II. DISEASES OF FORAGE AND FIBRE CROPS

ALFALFA

BLACK STEM (Ascochyta imperfecta). Diseased specimens were collected at Edgewater, B.C. in July (W.R. Foster and I.L. Conners). Stem infection was slight to moderate in 9 out of 99 fields examined in southern Alta. in July. In 4 other fields, slight leaf infection was found. Slight to moderate leaf and stem infection was present in the plots at Edmonton, Lacombe, and Lethbridge, while a moderate infection only on Ladak occurred at Beaverlodge (M.W. Cormack). Black stem was common and doing some damage at Indian Head, Sask., on July 14.

ROOT ROT (Cylindrocarpon Ehrenbergi, etc.) damage was found only in the Athabasca and Edmonton districts, where it occurred in 12 out of 27 fields examined. Severe damage by C. Ehrenbergi occurred in a field at Tawatinaw in early June. In the other fields damage was a trace in 4 fields and slight in 7. (M.W. Cormack)

DOWNY MILDEW (Peronospora aestivalis) was moderate on Lytton and slight on Baltic at Agassiz, B.C., while it was slight on Maesal at Sidney. Downy mildew was general on Grimm, Lytton and Ontario Variegated through the dry interior of B.C.; it was most prevalent in the north Okanagan and about Lytton, while it was found to a slight extent at Kelowna, Summerland and Grand Forks. The continuous wet weather during the spring months was probably responsible for its widespread occurrence. The infection was heaviest on the first crop, but the disease was observed on the young leaves of new growth following the first cutting (G.E. Woolliams). A trace to slight infection was general on young plants of all varieties at Edmonton in early September, and it was severe on a few scattered plants. (M.W. Cormack)

BACTERIAL WILT (Phytomonas insidiosa). Besides its occurrence in the fields of Grimm alfalfa at the Station, Summerland, B.C., bacterial wilt was found this year at Vernon and Grand Forks and diseased material was received from Trail. The organism was isolated, its identity and pathogenicity established. From these experiments it also appears that diseased plants are likely to succumb during the winter. Ladak appears to be more resistant than Grimm, Lytton (probably a strain of Grimm), or any other commercial variety available, and its cultivation is accordingly being recommended as a means of control of bacterial wilt. (G.E. Woolliams)

Bacterial wilt was found in 72 out of 74 stands of alfalfa, 3 years old or older, examined in the irrigated districts of southern Alta. The estimated mortality for 1941 was as follows: Trace in 23 fields, 1-2% in 32, 5% in 11 and 10% in 6. In the fields previously examined there was generally less damage than in 1940. Two 3-year-old fields, which were apparently free from damage had not been irrigated since the year of seeding and were very dry. No damage was found in 25 young stands, but the early stages of the disease were noted in several. Nearly all the old stands, which previously suffered severe damage, have been ploughed up. If increased damage in the younger stands is a reliable criterion, marked spread of infection was confined to the Lethbridge district. At the Lethbridge Station wilt was found in nearly all the plots and 5-10% of the plants were being killed in one old stand. (M.W. Cormack)

YELLOW LEAF BLOTCH (Pseudopeziza Jonesii) was severe in an isolated field of Lytton at Half-Way House, Lytton, B.C.; not observed elsewhere (G.E. Woolliams). A slight to moderate infection was found in 3 fields in Alta., and in the plots at Edmonton.

COMMON LEAF SPOT (Pseudopeziza Medicaginis) was general on Vancouver Island and the lower mainland, B.C. The disease was rather severe on the older foliage in crops of Grimm, uncut for hay in the Salmon Arm district. Infection was slight in 10 fields in Alta. and moderate in 3. In the plots, a trace was present at Beaverlodge, slight infection at Edmonton and Lacombe, slight to moderate at Lethbridge except on Orestan, which was severely infected. Common leaf spot was absent on the first crop at Ste. Anne de la Pocatiere, and Beaumont, Que., but it caused some defoliation of the lower leaves on the second (R.O. Lachance). Infection varied from a trace to severe in the 20 fields examined in P.E.I., with average infection slight (R.R. Hurst)

CROWN and ROOT ROT (A low-temperature Basidiomycete). Early spring killing of alfalfa caused by this pathogen (Phytopathology 31:1058-1059. 1941) was particularly severe in the seed growing areas of northern Alta. in 1941. The estimated damage by fields is given for the different districts in Table 2.

