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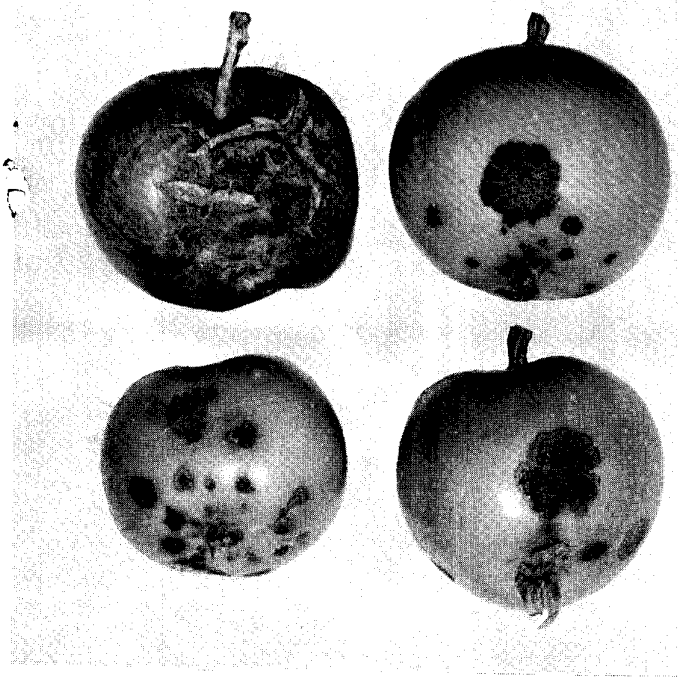
Canadian Plant Disease Survey



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CANADIAN PLANT DISEASE SURVEY

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CONTENTS

Manitoba and south-eastern Saskatchewan experienced the most severe rust epidemic since 1954. Overall losses in 1962, however, were relatively small because the predominant wheat varieties were resistant or partially resistant to the rust races prevalent. Varieties susceptible to wheat stem rust (Puccinia graminis f. sp. tritici) were virtually destroyed by mid-August. Leaf rust of wheat (Puccinia recondita) was severe on susceptible varieties such as Marquis and Thatcher and more than the usual amount developed on the moderately resistant varieties Selkirk and Pembina. The probable loss from wheat leaf rust was estimated at 6 million bushels in Man. Late oat fields in south-eastern Man. were moderately damaged by crown rust (Puccinia coronata).

Common root rots of wheat and barley (Bipolaris sorokiniana, Fusarium spp.) were more destructive in Sask. than in 1961 and browning root rot (Pythium arrhenoanes) was more commonly encountered than it has been for many years. Ergot (Claviceps purpurea) occurred commonly in all wheats, but especially durum, in Sask. Powdery mildew (Erysiphe graminis) of wheat, normally rare in north and central Alta., developed moderately. There was a spectacular increase in loose smut (Ustilago tritici) in durum wheat in western Canada in 1962, partially attributed to the greater susceptibility of the variety Ramsey. Soil-borne mosaic of wheat was again observed in winter wheat fields in southern Ont.

Speckled leaf blotch (Septoria avenae f. sp. avenae) of oats appeared later than normal in eastern Ont. but eventually became severe. Magnesium deficiency caused yield reductions in oats grown on soils with high organic matter content in the Peace River District of Alberta.

Common leaf spot (Pseudopeziza trifolii f. sp. medicaginis-sativae) of alfalfa was prevalent and destructive in P. E. I. Phyllody, a virus disease, continues to be a problem on ladino and red clovers in Que. and the Maritime Provinces. There was a significant increase in the incidence of white rust (Albugo cruciferarum) on rape in north and central Alta. Downy mildew (Plasmopara halstedii) was more prevalent than normal on sunflowers in Man. and leaf mottle (Verticillium albo-atrum) caused considerable damage to sunflowers in the same province.

Northern leaf blight (Bipolaris turcicum) was prevalent and occasionally severe on field corn in south-western Ontario. Black root rot (Thielaviopsis basicola) caused extremely heavy losses in tobacco fields in western Ont. and tobacco etch virus was responsible for considerable losses in fields of burley tobacco in the same district.

Anthracnose (Colletotrichum lindemuthianum) and stem rot (Sclerotinia sclerotiorum) caused significant losses in bean crops in Que. and the Maritime Provinces. Xanthomonas campestris, apparently seed-borne, produced vascular discoloration and head rot in a large acreage of brussels sprouts in N. B. Areas of infestation by the root-rot nematode (Meloidogyne hapla) continue to spread in muck soil areas in Ont. and Que.

Stem rot (Botrytis cinerea) was troublesome on greenhouse crops of cucumbers and tomatoes in western Ont. and in N. S. Greenhouse-grown cucumbers in Ont. also suffered heavy damage from powdery mildew (Erysiphe polygoni). Few fields of lettuce in western Ont. were free of big vein

(tobacco mosaic virus and Olpidium sp. associated). Stunt, caused by an undetermined species of Pythium, caused losses in lettuce crops on muck soils in western Ont.

Onion blast (Botrytis cinerea) reduced yields in Man., Ont., Que., and N. S. White rot of onions (Sclerotium cepivorum) appeared for the first time in eastern Canada and caused heavy losses in fields in south-western Que. Tobacco etch virus drastically reduced yields in pepper fields in western Ont.

Bacterial ring rot (Corynebacterium sepedonicum) of potato was at a greatly reduced level of incidence in Que. and P. E. I. The reduction in both provinces is attributed to vigorous programs of disinfection of planting machinery. Blackleg (Erwinia atroseptica) was the principal cause of rejection of seed potato fields. There was a four-fold increase in its incidence in P. E. I. The golden nematode (Heterodera rostochiensis) was found, for the first time in Canada, infesting potato fields in Nfld.

Early blight (Alternaria solani) caused appreciable reductions in tomato yields and subsequent heavy losses from fruit rot in the B. C. Interior. Bacterial canker (Corynebacterium michiganense) was responsible for significant losses in field-grown tomatoes in B. C. and in greenhouse crops in western Ont. Losses from late blight (Phytophthora infestans) of tomato in N. S. were the heaviest in years.

