## II. DISEASES OF FORAGE AND OTHER FIELD CROPS

### A. FORAGE LEGUMES

#### ALFALFA

BLACK STEM (Ascochyta imperfecta) was generally sl. in s.-c. B.C. (E.J. Hawn) and sl.-mod. throughout the Peace River district of B. C. and Alta. (W. P. Campbell). Continuous dry ,weather checked its development in Sask. and disease incidence was only 12-tr./20 fields (H.W. Mead), Infection ranged from tr.-mod., depending on variety, at St. Charles de Caplan, Que. (D. Leblond).

WINTER CROWN ROT (low-temperature basidiomycete) was much more prevalent and destructive in Sask. in 1961 than for many years. Fifteen/20 fields surveyed were affected with up to 50% of the plants killed in a few fields. The same organism caused sev, damage to lawns (H.W. M.).

BACTERIAL WILT (Corynebacterium insidiosum) was found in 34% of fields examined in s.-c. B. C, compared with 78% in 1956. It was rated 11-tr.-sl. 15-sl.-mod. 8-mod.-sev./89 fields in s. Alta. and 4-mod./12 in the Maple Creek district in Sask. (E.J.H.)

STEM NEMATODE (Ditylenchus dipsaci) was 4-tr. 3-sl.-mod./89 fields in s. Alta. (E.J.H.).

CROWN BUD ROT (Fusarium roseum, Rhizoctonia solani, Ascochyta imperfects) was the most prevalent alfalfa disease observed in s.-c. B. C., particularly in irrigated areas. Infections were rated 36-tr.-sl. 41-sl.-mod. 8-mod,-sev./89 fields in s. Alta. and 3-tr.-sl. 3-sl.-mod./12 in the Maple Creek and Maryflat areas of Sask. (E.J.H.).

YELLOW LEAF BLOTCH (Leptotrochila medicaginis) was sl. in s.-c. B. C. (E.J.H.).

DOWNY MILDEW (Peronospora aestivalis), Slight infections occurred in s.-c. B. C. (E.J.H.) and 1 very light infection was seen in 20 fields examined in Sask. (H.W.M.)

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. medicaginis-sativae) was rated as sl. in s.-c. B. C, (E.J.H.) and was tr.-sl. in fields in the Peace River district of B. C. and Alta, (W. P.C.). One infected field was seen in n.-e. Sask. (H.W.M.) and the disease was common as light infections throughout P.E.I. (J.E. Campbell).

LEAF SPOT (Stemphylium botryosum) caused serious defoliation in late Sept. in several fields near Wallaceburg, Ont. (C. D. McKeen).

WITCHES' BROOM (virus). Slight infections were seen in s.-c. B.C. (E.J.H.).

BORON DEFICIENCY was observed in the Nicola Valley, nr. Merrit, B. C. (G. E. Woolliams). It was also mod. in fertilizer plots at Lennoxville, Que. (R. O. Lachance).

POTASSIUM DEFICIENCY was mod. in fertilizer plots at Lcnnoxville, Que. (R. O. L.)

## COMMON CLOVER

WINTER CROWN ROT (low-temperature basidiomycete) Two/9 red clover fields visited in the Peace River district of B. C. and Alta. had tr. infections (W. P. Campbell), Four/8 red clover fields in Sask. showed mod, damage with infection ranging from 10-40% in the Squaw Rapids area in n. -e. Sask. It was also sev. in 2 alsike fields n. -e. of Nipawin (H. W. Mead).

ROOT ROT (Cylindrocarpon ehrenbergii). The fungus was fruiting on decayed red clover roots in the Nipawin, Sask., area, Damage was trace (H. W. M.).

POWDERY MILDEW (Erysiphe polygoni) was found on red clover cover crops in some orchards nr. Summerland, B.C. (G.E. Woolliams). It was 1-tr. 1-sl. 2-sev./9 red clover fields in the Peace River district of B. C. and Alta. and 1-sev./15 alsike fields (W. P. C.). Infection was general in Oct. on the lower leaves of red clover in P.E.I. (J.E. Campbell),

NORTHERN ANTHRACNOSE (Kabatiella caulivora) was 5-tr. 2-sl. 2-sev./9 red clover and 1-tr./15 alsike fields in the Peace River district of B. C. and Alta. (W. P. C.).