Table 2. Estimated damage caused by crown and root rot in alfalfa fields examined in central and northern Alta. in May, 1941.

District	Fields examined	Fields arranged according to estimated damage				
		None	Trace	Slight	Moderate	Severe
Cherhill-Sangudo	36	2	2	6	8	18
Barrhead-Westlock	14	2	4	5	3	
Edmonton-Lacombe	16	6	6	2	2	
Total fields	66	10	12	13	13	18

The damage was usually most severe in fairly young stands about 3 to 4 years old. In the Cherhill-Sangudo district, on grey wooded and transition soils, about 50% killing was found in 6 fields, and over 25% in 12 others. Much less damage occurred in the other districts on black soil. Severe killing was found previously, however, on black soil in the Lacombe district. (M.W. Cormack)

WITCHES' BROOM (virus?). A few plants were moderately affected in 3 fields at Cherhill, Alta. In a plot at Edmonton the disease had increased until about 5% of the plants were dead or severely damaged. (M.W. Comack)

POTASH DEFICIENCY was general in 2 fields in Queens Co., P.E.I. Small chlorotic islands were present in the leaves; these tended to coalesce along the leaf margin. (R.R. Hurst)

COMMON CLOVER

SOOTY BLOTCH (Cymadothea Trifolii) was general and moderately affected the lower leaves of red clover on the lower mainland and Vancouver Island, B.C. (W. Jones). Infection was a trace to moderate on red clover in P.E.I. (Bruce McLaren)

ROOT ROT (Cylindrocarpon Ehrenbergi, etc.) caused slight damage to red clover and moderate damage to white clover in the plots at Lacombe, Alta. (M.W. Cornack)

POWDERY MILDEW (Erysiphe Polygoni). Infection was moderate on alsike clover at Brooks, Alta., and was a trace to severe on red clover in the plots at Edmonton. Powdery mildew was generally slight in P.E.I. on red clover. (R.R. Hurst)

COMMON LEAF SPOT (Pseudopeziza Trifolii) was collected on red clover at Agassiz, B.C. in June, 1940 (W. Jones and I.L. Conners). Infection was heavy in 15 fields under observation in Queens and Prince Counties, P.E.I. (Bruce McLaren)

STAGONOSPORA LEAF SPOT (S. recedens) was moderate to severe on red clover in the plots at Agassiz, B.C. on May 30, 1941. This is a new record for B.C. (W. Jones and I.L. Conners)

RUST (Uromyces Trifolii) was severe on leaves and stems on alsike clover in the plots at Sidney, B.C. (W. Jones). Aecia were abundant on white clover in the Winnipeg area, Man. by May 24 (A.M. Brown). Rust in varying amounts was widespread in P.E.I. (R.R. Hurst)

POTASH DEFICIENCY was heavy in patches covering 15% of the area of one field in Queens Co., P.E.I. (R.R. Hurst)

SWEET CLOVER

STEM CANKER (Ascochyta caulicola). A slight to moderate infection was found in 2 out of 15 fields in Alta. Scattered plants were killed at Brandon, Man. The organism was identified by W.J. Cherewick. This is the first time this organism was definitely identified with the disease in Man. (W.L. Gordon)

BLACK STEM (Ascochyta lethalis). A moderate infection was found in one field at Edmonton, Alta., out of 15 examined.

ROOT ROT (Cylindrocarpon Ehrenbergi, etc.). Damage was slight in 1 field and moderate in 2 at Athabasca, Alta. It was a trace to slight on all varieties at Lacombe and Lethbridge. (M.W. Cormack)

ROOT ROT (Fusarium spp.) caused slight damage at Saskatoon, Sask. About 10% of the plants were affected in small second-year plots at Kentville, N.S.