Both European canker (Nectria galligena) and perennial canker (Neofabraea perennans) caused damage in B. C. apple orchards. Collar rot (Phytophthora cactorum) killed or damaged apple and cherry trees in the same province. Scab (Venturia inaequalis) infections resulted in some losses in apple crops in Que. and N. S. Trellis rust of pear (Gymnosporangium fuscum) is well established in a localized area of Vancouver Island and was also found at one location on the B. C. Mainland. Moderate losses of pear fruit in Ont. and N. S. were attributed to Phytophthora cactorum.

Some losses of apricots and peaches occurred in B. C. following infection by Coryneum blight (Stigmina carpophila) Wilt (Verticillium dahliae) affected both sweet and sour cherry trees in B. C. and crown gall (Agrobacterium tumefaciens) seriously affected peach nursery stock in the same province. Canker (Valsa cincta) has become a serious problem in peach orchards in western Ont.

Gray mold wilt (Botrytis cinerea) and anthracnose (Elsinoë veneta) caused losses in raspberry plantations in Que. and N. S. Crown gall (Agrobacterium tumefaciens) affected highbush blueberries in N. S. Some grape varieties were seriously damaged by dead arm (Fusicoccum viticola) in the Niagara Peninsula, Ont. where powdery mildew (Uncinula necator) also caused considerable losses. Gray mold (Botrytis cinerea) was responsible for much fruit rotting in strawberry plantings in N. S. and P. E. I. Wilt (Verticillium albo-atrum) was damaging to strawberries in the Maritime Provinces, especially where the crop followed other susceptible crops. Green petal, a virus disease of strawberry was serious in parts of Que. and in P. E. I.

Leaf blotch (Guignardia aesculi) of horsechestnut was widespread and caused estensive defoliation in the Maritime Provinces. Leaf blight (Fabraea maculata) resulted in defoliation of hawthorn hedges in B. C. Rust (Puccinia sparaganioides) was very severe on white ash in western Nova Scotia and severe infections of leaf blister (Taphrina caerulescens) occurred on oak in Que. Leaf blight (Herpobasidium deformans) was commonly found on Lonicera in hedges and nurseries in Que. Infections of powdery mildew (Sphaerotheca pannosa) were especially severe on roses in N. S. Dutch elm disease (Ceratocystis ulmi) continues to spread in Ont., Que. and N. B.

Tuber rot (Erwinia carotovora) was responsible for losses of Cyclamen plants in B. C. Rhizoctonia solani caused a severe root and crown rot in commercial plantings of Dianthus in eastern Ont. Glomerella cingulata continues to be a serious disease of imported Ficus plants in B. C. Losses in gladiolus plantings from dry rot (Stromatinia gladioli) were unusually heavy and there was a high incidence of mosaic in commercial gladiolus stocks in N. S. Heavy infections of leaf spot (Didymellina macrospora) of iris were reported in eastern Canada. Blight (Botrytis elliptica) was severe on lilies in Que. and N. S. as was fire (Botrytis tulipae) on tulips in Alta. and N. S. Leaf blight (Centrospora acerina) caused the abandonment of a commercial planting of pansies in N. S.

The Weather and its Influence on Plant Disease

There were few extremes of weather in the B.C. Interior in 1962, but conditions that prevailed during several periods had obvious influence on disease occurrence. The lowest incidence of bull's-eye rot (Gloeosporium perennans) of stored apples for a number of years followed abnormally low rainfall in September and October, 1961. Temperatures as low as -4°F in January had no apparent effect on the overwintering of apple powdery mildew (Podosphaera leucotricha). Cloudy, wet weather in mid-May favored abundant development of blossom blight (Monilinia fructicola) of sweet cherry in the Kootenays, but the onset of dry weather from mid-June until the picking season prevented the development of fruit rot.

Apple scab infection periods were confined to May in most districts and good control was easily obtained. Cool, wet weather in August favored a high incidence of Rhizopus rot in peaches. A severe hail storm in late June, followed by several days of high humidity, provided infection courts and favored serious outbreaks of fire blight (Erwinia amylovora) on apples and pears. Fire blight cankers remained active very late in the fall of 1962 as minimum temperatures remained high with no freezing temperatures recorded until late November.

During several cool, moist periods in spring and early summer, apple virus symptoms were expressed strongly on developing leaves. There was more variation than usual from district to district in severity of the fruit symptoms of apple virus diseases. The fruit symptoms associated with leaf pucker of McIntosh were unusually severe in northern districts, but very mild in the early southern districts. Ring russeting of Newtown was unusually severe in southern districts, but mild in northern districts. This may indicate that symptom severity is determined during a single short period of fruit development, and that the alternating warm and cool periods in April, May and early June, accounted for the differences in severity between early and late districts.

The cool, wet weather in August delayed tomato ripening and resulted in a crop of low quality with a high incidence of early blight (Alternaria solani) and other fruit rots. Foliage diseases of vegetables, including angular leaf spot of cucumber (Pseudomonas lachrymans), were common. Symptoms of Verticillium wilt in most crops were not severe (M.F. Welsh).

The spring and summer of 1962 were generally wet and cool in north and central Alberta. Growth of cereals, vegetables and ornamentals was rank and conditions at ground level were generally wet with dew persisting into late morning. Under these conditions powdery mildew (Erysiphe graminis) and ergot (Claviceps purpurea) of wheat and barley developed more severely than usual. White rust (Albugo cruciferarum) increased significantly in the rapeseed crop.

The rank growth and moist conditions favored an unusually severe development of Sclerotinia rot in vegetables, both in the field and in subsequent storage. Botrytis diseases of ornamentals were favored by the cool, moist

season (W. P. Skoropad). The annual rainfall in southern Alberta was about five inches below the long-term average. The Lethbridge area had the earliest killing frost on record on September 3. Many cereal crops were damaged by the low temperatures in the latter part of the growing season (J. B. Lebeau).

Moisture conditions in Manitoba at the beginning of May were only fair to poor in many districts. Precipitation from 1 April to 1 May was 49 per cent below normal and the mean temperature for the week ending 30 April was 4.5°F above normal. The cumulative deficit in precipitation by 9 May was 54 per cent but by 16 May weather conditions had changed drastically and by 23 May precipitation was 46 per cent above normal and by 6 June, 65 per cent above normal. Precipitation continued to be above normal through until September. The mean temperature throughout the crop season was generally below normal.

Late seeding, abundant and frequent rainfalls and temperatures below normal for most of the growing season resulted in a late harvest, particularly in the Red River Valley. These conditions were favorable for rust development and Manitoba and south-eastern Saskatchewan experienced the most severe rust epidemic since 1954. Late-maturing fields were particularly affected.