BLACK STEM (Phoma ? trifolii E.M. Johnson & Valleau). A Phoma was collected on alsike at Beaverlodge, Alta. (W. P, C.). According to Weiss and O' Brien (U.S.D.A. Handbook 165: p. 274. 1960), more than one Phoma is reported on clover, but the precise position of these in Ascochyta - Phoma - Stagonospora complex on Leguminosae is not yet determined (D. W. Creelman).

ROOT LESION NEMATODE (Pratylenchus penetrans) was found in red clover at the Cent, Exp. Farm, Ottawa, Ont. (R.H. Mulvey **(C.P.D.S.** 41:5. 357. 1961).

BASAL ROT (Sclerotinia sclerotiorum). Specimens were received from Agassiz, B. C. for identification (M. J. Pratt).

LEAF SPOT (Stemphylium sarcinaeforme) was rated 1-tr. 1-sl. 3-sev. /15 alsike fields in the Peace River district of B, C. and Alta. (W. P. C.) and was general as slight infections on red clover in P.E.I. **(J.E.C.).**

RUST (Uromyces trifolii). Light infections were general on red clover in P.E.I. (J.E.C.).

MOSAIC (virus) was found in tr.-sl. amounts in alsike in farmers' fields and at Experimental Stations in Alta. (W.P.C.). It was mod. on alsike at St. Flavien, Lotbiniere Co., Que. (D. Leblond).

PHYLLODY (virus). Affected alsike plants, 1-year old, in single spaced plots at Beaverlodge, Alta., showed scv. symptoms. No phyllody was seen in commercial seed fields in the area or elsewhere in the Peace River district (W. P.C., D. W. C.). Two mod. and 2-sev. infections were seen at Lacombe, Alta. (W. P. C.). Ladino plants, infected with phyllody in 1960, were completely winter-killed at Normandin, Que. in the winter of 1960-61. In other parts of the province, damage was less sev. than in recent years (R.O. Lachance). Phyllody was seen in Kings Co., N.S. but not as commonly as in 1960 (K.A. Harrison). A specimen of red clover, forwarded for identification from Queen's Co., P.E.I., appeared to be affected by phyllody (J.E. C.).

OTHER VIRUS DISEASES. Bean yellow mosaic virus was common in red clover plots at the Range Station, Kamloops, B.C. At Summerland, B. C., alfalfa mosaic, clover yellow mosaic and white clover mosaic viruses were heavy in ladino (M. J. P.).

POTASSIUM DEFICIENCY was sev., on alsike in a field at St. Flavien, Lotbiniere Co., Que. (D. L.).

## SWEET CLOVER

ROOT ROT (Plenodomus meliloti and Fuearium spp. aesociated). Many second-year stands of all varieties of sweet clover were badly damaged in Sask. in the apring of 1961 and the average damage was mod. in 31/36 fields examined. Pycnidia of P. meliloti were present on more than 50% of the roots examined from the Waldheim and Wakaw areas but not on lesioned roots in the Nipawin area. Several species of Fusarium were also regularly isolated, Recovery was good in areas where even light rainfall occurred. Controlled experiments are underway to test the pathogenicity of the various isolates (H.W. Mead).

# B. OIL-SEED CROPS

## FLAX

WILT (Fusarium oxysporum f. lini) was 3-tr./10 varieties in plots at Keg River and 4-tr./8 at Manning, Alta. and was 2-sl, 1-mod./14 farmers' fields in the Fort Vermilion, Alta. district (W. P. Campbell).

RUST (Melampsora lini) was sl.-mod. on Redwing in plots at Blueberry Mountain and tr, at High River, Alta. It was 2-sl. 1-mod./14 fields in the Fort Vermilion, Alta. area (W. P. C.). Rust was sl. in a field at Alliance and caused complete loss of a crop nr. Barrhead, Alta. (W. P. Skoropad). A trace was seen in 1 field at Shipman, Sask. (B.J. Sallans).