STAGONOSPORA LEAF SPOT and STEM BLIGHT (Leptosphaeria pratensis (Stagonospora Meliloti). A trace of leaf infection was found in 4 fields in Alta. and in the plots at Edmonton and Lacombe. Mature perithecia of L. pratensis were found for the first time on overwintered material at Edmonton. (M.W. Cormack)

PHYTOPHTHORA ROOT ROT (P. Cactorum). The damage ranged from 1 to 5% in 5 fields examined in southern Alta. There was also, in general, a trace to slight mortality in roadside stands. (M.W. Cormack)

LEAF SPOT (Pseudopeziza Meliloti). A moderate infection was found on a few plants of Melilotus alba at Countess, Alta.; this disease has not been previously reported on sweet clover in Alta. (M.W. Cormack)

ROOT ROT (Rhizoctonia Solani) was recorded in Man. from 3 fields; infection was a trace at Neepewa and slight at Brandon and Pipestone. Rhizoctonia Solani was isolated from all collections and considered to be the causal organism. (W.J. Cherewick)

WITCHES' BROOM (virus). A trace to 0.5% of the plants were affected in foundation stock of Pioneer sweet clover at Wembley, Alta. (W.C. Broadfoot)

BUCKWHEAT

YELLOWS (Callistephus virus 1) causing a severe sterility in buckwheat was common in York, Queens, Sumbury and Westmorland Counties, N.B. In the experimental plots, infection ranged from 2 to 8% in the rough Fagopyron tataricum varieties and a trace to 1% in the smooth F. esculentum varieties. In the test plot at the Laboratory, the winged buckwheat, F. emarginatum, remained free from infection. The virus was transmitted to China aster by means of the leafhopper, Macrosteles divisus, and was identified as Callistephus Virus 1.

In N.B., Fagropyron tataricum is grown to the virtual exclusion of F. esculentum. Two small fields only of the latter were noticed in 1941. It is believed that F. esculentum is not popular because it fails to ripen satisfactorily under N.B. conditions. On the other hand, four fields of buckwheat examined near Napanee, Ont., were all F. esculentum and yellows was found in only one field, in reality only a small garden plot. (D.J. MacLeod)

CORN

EAR ROTS. In late September a survey was made of the incidence of disease in corn in the areas producing grain corn in southwestern Ont. Ear and cob rots, with which Diplodia Zeae, Fusarium moniliforme, Gibberella Saubinetii, Nigrospora sphaerica and Penicillium spp. were associated, were found occasionally, but were of negligible importance. A second survey, during the first week in November, was made of husked corn in the field and crib in Essex Co. The results were as follows: Nigrospora ear rot, trace

to 6%; Diplodia, trace to 2%; F. moniliforme, trace to 1%; and G. Saubinetii, trace. Ears of hybrid corn seemed as easily infected by Diplodia Zeae and Nigrospora sphaerica as those of open-pollinated varieties. There was some indication also that ear rots were more severe in plantings of corn on the lighter soils (A.A. Hildebrand). During seed inspection in September in the dry interior districts of B.C. some affected ears (F. moniliforme) were present in nearly every planting, but the extent of the disease on the individual ears differed widely. Rhizopus sp. also occurred, but much less frequently. (G.E. Woolliams)

STALK ROT. The September survey in western Ont. revealed a trace of infection in a few fields. However, in one of Late Golden Glow in Essex Co., 12% of the stalks were affected presumably by Nigrospora sphaerica. This was the only case, where the disease had any economic significance. (A.A. Hildebrand)

RUST (Puccinia Sorghi). A trace was observed in 2 fields at Estevan, Sask, and Balmoral, Man., while a trace to a moderate infection occurred at Winnipeg. It was less commonly observed in Man. than in former years. In south-western Ont., infection was general and varied from a trace to severe according to location and variety. In general, infection apparently took place so late in the season that little or no damage resulted. Traces were recorded in Queens Co., P.E.I.

ROOT ROT (Pythium ultimum) very lightly infected corn at Saskatoon, Sask. Although P. ultimum was isolated, it is probably only slightly pathogenic to corn. Under field conditions in Sask., corn does not appear to be as susceptible to Pythium root rots as it is in the United States. (T.C. Vanterpool).

SMUT (Ustilago Zeae) was recorded as follows: Trace at Swift Current and Estevan, Sask.; trace to moderate on various varieties at Winnipeg, Morden, Brandon and Rossendale, Man.; in general light in southwestern Ont., but in a few fields heavier infection of the lower stalk was clearly correlated with early injury due to careless cultivation; occurred everywhere in Quebec, but rate of infection low; a trace at Summerside, P.E.I.