Foliage diseases of cereals were less common and severe than might be expected under the prevailing environmental conditions. It seems probable that the exceedingly dry conditions that prevailed in 1961 reduced the supply of inoculum. Conditions were favorable for ergot infection at time of flowering and this disease was more common than usual on cereals, particularly rye. The common occurrence of onion blast (Botrytis cinerea) and tomato leaf spot (Septoria lycopersici) can be attributed to the frequent rainfalls (W. L. Gordon).

The occurrence and spread of the tobacco etch virus was in susceptible crops in south-western Ontario was again shown to be closely related to aphid infestations and their movements, which are, to a considerable degree, influenced by weather. A heatwave in late April induced an early development of both the green peach and potato aphid and resulted in an early-season build-up of both populations. First infections of the virus were recorded earlier than in previous epidemics. There was also good evidence to support the hypothesis that wind currents carried viruliferous aphids into areas where the virus was observed occurring for the first time.

Frequent rain showers in July favored the spread of foliage and fruit diseases of such crops as tomatoes (C. D. McKeen).

The outstanding feature of the season in the Niagara Peninsula, Ont. was the dry weather in April and May, with 1.34 and 0.60 inches of rain respectively and its effect on the development of the overwintering stages of pathogens. The development of perithecia of the apple scab fungus, for example, lagged well behind the development of the trees. There were a few scab infection periods in May and June but dry and warm conditions prevented more

than a trace of scab development.

The meagre spring rainfall was unfavorable for the development of both downy mildew and the shoot lesion phase of dead arm of grapes. Periods of high relative humidity in August and September, however, favored a profuse development of powdery mildew of grapes and losses, especially in susceptible varieties, were heavy. Phytophthora rot of late-season pears was favored by wet weather in late September and early October (G. C. Chamberlain).

In the Lower St. Lawrence district of Quebec, July was excessively wet and the mean temperatures were well below normal. These conditions favored a severe infection of onions by downy mildew and the development of scab in unsprayed apple orchards. Striking symptoms of mosaic and leaf roll were particularly evident on potato foliage. These conditions also were favorable for late blight infection. A further excess of rainfall in the latter part of September favored its development and spread (H. Genereux).

1. DISEASES OF CEREAL CROPS

WHEAT

BLACK POINT (Alternaria spp.) was generally present in durum wheats in Sask. Four samples examined had 20, 23, 26 and 45% of the seeds affected. Isolations yielded abundant cultures of Alternaria and a few of Cladosporium spp. and Bipolaris sorokiniana (B. J. Sallans). Mod. infections were found in Man. from Winnipeg west to Baldur and south to the International Border (W. A. F. Hagborg).

LEAF SPOT (Ascochyta sorghi). Infection was rated as 7-tr. 3-sl. 1-mod. 4-sev. / 35 spring wheat fields surveyed in s. Alta. (J. S. Horricks, T. G. Atkinson). Tr-sl. infections of several varieties were recorded at 3 locations in s. -w. Sask. (R. D. Tinline).

COMMON ROOT ROT (Bipolaris sorokiniana. Fusarium spp.) was rated 3-sl. 3-mod. 1-sev. /35 spring wheat and 4-tr. 10-sl. 9-mod. 2-sev./40 winter wheat fields in s. Alta. (J. S. H., T. G. A.). The average disease ratings in Sask. for crop districts 1 to 9 were: 12. 6, 11. 0, 13. 0, 17. 2, 14. 3, 12. 4, 18. 1, 13. 6 and 8. 5 respectively. The average for the province was 13. 2; up from 12. 1 in 1961 (B. J. S.).

SEEDLING BLIGHT (Bipolaris sorokiniana). Isolations from samples received from Regina, Sask. all yielded B. sorokoniana (W. A. F. H.).

ERGOT (Claviceps purpurea) was heavy in scattered fields in n. and c. Alta. (W. P. Skoropod) and occurred commonly in all wheats, but especially durums, in w., s-w. and s-c. Sask. (B. J. S.). In Man., traces were found in Selkirk at McCreary and on durum in the Pasqui development area at Le Pas (W. L. Gordon, G. J. Green). It was tr. at the Exp. Farm, Caplan, Que. (D. Leblond).

ANTHRACNOSE (Colletotrichum graminicola) was tr. in plots at the Exp. Farm, Caplan, Que. (D. L.).

POWDERY MILDEW (Erysiphe graminis), normally rare in n. and c. Alta., developed moderately in 1962 probably favored by lush, dense growth. It contributed to a considerable amount of head discoloration (W. P. S.). It was 2-mod/35 spring wheat and 1-mod. /40 winter wheat fields surveyed in s. Alta. (J. S. H., T. G. A.) It was tr. in 1 field in n. -c Sask. (R. D. T.); mod. on winter wheat at Ridgetown, Ont. (D. W. Creelman), and prevalent on both spring and winter wheat at Ottawa where infections of previously resistant varieties suggested the appearance of new races (R. V. Clark).

HEAD BLIGHT (Fusarium spp.). It was reported from Indian Head that 2 carloads of durum wheat at Viceroy, Sask. were rejected because of Fusarium blight (D. W. C.). Infection was tr. at McCreary, Man. Isolations

yielded, in addition to F. poae, Bipolaris sorokiniana. It was mod-sev. in winter wheat plots at Ridgetown, Ont. (D. W. C.).

BASAL GLUME ROT (Pseudomonas atrofaciens) was fairly prevalent in Sask. as evidenced from samples of durum wheat (R. D. T.).

STEM RUST (Puccinia graminis) was 1-sev./35 spring wheat fields in s. Alta (J. S. H., T. G. A.). Ratings in Sask. were 11-tr. 1-sl. 1-sev./149 fields (B. J. S.). There were scattered infections in spring wheat fields and heavy infections in winter wheat fields in the Ottawa, Ont. area (R. V. C.).

LEAF RUST (Puccinia recondita) was sl. on Ridit and Dawson's Golden Chaff in plots at Oyster River, B. C. (H. N. W. Toms). Infection was rated 39-tr. 29-sl. 12-mod. 12-sev./152 fields in Sask. (B. J. S.). Infection was mod.-sev. in winter wheat plots at Ridgetown, Ont. (D. W. C.). Considerable leaf rust developed on spring wheat and it was sl.-mod. on winter wheat at Ottawa, Ont. (R. V. C.). It was abundant in plots at the Exp. Farms at La Pocatière, Normandin and Caplan, Que. (D. L.).