STEM CANKER AND ROOT ROT (Rhizoctonia praticola) was 7-tr./27 varieties in plots at Beaverlodge and 1-tr./7 at Blueberry Mountain, Alta. and was 1-tr. 1-sl./14 fields in the Peace River district of B. C. and Alta. (W. P. C.).

ASTER YELLOWS (Callistephus virus 1). Trace infections were noted northward of Saskatoon, Sask. It was more conspicuous than in the past four years (T. C. Vanterpool). It was also tr. at Homewood, Man. (W.A. F. Hagborg).

HEAT CANKER. Reports and specimens of heat injury to flax seedlings were received from the Kindersley-Merid area of Sask. It was also noted at White Fox (B. J.S.), and caused considerable damage in c. -Sask. (T. C.V.), Damage was rated at 10-15% at Emerson and Brandon, Man. (B. Peturson).

## MUSTARD

LEAF SPOT (Alternaria sp.) was seen in experimental plots at Melfort, Sask. (T. C. Vanterpool).

## RAPE

WHITE RUST (Albugo cruciferarum) was rated 1-tr. nr. Lloydminster and 1-sl. nr. Red Deer in 18 fields in Sask. and Alta. (W.P. Campbell). In Sask. it was conspicuous only nr. Meadow Lake on the northern fringe of the crop area, It was less sev. than in 1960 but was generally distributed (T. C, Vanterpool).

WHITE RUST-DOWNY MILDEW COMPLEX (Albugo cruciferarum, Peronospora parasitica) was found in amounts ranging from tr, -25% in crops north and east of Edmonton, Alta. Most fields had about 2% infection (W, P, Skoropad),

LEAF BLIGHT (Alternaria spp.). Trace infections were seen in the northern areas of Sask. and at Melfort (T. C.V.).

POWDERY MILDEW (Erysiphe polygoni) was sev. in experimental greenhouses and sprinkler-irrigated plots at Saskatoon, Sask. (T. C. V,)

RING SPOT (Mycosphaerella brassicicola) was developing well in late Aug, at Meadow Lake and in n. -e. Sask. (T. C. V.)

BLACK LEG (Phoma lingam). The presence of this disease in n. Sask. was confirmed through isolation of the causal organism (T. C. V.).

ROOT ROT (Rhizoctonia solani) was 3-sl./14 fields in n. and c. Alta. (W. P. C.).

STEM BLIGHT (Sclerotinia sclerotiorum). A tr. infection was seen in Sask. (T. C. V.).

ASTER YELLOWS (Callistephus virus 1). Trace-sl. infections were seen in many fields in n. Sask. and tr. infections only further south (T.C.V.).

CHEMICAL INJURY. Moderate damage was suffered in a field adjacent to a wheat field sprayed with 2,4-D at Brancepeth, Sask. (T.C.V.).

## SAFFLOWER

LEAF SPOT (Alternaria carthami) infected 40% of the lower leaves and caused mod. damage in plots at the Cent. Exp. Farm, Ottawa, Ont. (M.D. Sutton, M. E. Elliott).

## SOYBEAN

STALK AND ROOT ROT (Phytophthora megasperma var sojae) continues its steady encroachment on more and more of the soybean-growing areas in western Ontario, It is anticipated that the situation should be remedied in a year or two with the release of a resistant variety from the Harrow Station, The variety Harosoy, now widely grown, is not resistant (A.A. Hildebrand).

MANGANESE DEFICIENCY caused appreciable damage in western Ontario, particularly in Essex Co, This is a perennial problem that can be controlled by the early application, as a spray, of $MnSO_4$ at 6-8 lb./acre in 20 or more gallons of water (A.A.H.).

## SUNFLOWER

LEAF MOTTLE (Verticillium albo-atrum) was prevalent in the main sunflower-producing area between Morden and Altona, Man. Estimates of prevalence and damage (in brackets) in 11 fields surveyed were; 1-trace; 2-10% (slight); 5-25-30% (severe); and 1-100% (very severe). Outside this area only tr.-10% infections were found in 6 fields. The disease was an important factor contributing to yield reductions other than those that could be attributed to drought (J.A. Hoes, W. C. McDonald).