Fusarium moniliforme Sheldon var. subglutinans Wr. & Rg. was isolated from dead larvae of the corn borer, Pyraustia nubilalis, received from Dr. G.M. Stirrett, Dominion Entomological Laboratory, Chatham, Ont. The fungus has been recorded in Germany on the larvae of the corn borer. Although it is commonly found on corn in various parts of the world (Wollenweber & Reinking, Die Fusarien p. 100, 1935), this constitutes the first record of its association with corn in Canada. (W.L. Gordon)

FLAX

WILT (Fusarium Lini). Fusarium and some Rhizoctonia developed on specimens received from Edgeworth, Sask.; about 10% of the plants were affected in a field at Viscount. A new flax-wilt nursery was started by the Field Husbandry Dept. at Saskatoon in 1940. Soil from the old nursery was scattered over the new one and worked in. No wilt developed in 1940. This

year, wilt was generally distributed and moderately severe throughout the nursery. (T.C. Vanterpool) Wilt was recorded in Man.: Neepewa, trace in patches; Scarth, 20% of plants in patches. The organism (F. oxysporum f. Lini) was isolated from The Scarth specimens by W.E. Sackston (W.L. Gordon). Wilt was fairly prevalent in the plots of the Fibre Flax Division at Ottawa. Results of isolations by W.L. Gordon were reported as follows: About 30% of the plants were affected with F. oxysporum probably f. Lini; besides there was a trace of Rhizoctonia and a good deal of Alternaria; the plants had all the earmarks of flax wilt. Some wilt was also present in fields of fibre flax in Quebec. (I.L. Conners)

RUST (Melampsora Lini). A slight infection was seen in a field at Ladner, B.C. (J.W. Butler). Infection was a trace in a field at Edberg, Alta., and moderate to severe in the plots at Lethbridge. Specimens received from Regina and places further south in Sask. indicate that rust was fairly prevalent. It was severe on some new crosses at Indian Head and slight to moderate on Redwing and Bison. Rust was found in 16 out of 19 fields examined in Man. and the average damage was slight; it was more commonly observed than in previous years.

BROWNING (Polyspora Lini). A trace was found in a field at Wembley, Alta., and in the plots at Beaverlodge. A trace of browning was found at Saskatoon, Sask.; in general, breaking over of flax above ground level was found only occasionally in Sask. in contrast to a breaking over at ground level, probably the result of late heat canker (q.v.) which was common, conspicuous and serious. (T.C. Vanterpool)

SEEDLING BLIGHT. A scattered infection of damping-off and early seedling blight was observed at Saskatoon, Sask. Isolations yielded fungi in the following proportions: Rhizoctonia, 15; Fusarium, 2; Alternaria, 1; no growth, 4. (T.C. Vanterpool)

HEAT CANKER (non-parasitic). A form heat or drought injury was very prevalent this year in all varieties of flax in Sask. Samples were received from many points in the province, including Rockglen in the extreme south. It was common at Saskatoon and was reported to have been severe in the Scott district, causing heavy losses in some fields, particularly of Bison.

The trouble, as it appears in Western Canada, occurs somewhat later than the canker described by C.S. Reddy and W.E. Brentzel (U.S.D.A. Bull. 1120. 1922. The stems are girdled at the soil line, but lack conspicuous cankers. As the injured plants are broken over by the first strong wind, the break is rather clean. (P.M. Simmonds and T.C. Vanterpool)

MANGEL

LEAF SPOT (Cercospora beticola) was general on the leaves with occasional spots on the stem and few on the inflorescence in a large acreage of Prince and Yellow Intermediate being grown for seed in Middlesex Co., Ont.; the damage was slight (J.K. Richardson). A slight infection was observed in 12 out of 21 fields of seed mangels in P.E.I. (R.R. Hurst)

LEAF SPOT (Phoma Betae) was prevalent on the leaves of seed mother plants in the northern Okanagan, B.C., affecting 90% of the leaves. The disease was not found on young steckling plants being grown for the 1942 seed crop. Its general prevalence was no doubt due to a continuous rainy period, which lasted 6 weeks or more (G.E. Woolliams). Infection was trace to moderate in one field in Queens Co., P.E.I.