STRIPE RUST (Puccinia striiformis) was tr. in 1/35 spring wheat fields examined in s. Alta. (J. S. H., T. G. A.).

BROWNING ROOT ROT (Pythium arrhenomanes) was seen in 5/10 fields in the Bounty, Rosetown and Biggar areas of Sask. Specimens showing sl.-mod infections were received from Yellowgrass, Stranraer, Leader, Wilkie, Maple Creek and Meadow Lake, Sask. (B. J. S.).

SPECKLED LEAF BLOTCH (Septoria spp.) Trace-mod. infections of S. tritici were found in 16/157 fields in Sask. Six of the infected fields were durum wheat (R. D. T.). Infection by S. avenae f. sp. triticea was sl.-mod. on Ramsay in Man. (G. J. G. and W. C. McDonald). Slight-sev. infections, depending on variety, were seen in winter wheat plots at Ridgetown, Ont. (D. W. C.) and tr. infections occurred on winter wheat at Ottawa, Ont. (R. V. C.).

GLUME BLOTCH (Septoria nodorum) was mod. on Selkirk at Gainsborough, Sask. (W. A. F. H.)

DWARF BUNT (Tilletia contraversa) occurred as traces in 3/21 winter wheat fields in s. Alta. (J. S. H., T. G. A.).

LOOSE SMUT (Ustilago tritici). Three/110 fields of bread wheat showed trace infection and ratings were 15-tr. 7-1%/ 38 durum fields in Sask. (B. J. S.). There was a spectacular increase in loose smut in durum wheat in Western Canada in 1962, partially attributed to the greater susceptibility of Ramsay (W. J. Cherewick).

BACTERIAL BLACK CHAFF (Xanthomonas translucens). The only infections seen in Man. and Sask. were in plot experiments (W. A. F. H.).

BARLEY YELLOW DWARF (virus) was 7-tr./117 common wheat and 7-tr./39 durum fields in Sask. (R. D. T.). Infections in Man. were limited to trace amounts in about one-third of the fields examined (W. A. F. H., J. T. Slykhuis). It was tr. in plots at Ottawa, Ont. (R. V. C.).

SOIL-BORNE MOSAIC (virus) was again observed on winter wheat in s.-c. and s.-w. Ont. in 1962 but the incidence was much lower than in 1961. The fields in most areas in 1962 dried quickly in contrast to 1961 when the soil remained wet and cold for several months in early spring. Disease incidence in fields examined was 3-tr./4 in Simcoe Co., 1-tr. 3-sl./4 in Huron Co., 2-tr./3 in Middlesex Co., 1-mod./3 in Essex Co., 4-tr. 2-sl. 9-abundant/18 in Kent Co. No soil-borne mosaic was seen in 4 fields examined in Durham Co., 1 in Lambton, 3 in Norfolk, 5 in Welland or 5 in Lincoln counties, nor has the disease been found east of Peterborough (J. T. S.).

STREAK MOSAIC (virus) was rated 1-sl. 5-mod. 2-sev./38 spring wheat and 2-tr. 7-sl. 3-mod. 5-sev./40 winter wheat fields in s. Alta. (J. S. H., T. G. A.).

STRIATE MOSAIC (virus) was trace in 1 field and 1% in another in s.-w. Sask. (R. D. T.). It was not found in Man. (W. A. F. H.).

FALSE BLACK CHAFF (physiological). Melanism was general in the empty glume tissues and exposed portions of the lemmas of a sample of Marquis wheat received from Bindloss, Alta. No indication of infection by pathogens on saprophytes could be found (W. A. F. H.).

SPLOTCH (physiological) was general in the durum crop throughout Sask. In 39 fields examined its incidence was 10-tr.-sl. and 10-mod.-sev. (R. D. T.). It was sl. at Starbuck and nr. Melita, Man. (W. A. F. H.).

OATS

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was 10-tr./23 fields examined in s. Alta. (J. S. Horricks, T. G. Atkinson).

ANTHRACNOSE (Colletotrichum graminicola) was 2-tr./23 s. Alta. fields (J. S. H., T. G. A.). In variety test plots in Que. it was sl.-sev. at Peribonka, Roberval Co., tr.-sl. at Caplan, Bonaventure Co., and tr. at Thetford Mines, Megantic Co. The variety Shefford was the variety most affected at each of the stations (D. Leblond).

LEAF BLOTCH (Drechslera avenacea) was observed to be tr. in 1 field and sl. in another in n. -c. Sask. (R. D. Tinline).

POWDERY MILDEW (Erysiphe graminis) was tr. on Victory in plots at Oyster River, B. C. (H. N. W. Toms). It was found for the first time in 24 years of surveys of cereal plots in Que. as tr. -mod. infections on 10/24 varieties at 4/21 stations; Macdonald College, Lennoxville, Honfleur and St. Sébastien (D. L.).

HALO BLIGHT (Pseudomonas coronafaciens) was found as tr. -sl. infections in 5/14 fields in c. Sask. (R. D. T.). It was recorded as tr. in 5/18 fields examined in Man. and e. Sask. (W. A. F. H.).

CROWN RUST (Puccinia coronata) was generally tr. -sl. in the Ottawa, Ont. area (R. V. Clark). It was particularly heavy in plots at Rivière Ouelle, Kamouraska Co., Que., (D. L.). A slight infection was seen near buckthorn at Pokiok, York Co., N. B. (S. R. Colpitts).

STEM RUST (Puccinia graminis) was prevalent as tr. -sl. infections late in the season in e. Ont. It caused considerably more damage than did crown rust (R. V. C.). Mod. infections were seen at St. Jean, (R. Crête) and it was tr. -sev., depending on variety, at Lennoxville, Que. (D. L.).

SPECKLED LEAF BLOTCH (Septoria avenae f. sp. avenae) was rated 1-tr. 1-sl. 1-mod. /11 fields examined in Man. (G. J. Green, W. C. McDonald). It appeared later than usual in the Ottawa, Ont. area but eventually became quite severe (R. V. C.). Light infections occurred on 80% of the plants in plots at the Exp. Farm., St. John's West, Nfld. (G. A. Nelson).