# C. ROOT CROPS

## SUGAR BEET

LEAF SPOT (Cercospora beticola). After being of negligible importance for a number of years in w. Ont., this disease is again becoming a matter of concern. Appreciable damage was incurred, especially in Kent Co., in 1961. The increased use of monogerm seed, plants' from which have little resistance, is blamed for the increase in Cercospora leaf spot (A.A. Hildebrand).

ROOT NEMATODE (Heterodera schactii) was found in Alberta for the first time. Only 1/721 fields inspected was affected (E.J. Hawn).

ROOT ROT AND LEAF SPOT (Phoma betae) A slight infection was observed in a field nr. Coaldale, Alta. (F.R. Harper).

## D). MISCELLANEOUS CROPS

### BUCKWHEAT

GRAY MOLD WILT (Botrytis cinerea) was sev. on a slope near woodland at Ange Gardien, Montmorency Co., Que. (D. Leblond).

### FIELD CORN

NORTHERN LEAF BLIGHT (Bipolaris turcicum (Pass.) Shoemaker) affected many fields in Essex and Kent counties, Ont. Its increasing incidence and severity are compelling growers to ensile their corn before it is properly mature (A.A. Hildebrand). Some heavy infections were reported from the Woodslee, Ont. area (D.W. Creelman).

STALK ROT (causal organisms unidentified) was reported to be very sev. in the Morden, Man. district and resulted in considerable stalk breakage (D. W. C.).

### TOBACCO

BROWN LEAF SPOT (Alternaria longipes) is rapidly becoming a serious disease in w. Ont. (Z.A. Patrick, L. W. Koch **(C.P.D.S.** 41:5. 374. 1961). A few plants were severely damaged at Buctouche, N.B. (K.M. Graham, E.A. Grant),

NORTHERN ROOT-KNOT NEMATODE (Meloidogyne hapla) was found in 6 samples from Mt. Brydges and 2 from Houghton, Ont. Damage was mod.-sev. (W.B. Mountain, R. M. Sayre (C.P.D.S., 41:5. 376. 1961).

SOUTHERN ROOT-KNOT NEMATODE (Meloidogyne incognita) infested tobacco seedlings in a greenhouse at Leamington, Ont. (W. B. M., R. M. S. (C.P.D.S. 41:5. 376. 1961).

ROOT-LESION NEMATODE (Pratylenchus penetrans) occurred in 126 samples submitted to Harrow, Ont. It is widely distributed in s.-w. Ont. and the acreage treated with nematicides has increased from 50 in 1958 to 1500 in 1961 (W. B. M., R. M. S. (C.P.D.S. 41:5. 376. 1961).

BED ROT (Rhizoctonia solani, Pythium spp.) occurred in small patches in greenhouses in s.-w. Ont. Overall damage was less than 5%. (Z.A.P., L. W.K. (C. P. D. S. 41:5. 374. 1961).

SORE SHIN (Rhizoctonia solani, Pythium spp.) was sev. in 1961 in s.-w. Ont., necessitating the replanting of at least 10% of the fields (Z.A. P., L. W. K. (C. P. D. S. 41:5. 374. 1961).

BLACK ROOT ROT (Thielaviopsis basicola) was observed in a few seedbeds in s.-w. Ont. It was more common in the field than in 1960 and caused considerable stunting early in the season (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

VIRUS DISEASES affected a few scattered plants in s.-w. Ont. and losses were negligible. The following viruses were observed: tobacco mosaic, etch (on burley only), cucumber mosaic, streak, ring spot, alfalfa mosaic, curly top, potato Y and mottle (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

CHEMICAL INJURY. Fumes from Pentox, used to treat all wooden parts of a new grecnhousc at Woodside, Kings Co., N.S. caused sev. damage to tobacco seedlings. Young plants were completely killed. Lettuce, cabbage and cauliflower in the same house were also affected (K.A. Harrison).

WEATHER FLECK (air pollution) continues to be one of the most serious disorders of flue-cured tobacco in Ont. (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

YELLOW PATCH (excess nutrients) was common in seedbeds in Ont. just after germination (Z.A.P., L.W.K. (C.P.D.S. 41:5. 374. 1961).

