. O. Lachance).

SPECKLED LEAF BLOTCH (Septoria passerinii). Infection was 12-tr. 87-sl. 103-mod. 75-sev./351 fields in Alta.; most of the affected fields were in central Alta. and the Peace River District (W. P. C., J. S. H.). Infection was sl. in 3 and mod. in 2 in s. -central Sask. out of 24 fields examined (H. W. M.). Infection was 4-tr. 1-sl. 9-mod. 9-sev./37 fields examined in Man. (G. J. Green). The disease was mod. to heavy in the plots at Ste Anne de la Pocatiere, Que. (L. J. Coulombe).

COVERED SMUT (Ustilago hordei) was found in 34/351 fields in Alta.; infection was tr. -5%, av. tr. in the fields examined (W. P. C., J. S. H.). A tr. was found in 1/3 fields about Creston, B. C. (J. S. H.). Covered smut was recorded in 14/28 fields examined in Sask.; the av. infection in the affected fields was about 2% (R. C. Russell). Infection by covered smut was 0-12%, av. 0.3% and that by false loose smut 0-10%, av. 0.7% in the 108 fields examined in Man. Although these smuts are comparatively easily controlled by seed treatment, some heavy infections continue to be observed (W. Popp). Infections of 10-20% were quite common in fields in Kamouraska Co., the disease appeared to be more prevalent than usual (R. O. Lachance). False loose smut (U. nigra) affected 10% of heads in a field of Fort barley in the Lake St. John area. The species was checked by germinating the spores (L. J. Coulombe). About 1% of the heads were affected in a field at Brackley, P. E. I. (R. R. Hurst).

LOOSE SMUT (Ustilago nuda) A tr. -1% of loose smut was found in 2 fields about Creston, B. C. (J. S. H.). Loose smut was present in 138/351 fields examined in Alta. Infection was tr-40%, av. 1.4% (W. P. C., J. S. H., A. W. H.). Loose smut affected 15/28 fields examined in Sask.; the av. infection was about 2%. The level of infection appeared to be somewhat heavier than last year especially in n. e. Sask. where the humidity was particularly high in 1953. Some false loose smut may have been present (R. C. Russell). Loose smut was prevalent in Man., particularly in some fields of Montcalm and to a lesser extent in Vantage and O. A. C. Infection was 0-12%, av. 1.6% in the 108 fields examined (W. Popp). Infections of 1-10% loose smut were seen in most fields in Kamouraska Co., Que.; it appeared to be more prevalent than usual (R. O. Lachance). Loose smut was noticed in several fields in Richelieu Co.; less than 1% of the heads were affected (R. Crete).

BACTERIAL BLIGHT (Xanthomonas translucens). Infection of the heads was 24-tr. 30-sl. 5-sev./351 fields in Alta. (W. P. C., J. S. H.). A sl. infection was found on the leaves in 3/11 fields examined in Man. (W. A. F. Hagborg).

FALSE STRIPE (virus) occurred in several fields and plots at the Station, Lethbridge, Alta., where infected seed was sown. None was recorded in farmers' fields (J. T. Slykhuis).

STREAK MOSAIC (virus). Infection was a tr. in one field and mod. in another in s. Alta. These fields were adjacent to sev. infected wheat fields. The disease did not spread far into the barley and was of minor importance (J. T. S.).

BARLEY YELLOW DWARF (virus). Last summer symptoms resembling barley yellow dwarf were found on barley, oats and wheat in the experimental plots at Lethbridge, Alta. Attempts to transmit the disease experimentally by using aphids were inconclusive (J. T. Slykhuis).

MISCELLANEOUS. Injury of barley heads by birds was observed in samples sent from Kamsack, Sask., by the Agricultural Representative (T. C. Vanterpool). A case of Chlorosis was observed s. of Prince Albert. It was attributed to lack of nitrogen brought about by the cold weather this spring. Seedlings showing delayed growth and purple colour in the leaf sheaths were observed at Asquith. The soil was poor and probably deficient in phosphorus (T. C. V.).

A sl. -sev. stunting of the plants was observed in four fields around Camrose and Lacombe, Alta. It is suspected that the plants were injured as a result of cold, wet weather (W. P. C., G. B. S.).

RYE

ERGOT (Claviceps purpurea). Infection was 7-tr. 1-sl./30 fields examined in Alta. No ergot was observed in rye in the Peace River District, except at two places on plants along the roadside (W. P. C., J. S. H.). (cf. Ergot Survey). Infections in Eastern Canada were: sl. in a field at St. Catharines, Ont. (T. R. Davidson), sl. in 2 fields at Shawville (E. H. Peters) very sl. at the Station, Fredericton, N. B. (J. L. Howatt), tr. at Berwick, N. S. (D. W. Creelman), and sl. on Prolific in the rust nursery, at Charlottetown, P. E. I. (J. E. Campbell).

POWDERY MILDEW (Erysiphe graminis) was recorded as follows: traces in 8 fields in s. Alta. (J. S. Horricks); sl. and general in the plots at Saskatoon, Sask., where it is seldom observed (T. C. Vanterpool); sl. in a field at Stamford, Ont. (T. R. Davidson).

COMMON ROOT ROT (Helminthosporium sativum and Fusarium spp.). Infection was 6-tr. 13-sl. 2-mod./30 fields in Alta. Relatively little rye was grown in 1954 (W. P. C., J. S. H.).

TAKE-ALL (Ophiobolus graminis). A trace was found in one field and a slight infection in another in the Peace River District, Alta. (W. P. C.).

STEM RUST (Puccinia graminis). Tr. -sl. infections were recorded in 2 fields in e. -central Alta. (W. P. C.).

LEAF RUST (Puccinia secalis). Traces were found in 2 fields in s. Alta. (J.S.H.). Infection was mod. in a field examined at Stamford, Ont. (T.R. Davidson).

SPECKLED LEAF BLOTCH (Septoria secalis). Infection was 8-tr. 5-sl. 2-mod./30 fields examined; the affected fields were all located in central Alta. and the Peace River District (W. P. C. , J. S. H.).

STEM SMUT (Urocystis occulta). A tr. was found in a field of rye near Paisley, Ont. A previous record of this smut in Ont. is a herbarium specimen collected at Preston on 24 July 1912 by H. Groh (I. L. Conners).