RED LEAF (barley yellow dwarf virus) was 2-tr. /23 fields examined in s. Alta. (J. S. Horricks, T. G. Atkinson). It was 4-tr. /14 fields surveyed in Sask. (R. D. T.), and was found in 8/19 fields examined in Man. and e. Sask. (W. A. F. H.). Infection in plot areas at Ottawa, Ont. was heavy but it was generally only tr. in farmers' fields (R. V. C.).

BLAST (physiological) was tr. on Eagle in plots at Oyster River, B. C. (H. N. W. T.).

GREY SPECK (Manganese deficiency) caused yield reductions at High Prairie, Alta. were soils have a high organic content (W. P. Skoropod). It was rated 2-tr. 1-sl. 1-mod. 3-sev. /23 fields examined in s. Alta. (J. S. H., T. G. A.). It is suspected to be the cause of considerable damage in a field at Starbuck and another at Oak Bluff, Man. (W. A. F. H., W. C. McD.).

BARLEY

SPOT BLOTCH (Bipolaris sorokiniana). Infection was 1-sl./18 fields surveyed in Sask. (R. D. Tinline). In Man. it was rated 3-tr. 6-sl. 5-mod./24 (G. J. Green, W. C. McDonald). It was mod. in test plots at the Exp. Farm, Caplan, Que. (D. Leblond), and affected 90% of the plants of several varieties at Colinet, Nfld. (O. A. Olsen).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was rated 1-tr. 5-sl./8 fields examined in s. Alta. (J. S. Horricks, T. G. Atkinson). The average disease rating in Sask. was 16.2 in 19 fields. It was up considerably from the 1961 average of 11.5 (B. J. Sallans).

ERGOT (Claviceps purpurea). Heavy infections were seen in some fields in n. and c. Alta. (W. P. Skoropod). It was tr. at Riding Mountain and mod. in the Pasqui development area at Le Pas, Man. (W. L. Gordon, G. J. G.).

ANTHRACNOSE (Colletotrichum graminicola) was tr. in variety test plots at Caplan, Que. (D. L.)

NET BLOTCH (Drechlera teres) was sl.-sev. on Vantage in plots at Oyster River, B. C. (H. N. W. Toms). It was rated 1-tr. 1-mod./8 fields surveyed in s. Alta. (J. S. H., T. G. A.) and was found in 14/18 Sask. fields examined, with tr. infections in southern areas and sl.-sev. infection in the northern areas of the province (R. D. T.). Ratings in Man. were 3-tr. 7-sl. 7-mod. 1-sev./24 fields examined (G. J. G., W. C. McD.).

POWDERY MILDEW (Erysiphe graminis) was tr.-sl. on Vantage in plots at Oyster River, B. C. (H. N. W. T.) Ratings in Man. were 2-tr. 2-sl. 1-mod./24 fields examined (G. J. G., W. C. McD.). Infection was tr.-sl. on both spring and winter barley in the Ottawa, Ont. area (R. V. Clark).

HEAD BLIGHT (Fusarium spp., Bipolaris sorokiniana) was tr. at Riding Mountain where isolations yielded Fusarium poae, F. acuminatum and Bipolaris sorokiniana, and at Culross, Man. where B. sorokiniana was isolated from discolored kernels (Wl. L. G.).

STEM RUST (Puccinia graminis). Trace infections were seen in 3/17 fields in Sask. (B. J. S.) and it was tr. in the Ottawa, Ont. district (R. V. C.).

LEAF RUST (Puccinia hordei) was 1-tr./17 fields examined in Sask. (B. J. S.). It was tr.-sl. on spring barley and fairly prevalent on winter barley as slight infections in the Ottawa, Ont. district (R. V. C.). Leaf rust was abundant in test plots at Lennoxville and St. Gédéon, Que. and was noticeably less sev. at 19 other stations surveyed (D. L.).

STRIPE RUST (Puccinia striiformis). One trace infection was seen in 8 fields examined in s. Alta. (J. S. H., T. G. A.).

SCALD (Rhynchosporium secalis) was found in tr. -mod. amounts in 3 fields in n. Man. (G. J. G., W. C. McD.).

SPECKLED LEAF BLOTCH (Septoria passerinii) was 1-tr./8 fields surveyed in s. Alta (J. S. H., T. G. A.) and 1-tr. 1-sl./24 fields in Man. (G. J. G., W. C. McD.).

COVERED SMUT (Ustilago hordei) was 1-1% and 1-3% in 17 fields examined in Sask. (B. J. S.). There was less than 1% at Doyles, Nfld (O. A. Olsen).

LOOSE SMUT (Ustilago nuda, U. nigra) was rated 7-tr-1%/17 fields surveyed in Sask. (B. J. S.). Degree of infection varied with the variety at Ottawa, Ont. with York and Nordi the most heavily infected (R. V. C.). It was sl. at La Pocatière, Que. (H. Généreux).

BACTERIAL BLIGHT (Xanthomonas translucens) was found in Man. in 1 field of Montcalm at Christie and in plots of Olli at Fort Garry. The inoculum at Fort Garry was apparently seed-borne as adjacent varieties were not affected (W. A. F. H., W. C. McD.).

STREAK MOSAIC (virus) was 1-sev./8 fields examined in s. Alta. (J. S. H., T. G. A.).

STRIPE MOSAIC (virus). Infection was 2-tr. and 1-sl. in n. -e. Sask. (R. D. T.). It was found in Man. only in experimental plots. As in 1961, it occurred in O. A. C. 21 in the cooperative tests and in demonstration plots. It spread from the demonstration plots to border rows of winter wheat from which it was isolated by sap transfer (W. A. F. H.).

YELLOW DWARF (virus) was 2-tr./18 fields in Sask. (R. D. T.). Of the 6 fields examined in Man. and e. Sask. the most severely infected was at Carnduff, Sask. where infection was calculated to be 4% (W. A. F. H.). Trace infections were seen in spring barley at Ottawa, Ont. (R. V. C.).

RYE

ERGOT (Claviceps purpurea). Volunteer rye plants were infected in a wheat field in Sask. (B. J. Sallans). At Brandon, Man., 100% of the plants and 5% of the kernels were infected in a plot of the variety Prolific. Ergot was more common than usual in Man. in 1962 (W. L. Gordon). Infection was sev. in a field nr. Alliston, Ont. (D. W. Creelman) and was heavy at Gagetown, N. B. (S. R. Colpitts).