CROWN GALL (Phytomonas tumefaciens). A few plants, severely affected, were found in one field in Queens Co., P.E.I. (R.R. Hurst)

LEAF SPOT (Ramularia beticola) was general and caused considerable damage in 2 seed crops of Long Red at Dewdney, B.C. (W. Jones)

CRINKLE (virus). A trace was found in 3 fields in York and Sunbury Counties, N.B. The affected plants were severely dwarfed. (D.J. MacLeod)

CURLY TOP (virus). Only a few affected plants were observed in seed crops in the northern and central Okanagan districts, B.C. (G.E. Woolliams)

MOSAIC (virus). A trace of mosaic (Beta Virus 1) was found in 2 fields in York Co., N.B. The mottle was very marked and the plants were dwarfed (D.J. MacLeod). Traces were observed in 5 fields of elite seed stock out of 21 examined in P.E.I. (R.R. Hurst)

YELLOWS (virus). Traces were present in 5 out of 21 fields examined in P.E.I. (R.R. Hurst)

FASCIATION (cause unknown) affected 2% of the plants in a seed plot near Maugerville, N.B. In some plants, the entire stem was flattened and was from 2 to 3½ in. in width, suggesting the fusion of several branches (D.J. MacLeod). Several plants were affected in 7 fields out of 21 examined in P.E.I. (R.R. Hurst)

HEART and CROWN ROT (boron deficiency) was found in 11 out of 21 fields of elite seed stock examined; percentage of infected plants ranged from a trace to 15%. (R.R. Hurst)

MILLET

SMUT (Sphacelotheca Panici-miliacei). A slight infection was present in the plots of proso millet at Edmonton, Alta.

SOY BEAN

DOWNY MILDEW (Peronospora manshurica). Scattered infected plants were noted in the plots and general planting at the Station, Harrow, Ont.; damage was very slight (A.A. Hildebrand). A slight infection was found on Pagoda at the Farm, Nappan, N.S. (J.F. Hockey) Downy mildew has not been previously reported in Canada outside of Harrow.

BACTERIAL BLIGHT (Phytomonas glycinea). In the varietal and test plots and in the general plantings (at Harrow, Ont.), infection was general and ranged from slight to moderate. It was estimated that 95% of pods were affected in a field of Early Black Eye at St. Jean Chrysostome, Que. and 13.5% in another at the Station, L'Assomption; both were foundation stock grown from seed originating at Ottawa (R.O. Lachance). Three-quarters of the plants showed 50-100% foliage infection in a plot of Pagoda at the Farm, Nappan, N.S. on Aug. 23, and some pod infection later; Manitoba was less seriously affected. (J.F. Hockey)

MOSAIC (virus). Infection ranged from slight to moderate in the plots and general plantings at the Station, Harrow, Ont. (A.A. Hildebrand). An occasional plant of Pagoda was affected at Nappan, N.S.

SUGAR BEET

LEAF SPOT (Cercospora beticola) was present in 2 fields on Vancouver Island causing severe damage in one (W. Jones). As a result of periodic surveys of sugar beets in southwestern Ont. during the current season, it was established that, although leaf blight was general, it did not cause severe damage since infection of plants was delayed until relatively late in the season due to unfavourable environmental conditions. (A.A. Hildebrand)

LEAF SPOT (Phoma Betae) was found occasionally on the lower leaves on sugar beets on the lower mainland and on Vancouver Island, B.C. (W. Jones). A slight infection was recorded at Winnipeg, Man. In southwestern Ont., Phoma leaf spot was noted in the early part of the season on the foliage of beets being grown for seed in several different areas. Most of the infection was on the older leaves or on those of plants obviously lacking vigour. In a significant number of cases, however, young leaves near the tip of the seed plants were infected thereby affording a potential source of inoculum in close proximity to flower clusters in an early stage of their development. (A.A. Hildebrand)

CROWN GALL (Phytomonas tumefaciens). Only a few affected plants were seen in southwestern Ont. throughout the whole season; the disease was not of economic significance. (A.A. Hildebrand)

LEAF SPOT (Ramularia beticola). All 6 varieties (q.v. under rust) were moderately affected in the plots at Sidney, B.C., on April 4. It occurred generally on the lower mainland and on Vancouver Island on leaves and stems; it caused considerable damage to the foliage. (W. Jones)

RHIZOCTONIA ROT caused appreciable loss both in seed-producing plants and in commercial plantings in southwestern Ont. In seed plants, the injury usually appeared as a rotting of the base of the stem and crown of the steckling. In commercial plantings, the rot was first noted in early July on half-grown beets in several fields. When piles of harvested beets were examined in November, in those from one field, infection was exceptionally high, reaching 25%. (A.A. Hildebrand)

LEAF SPOT (Septoria Betae). All 6 varieties were slightly affected in the plots at Sidney, B.C., on April 4. (W. Jones)