## E. CULTIVATED AND OTHER GRASSES

### AGROPYRON

Stem smut (Ustilago spegazzinii) affected 10% of the plants of A. repens along a roadside at Trout Creek Point, B.C. (G.E. Woolliams).

### AGROSTIS

Powdery mildew (Erysiphe graminis) was prominent on Agrostis sp. at Alces River, B.C. (W.P. Campbell)

Stem rust (Puccinia graminis agrostidis) was mod. on Agrostis sp. in turf grass at Lethbridge, Alta. (J.B. Lebeau).

### BROMUS

Purple-brown blotch (Stagonospora bromi) was collected on B. inermis at Matapedia and Carleton, Que. A Leptosphaeria stage appeared to be associated with it. A third fungus, presumed to be Hendersonia crastophila Sacc. was also present on the material (D. Leblond).

Ergot (Claviceps purpurea) was found on B. inermis in the area north and east of Edmonton, Alta. (W.P. Campbell).

### CALAMAGROSTIS

Ergot (Claviceps purpurea) was common on C. canadensis north and east of Edmonton, Alta. (W.P. Campbell).

DRCTYLIS

Eye-spot (Selenophoma donacis). Infection was sl.-sev., depending on variety, in varietal trials of D. glomerata at Ste. Anne dc la Pocatiere, Que. (D. Leblond).

PHLEUM

Anthracnose (Colletotrichum graminicola) was generally mod., but sev. in some patches in test plots at St. Charles de Caplan, Que. (D.L.).

Eye-spot (Heterosporium phlei) was sev. on second growth of P. pratense at the Exp. Farm, St. Charles de Caplan, Que. (D. Leblond) and was mod. at the Exp. Farm, St. John's West and at Colinet, Nfld. (O.A. Olsen).

Tar spot (Phyllachora graminis) was general on timothy in experimental plantings at St. Charles de Caplan, Oue. (D.L.).

Stripe smut (Ustilago striiformis). Trace infections were seen in a field nr. Lindsay and in another nr. Peterborough, Ont. (D.W. Creelman).

POA

Powdery mildew (Erysiphe graminis). Late-season infection was heavy on P. pratensis in shaded areas of a lawn at Ottawa, Ont. (D. W. Creelman) and was also heavy on Kentucky blue at St. John' s, Nfld. in Oct. (O.A. Olsen).

SETARIA

Kernel smut (Ustilago neglecta) was prevalent on millet growing as a weed in orchards nr. Summerland, B.C. (G.E. Woolliams).

LAWNS AND TURF

Snow mold (low-temperature basidiomycete). Damage was sl. in 4 areas of turf grass in the Lethbridge, Alta. district (J.B. Lebeau) and was sev. in lawns at Saskatoon, Sask. (H, W. Mead).

Fading-out (Curvularia sp.) was sev. in 1 turf area at Lethbridge, Alta. (J.B. L.).

Powdery mildew (Erysiphe graminis). Heavy outbreaks developed, particularly on new lawns, at Saskatoon, Sask. in Aug. and Sept. Damage was suffered in most cases (T.C. Vanterpool).

Die-back (Fusarium nivale, Pythium sp.). The two organisms were isolated from affected areas in a large acreage of turf, grown for lawn sodding, at Hatzic, B.C. (H.N.W. Toms, H.S. Pepin, N.A. MacLean).

Melting-out (Helminthosporium spp.). Damage was sl. in 3 turf areas at Lethbridge, Alta. (J.B. L.).

Fairy ring (Marasmius oreades). Three sl.-mod. infestations in pasture lands were seen and damage to turf was rated 20-sl. 1-sev./21 areas surveyed (E. J. Hawn, J. B. L.). One large ring, about 6 ft. in diam. was seen in a lawn at Ottawa, Ont. (D. W. Creelman). About 25% of the area of a lawn at Ste. Anne de la Pocatiere, Que. was damaged (R.O. Lachance). A lawn at Charlottetown, P.E.I. was affected (J.E. Campbell).