POWDERY MILDEW (Erysiphe graminis) was sl. on the variety Storm at Oyster River, B.C. (H. N. W. Toms). It was mod. at Fort Garry, Man. with the heaviest infections on the lower leaves (W. A. F. Hagborg).

STEM RUST (Puccinia graminis) was tr. on Storm at Oyster River, B.C. (H. N. W. T.).

LEAF RUST (Puccinia recondita). Slight-mod. infections were seen on Storm at Oyster River, B.C. (H. N. W. T.). It was sl. on most plants of Dakold and Sangaste in plots at St. John's West, Nfld. (G. A. Nelson).

SCALD (Rhynchosporium secalis) was sl. on Dakold in plots at St. John's West, Nfld. (G. A. N.).

II DISEASES OF FORAGE AND OTHER FIELD CROPS

A. FORAGE LEGUMES

ALFALFA

BLACK STEM (Ascochyta imperfecta) was observed in 25/32 fields surveyed in Sask. It was late in developing but increased in late Aug. and early Sept. The average damage was light (H. W. Mead).

WINTER CROWN ROT (low-temperature basidiomycete). Ratings were 4-sl. 2-mod. 1-sev./32 fields in the area n.-e. of Nipawin, Sask. (H. W. M.).

BACTERIAL WILT (Corynebacterium insidiosum). Infections were rated 18-tr.-sl. 2-sl.-mod. 6-mod.-sev./79 fields examined in s. Alta. (E. J. Hawn). In Sask. it was 3-tr. 1-mod./32 fields n.-e. of Nipawin (H. W. M.).

CROWN BUD ROT (Fusarium roseum, Rhizoctonia solani, Ascochyta imperfecta) was 30-tr.-sl. 30-sl.-mod. 6-mod.-sev./79 fields surveyed in s. Alta. (E. J. H.).

STEM NEMATODE (Ditylenchus dipsaci) was rated 7-tr. 4-mod./77 irrigated fields examined in s. Alta (E. J. H.). All plants from a single clone were sev. infested in a greenhouse at Saskatoon, Sask. (H. W. M.).

YELLOW LEAF BLOTCH (Leptotrochila medicaginis). The average rate of infection at 3 locations in Queens and Kings counties, P. E. I. was 0-10% with slight damage (C. B. Willis).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. medicaginis-sativae). Very little infection developed in Sask. in 1962 with only 4-tr. infections seen in 32 fields (H. W. M.). Infection was very heavy at 3 locations surveyed in P. E. I. with ratings of 60-80% and about 50% of the leaf surface affected (C. B. W.).

BORON DEFICIENCY was observed in 1 field in the Lethbridge, Alta. area (E. J. H.) and was mod-sev. at St-Henri and Fortierville, Que. causing yellowing and reddening (D. Leblond).

COMMON CLOVER

WINTER CROWN ROT (low-temperature basidiomycete) caused slight damage in a field of alsike at Squaw Rapids, Sask. (H. W. Mead).

LEAF SPOT (Cercospora zebrina) infection was slight on ladino clover at the Exp. Farm, Caplan, Que. (D. Leblond). Infections, up to 5% caused slight damage to T. pratense at 12 locations in P. E. I. (C. B. Willis).

SOOTY BLOTCH (Cymadothea trifolii) affected up to 10% of the plants of T. pratense and up to 80% of the plants of T. hybridum at 12 locations in P. E. I. On T. hybridum, 25-30% of the leaf surface was affected (C. B. W.).

POWDERY MILDEW (Erysiphe polygoni) was frequently found on T. pratense in the Summerland, B. C. district (G. E. Woolliams). Infection was slight in 1 field at Pas Trail, Sask. (H. W. M.). It was rated 0-10% on both T. pratense and T. hybridum at 12 locations in P. E. I. (C. B. W.).

NORTHERN ANTHRACNOSE (Kabatiella caulivora) occurred as tr. -sl. infections on T. pratense at 2/12 locations surveyed in P. E. I. (C. B. W.).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. trifolii-pratensis). Infection of both T. pratense and T. hybridum was generally light early in the season but by Oct. up to 15% of the leaf surface in newly-seeded areas was affected (C. B. W.).

LEAF SPOT (Pseudoplea trifolii) was general but light on T. pratense throughout P. E. I. Lesions remained small and damage was negligible. It was found on T. repens only in Kings Co. (C. B. W.).

LEAF SPOT (Stemphylium sarcinaeforme) was common on T. pratense as tr. -mod. infections in all areas of P. E. I. (C. B. W.)

RUST (Uromyces trifolii). Infections in P. E. I. were 1-10% on T. pratense and less than 1% on T. hybridum. Damage was not significant (C. B. W.).

MOSAIC (virus). Distinct vein-clearing was observed in T. pratense at 1 location in Kings Co., P. E. I. (C. B. W.).

PHYLLODY (virus). Moderate infections were common in plots of ladino clover at La Pocatière, Que. (D. Leblond). It was common in clover adjacent to a strawberry field affected with green petal at Canaan, N. S. (K. A. Harrison). Phyllody was observed in both wild and cultivated red clover throughout P. E. I., usually in trace amounts. One field in Queens County had 5-10% of the plants affected (C. B. W.).

SWEET CLOVER

LEAF SPOT (Ascochyta meliloti) was sev. at Rimouski, Que. (D. Leblond).

GREY LEAF SPOT (Stagonospora meliloti) caused some defoliation in 2/10 fields examined in Sask. (H. W. Mead).

ROOT ROT (Plenodomus meliloti). The epidemic of root rot reported in Sask. in 1961 was not repeated in 1962. Pathogenicity tests with isolates of P. meliloti made in 1961 gave practically negative results with very little infection (H.W.M.).

B. OIL SEED CROPS

FLAX

RUST (Melampsora lini) was not found in farmers' fields in Man. but was observed in plots at Glenlea and Fort Garry on such varieties as Arny, Cree, Redwood, Redwing, Bison and Marina (W.L. Gordon, D.J. Samborski, B. Peturson).

PASMO (Septoria linicola) could be found in most fields in Man. in late Aug. and in Sept. Infection was more common on leaves than on stems and damage, if any, was slight (W.L.G.).

RAPE

WHITE RUST (Albugo cruciferarum). There was a significant increase in the incidence of white rust in n. and c. Alta. Losses up to 30% were recorded in 5/20 fields examined (W.P. Skoropod).