RUST (Uromyces Betae) was found in January and throughout the season in the southern end of Vancouver Island. Although the disease was checked to some extent during the summer season, it caused considerable damage to the foliage. It was found for the first time on the lower mainland, where a slight infection was present in one field. Infection was slight on U.S. 33, U.S. 33 Special, and Danish on April 4 at Sidney, while it was moderate to severe on U.S. 12, Italian and Hungarian. The seed was sown the last week of June, 1940. (W. Jones)

CURLY TOP (virus). A slight infection was found in seed mother plants at Kelowna, B.C. (G.E. Woolliams)

SAVOY (virus), which is transmitted by the pigweed bug, Piesma cinerea, is reported for the first time in Ont. In most plantings examined this year in southwestern Ont., only a trace of the disease was found, but in fields in one particular district, infection ran as high as 6.5%. Circumstantial evidence suggests that weeds growing in close proximity to the fields were infected with the virus, which was transmitted to the beets following the invasion of the beet rows by viruliferous insects. (A.A. Hildebrand). See Hildebrand and L.W. Koch, Phytopath 32:328-331. 1942.

VIRUS-LIKE DISEASES. In the course of the surveys in southwestern Ont., some hundreds of plants exhibiting symptoms suggestive of diseases of the virus type were observed and have been marked for special observation. The affected plants were later harvested and "pitted" and after a period of dormancy are to be transferred to the greenhouse for further study. (A.A. Hildebrand)

BLACK ROOT (cause undetermined). Because of relatively dry weather in April and early May in southwestern Ont., it was possible to prepare the beet seed beds very thoroughly in 1941, and the crop was sown under more favourable soil conditions than for several years previously. With weather conditions continuing favourable, excellent early stands of seedlings were obtained. Commencing May 27, however, black root suddenly appeared over a great area and for a few days mortality of seedlings was extremely high. Although only a low percentage of the total acreage of some 30,000 acres sown to beets this year had to be abandoned, the effect of the disease was noted throughout the season in many fields, and was reflected in a marked reduction in yield.

It has been commonly held that incidence of black root is more severe in years of wet, cold springs. The fallacy of this belief was clearly indicated this year, since, as pointed out above, the beets were sown under more favorable conditions than have obtained for years. Obviously there is need for careful research to determine just what factors are associated with the incidence of the disease. (A.A. Hildebrand)

RAT TAIL (cause undetermined). A few affected plants were noted in southwestern Ont. (A.A. Hildebrand)

SUNFLOWER

RUST (Puccinia Helianthi). A moderate infection was recorded at Solsgirth, Man. Rust was very heavy in the plots at Ottawa, Ont., on a number of selfed lines of branched-type sunflower, which have been selfed for upwards of 20 years. Two lines died at flowering time and failed to set seed. Most of the earlier maturing lines matured seed, but the leaves died prematurely. (E.J. Doyle and I.L. Conners)

WILT (Sclerotinia sclerotiorum) was very prevalent in the rotations at the Station, Lacombe, Alta. It was most severe in the continuous sunflower plot (fertilized) where 75% of the plants were dying and nearly all the rest were infected. (G.B. Sanford)

CULTIVATED GRASSES

AWNLESS BROME GRASS (Bromus inermis)

Ergot (Claviceps purpurea). A trace was found in 2 fields near Edmonton, Alta. A trace was present in the experimental plots at Saskatoon, Sask. A trace was noted on cultivated awnless brome grass, on Agropyron repens, A. Smithii, Calamagrostis sp. and Elymus curvatus at Winnipeg, Man.

Leaf Blotch (Helminthosporium Bromi). A trace was found in 2 fields in Alta. A severe infection was general throughout the Arborg district, Man. in mid-June; some fields were ruined by the disease. (W.J. Cherewick and J.E. Machacek)

Bacterial Leaf Spot (Phytomonas coronafaciens var. atropurpurea). A slight infection was observed in the experimental plots at Saskatoon, Sask.; it is probably the same as the disease reported from Man. and Alta. (P.D.S. 20:26-27). It may have been present for some time. (T.C. Vanterpool)

Root Rot (Pythium arrhenomanes and P. graminicola) See under Browning Root Rot of Wheat. No way of estimating field damage of grasses by Pythium has been worked out. The reduction in dry weight of grasses grown in browning (Pythium-infested) soil as compared with normal soil, frequently amounts to 50% or more. This depression is easily overcome by applying ammonium phosphate to the browning soil. (T.C. Vanterpool)

Leaf Spot (Selenophoma bromigena) was reported as being severe at Winnipeg, Man.