SAFFLOWER

LEAF SPOT (Alternaria carthami) was mod., but damage was slight at Lyleton, Man. (W.C. McDonald). It was prevalent on all varieties at Ottawa, Ont. (R.V. Clark).

HEAD BLIGHT (Botrytis cinerea, Fusarium spp.). Wet weather at blossom time contributed to considerable infection at Ottawa, Ont. (R.V.C.).

RUST (Puccinia carthami). Infection at Ottawa, Ont. ranged from 0-50%, depending on the variety (R.V.C.).

SOYBEAN

DAMPING-OFF (Rhizoctonia solani) resulted in a heavy loss of plants in a large field on Pelee Island, Ont. (C.D. McKeen).

SUNFLOWER

GRAY MOLD (Botrytis cinerea). All heads in a planting at Kentville, N.S. showed lesions. Some were completely rotted (K.A. Harrison).

RUST (Puccinia helianthi). In a survey in Man., infections were rated 11-sl. 7-mod. 7-sev./25 fields of Mennonite and 11-tr./11 fields of Admiral and Advent (J.A. Hoes). Moderate - sev. infection of all leaves of Mennonite was noted in 2 fields in the Morden, Man. area (W.L. Gordon, D.J. Samborski). It was common on H. maximilianus in a roadside patch at Westbourne, Man. (W.L.G., G.J. Green).

SCLEROTINIA WILT (Sclerotinia sclerotiorum). Ratings were 5-5%. 2-10%. 2-20-25%. 1-40%/36 fields surveyed in Man. (J.A.H.).

LEAF SPOT (Septoria helianthi) was rated 4-sl. 2-mod. 4-sev./36 Man. fields (J.A.H.).

DOWNY MILDEW (Plasmopara halstedii) was more prevalent than usual in Man. Infections were 2-tr. 2-sl. 2-mod./36 of the fields examined (J.A.H.). Infection at La Pocatière, Que. was rated at 25% with about 10% damage (J. Santerre).

LEAF MOTTLE (Verticillium albo-atrum) was 23-sl./3-mod. 10-sev./36 fields in Man. Loss was nearly 100% in 2 fields, 50% in 5, and 10-15 % in 3 (J.A.H.). Sev. infection was recorded in 2 fields in the Morden, Man. area (W.L.G., D.J.S.).

C. ROOT CROPS

SUGAR BEETS

LEAF SPOT (Cercospora beticola) was tr. on several varieties at La Pocatière, Que. (J. Santerre).

FUSARIUM YELLOWS (F. oxysporum) was sev. in a field nr. Lethbridge, Alta. The damage occurred in a localized area where debris from the previous year's crop was spread (J.E. Moffatt).

SUGAR BEET NEMATODE (Heterodera schactii) was found in the Stirling and Raymond districts of s. Alta. (E.J. Hawn).

DAMPING-OFF (Pythium spp.) caused a sev. reduction in stand in a field nr. Lethbridge, Alta. (J.E.M.).

D. MISCELLANEOUS CROPS

BUCKWHEAT

LEAF SPOT (Ascochyta fagopyri Bres.) was sl. in plots at Pointe aux Outardes, Que. (D. Leblond).

GRAY MOLD BLIGHT (Botrytis cinerea) was sev. on leaves in plots at Pointe aux Outardes, Que. (D.L.).

FIELD CORN

NORTHERN LEAF BLIGHT (Bipolaris turcicum) was prevalent on a number of hybrids and sev. in some fields in Essex and Kent counties, Ont. (R.E. Wall).

STALK ROT (Gibberella zeae and other soil organisms) occurred throughout s.-w. Ont. (R.E.W.).

NODAL DISCOLORATION AND LEAF WILT (Gibberella zeae) caused sl. damage at Dover, Kent Co., Ont. (R.E.W.).

LUPIN

GRAY MOLD (Botrytis cinerea) was mod.-sev. in plots at Pointe aux Outardes, Que. (D. Leblond).

TOBACCO

LEAF SPOTS (Alternaria spp.). Leaf spots, caused by Alternaria spp. and others of undetermined origin were the most serious tobacco diseases in the field in Ont. in 1962. All varieties are susceptible and no suitable control measures are known (Z.A. Patrick, L.W. Koch).

DAMPING-OFF (Pythium spp. and Rhizoctonia solani) was the most common seed-bed disorder in Ont. in 1962, occurring in patches in most greenhouses. Overall losses were about 5% (Z.A.P., L.W.K.).

SORE SHIN (Rhizoctonia solani) was sev. early in the season, just after planting, in Ont. The only remedial measure is to replant (Z.A.P., L.W.K.). It caused the loss of about 5% of the plants of the variety Hicks at Steam Mill, Kings Co., N.S. (R.G. Ross). It affected less than 1% of the plants in a crop nr. Montague, P.E.I. (C.B. Willis).

BLACK ROOT ROT (Thielaviopsis basicola) caused extremely heavy losses in some fields in s.-w. Ont. Even varieties considered resistant were severely affected and losses in some fields were as high as 30%. It was not a factor in seedbeds except in a few cases where steaming was not properly carried out (Z.A.P., L.W.K.).

VIRUS DISEASES. Tobacco etch caused considerable losses in burley in Essex and Kent counties in Ont. Other viruses noted in flue-cured and burley tobacco were: TMV, cucumber mosaic, streak, ring spot, alfalfa mosaic, curly-top, potato Y and mottle viruses. Losses, apart from those from etch, were slight (Z. A.P., L.W.K.).

WEATHER FLECK (atmospheric pollution). Some fleck was observed in Ont. at the end of the growing season (Z.A.P., L.W.K.).

YELLOW PATCH (excessive nutrients) was observed in some seedbeds, resulting in patches of yellowed, stunted seedlings (Z.A.P., L.W.K.).

E. CULTIVATED AND OTHER GRASSES

AGROPYRON

Ergot (Claviceps purpurea) was extremely heavy on A. repens near infected rye nr. Alliston, Ont. (D.W. Creelman).

Powdery mildew (Erysiphe graminis). Infection was 75% on A. repens at Port Morien, N.S. (C.O. Gourley).

Tar spot (Phyllachora graminis) was mod. on A. repens nr. Alliston, Ont. (D.W.C.).

Leaf rust (Puccinia recondita). Infection was tr. on A. repens at Port Morien, N.S. (C.O.G.).

Speckled leaf blotch (Septoria elymi) was extremely heavy on A. repens at Port Morien, N.S. (C.O.G.).