CREEPING RED FESCUE (Festuca rubra)

Black Spot (Phyllachora graminis) was general in the plots at Sidney, B.C. (W. Jones)

CRESTED DOGTAIL (Cynosurus cristatus)

Brown Stripe (Scoletotrichum graminis) was general at the Station, Sidney, B.C.

CRESTED WHEAT GRASS (Agropyron cristatum)

Ergot (Claviceps purpurea). A trace was present on Fairway in the plots at Saskatoon, Sask. (T.C. Vanterpool)

Root Rot (Pythium arrhenomanes and P. aristosporum) See under Browning Root Rot of wheat.

KENTUCKY BLUE GRASS (Poa pratensis)

Rust (Puccinia Poae-sudeticae). A moderate infection was reported from Arborg and Winnipeg, Man.

MEADOW FESCUE (Festuca pratensis)

Rust (Puccinia ?Poae-sudeticae) was general on 3 strains of meadow fescue at Sidney and Agassiz, B.C.; the damage was slight.

ORCHARD GRASS (Dactylis glomerata)

Purple Leaf Spot (Mastigosporium rubricosum) was general on the lower mainland and on Vancouver Island, B.C., and caused slight to moderate damage. (W. Jones)

TIMOTHY (Phleum pratense)

Leaf Spot (Heterosporium Phlei) was reported as follows: General, causing slight damage on the lower mainland and on Vancouver Island, B.C.; slight to moderate infection in the plots at Edmonton, Alta.; slight to moderate damage on native and cultivated timothy in Queens Co., P.E.I.

Stem Rust (Puccinia graminis var. Phlei-pratensis). Infection was moderate in 2 fields and severe in one in Alta.; it ranged from a trace to severe in the plots at Edmonton. A 5% infection was reported from Grand Pre, N.S. Stem rust was general throughout P.E.I.; in the cultivated strains, susceptible lines were heavily attacked. (R.R. Hurst)

Brown Stripe (Scoletotrichum graminis) was general but caused slight damage on the lower mainland and on Vancouver Island, B.C.; a 5% infection was observed at Grand Pre, N.S. (G.W. Hope)

WESTERN RYE GRASS (Agropyron tenerum)

Ergot (Claviceps purpurea). A trace to slight infection was present in the plots at Saskatoon, Sask.; it was more prevalent on this grass than on awnless brome or crested wheat grass. (T.C. Vanterpool)

Leaf Smut (Ustilago striaeformis) was fairly general in the plots at Sidney, B.C. This is the first record of its occurrence in Canada on western rye grass. (W. Jones and I.L. Conners)

BOWLING GREENS

Brown Patch (Rhizoctonia type) was so severe this spring in a green about 8 years old in Saskatoon, Sask. that it was decided to re-seed rather than attempt to patch the green. The disease has been getting worse in the last few years. (T.C. Vanterpool)

LAWNS

Smothering (Physarum cinereum) caused some damage in a lawn about the Laboratory, Fredericton, N.B. Weeds were also attacked. (J.L. Howatt)

Brown Patch (Rhizoctonia Solani) killed the grass in a number of localized areas in a small lawn of Colonial Bent at St. Catharines, Ont. In a second lawn the disease was causing rather extensive dead areas (G.C. Chamberlain). Brown patch caused severe damage to 4 lawns at Charlottetown, P.E.I. It also affected small areas in 2 greens at the Stanhope Golf Course. (R.R. Hurst)

Snow Mould. Mycelial growth of a snow mould was conspicuous at the

edge of melting snow at many spots on the campus of the University of Saskatchewan, Saskatoon, Sask. It was seemingly most common on the north edge of snow banks or on the north side of a terrace. Killing of the grass appeared to be negligible, owing probably to the very rapid melting of the snow followed by a period of relatively warm and bright days. At Saskatoon, this trouble is noticed every spring, but it rarely causes any appreciable damage. A non-sporulating basidiomycete is most commonly isolated. (T.C. Vanterpool)

GOLF GREENS

Snow Mould (Fusarium spp., etc.) caused moderate to severe damage on untreated greens at Edmonton, Alta. (W.C. Broadfoot)