Stem smut (Ustilago spegazinii). Infection was seen at Trout Creek Point, B.C. It was not as sev. as in recent years (G.E. Woolliams).

AGROSTIS

Ergot (Claviceps purpurea) was sl. on A. alba on a roadside near Alliston, Ont. (D.W. Creelman).

ALOPECURUS

Leaf spot (Mastigosporium album) was heavy on A. pratensis at the Exp. Farm, St. John's West, Nfld. (G.A. Nelson). The only previous reports, to the Survey, of this fungus, are from N.S. (D.W.C.).

BROMUS

Ergot (Claviceps purpurea) was tr. on B. inermis nr. Alliston, Ont. (D.W. Creelman) and was sev. on the same host at Matapedia, Que. (D. Leblond).

Anthracnose (Colletotrichum graminicola) was sl. at Caplan, Que. (D.L.).

Leaf blotch (Dreschlera bromi). Light infections were recorded in 2 fields in n.-e. Sask. (H.W. Mead) and it was sev. on the variety S-4088 of B. inermis in plots at Caplan, Que. (D.L.).

Tar spot (Phyllachora graminis) was observed on B. inermis in plots at Caplan, Que (D.L.). This organism has not previously been reported to the Survey on this host (D.W.C.).

Leaf spot (Selenophoma bromigena) was mod. in plots of B. inermis at Saskatoon, sl. in 4 fields in n.-e. Sask. and very sev. on roadsides at Tugaske, Sask. (H.W.M.). It affected 75% of the plants in a nursery row at St. John's West, Nfld. (G.A. Nelson).

Leaf spot (Septoria bromi Sacc) occurred in plots of B. inermis at Caplan, Que. (D.L.). This is the first report of this pathogen to the Survey (D.W.C.).

Smut (Ustilago bullata) was commonly found on B. tectorum in the Summerland, B.C. area (G.E. Woolliams).

CALAMAGROSTIS

Ergot (Claviceps purpurea) was common on C. canadensis on a roadside nr. Alliston, Ont. (D.W. Creelman) and was sev. in a field at Baie Ste-Catherine, Saguenay Co., Que. (D. Leblond).

Leaf spot (Cylindrosporium calamagrostidis) was mod.-sev. on C. canadensis at Caplan, Que. (D.L.). This disease has not previously been reported to the Survey (D.W.C.).

Eye spot (Mastigosporium rubricosum). Mod. infections occurred on C. canadensis at Baie Ste. Catherine, Que. (D.L.).

Crown rust (Puccinia coronata) was observed at Caplan and Baie Ste. Catherine, Que. Infection was mod. at both localities (D.L.).

DACTYLIS

Ergot (Claviceps purpurea) was seen on D. glomerata nr. Alliston, Ont. (D.W. Creelman).

Leaf spot (Mastigosporium rubricosum) infected 80% of the plants of D. glomerata in plots at St. John's West, Nfld. (G.A. Nelson.

Brown stripe (Passalora graminis) was mod. on D. glomerata nr. Alliston, Ont. (D.W.C.).

PHLEUM

Ergot (Claviceps purpurea) was tr. on P. pratense nr. Alliston, Ont. (D.W. Creelman) and was sl. at Baie Ste. Catherine, Que. (D. Leblond).

Eye spot (Heterosporium phlei) was sev. in plots of timothy at the Exp. Farm, Caplan, Que. (D.L.). It ranged up to 30% infection in 4/12 areas examined in P.E.I. (C.B. Willis). Infection was sev. and widespread on the Avalon Peninsula of Nfld. (O.A. Olsen).

POA

Powdery mildew (Erysiphe graminis was widespread and very sev. on both Kentucky and Merion bluegrass in lawns at Saskatoon, Sask. (H.W. Mead). It was conspicuous in shady areas in some lawns at Ottawa, Ont. (D.W.

Creelman).

Melting-out (Dreschlera vagans) caused sev. damage to a lawn at Lethbridge, Alta. (J.B. Lebeau) and was mod.-sev. in lawns at Saskatoon, Sask. (H.W.M.). It caused about 5% damage to Poa spp. in lawns at Winnipeg and Fort Garry, Man. (B. Peturson).

Fairy ring (Marasmius oreades) caused sev. damage in 5 lawns at Lethbridge, Alta. (J.B.L., E.J. Hawn) and mod.-sev. in lawns at Saskatoon, Sask. (H.W.M.).

Rust (Puccinia graminis) was sev. in a lawn of Merion bluegrass at Lethbridge, Alta. (J.B.L.) and was mod. on the same variety in a lawn at Ottawa, Ont. (D.W.C.).

Rust (Puccinia poae-nemoralis) occurred in many lawns in the Winnipeg and Fort Garry areas of Man. Infection ranged from 5-75% (B.P.).

Leaf blotch (Septoria macropoda Pass.var sepulata (Gonz. Frag.) Sprague) affected 60-70% of the leaves of Merion bluegrass in a lawn at Ottawa, Ont. Extensive, necrotic areas occurred at the leaf tips or cut ends but the leaves were not killed. The reddish margins of the lesions described by Sprague were lacking but spore and pycnidrium size agree well with var. sepulata (W.L. Seaman).

TURF

Anthracnose (Colletotrichum graminocola) was isolated from a plug of turf from a golf course in the Vancouver, B.C. area (H.S. Pepin).

Powdery mildew (Erysiphe graminis). Mod. infections were seen on native grasses in the Petaigan area of n.-e. Sask. (H.W. Mead).

Snow mold (low-temperature basidiomycete) damage in turf areas was rated 4-sl. at Calgary, 3-mod.-sev. at Banff and 1-sl. at Lethbridge, Alta. (J.B. Lebeau). Mod.-sev. damage was seen in turf at Saskatoon, Sask. (H.W.M.).

Slime mold (Physarum cinereum) appeared on lawns in Vancouver about a month earlier than usual (H.N.W. Toms). It occurred on pasture grasses at Berthierville, Que. (D. Leblond). and on a lawn at Hartland, N.B. (K.M. Graham).

III DISEASES OF VEGETABLES

ASPARAGUS

STEM CANKER (Phoma asparagi) was heavy on fern growth of asparagus at Leamington, Ont. (C.D. McKeen).

RUST (Puccinia asparagi). At Leamington, Ont. a 2-acre field of the variety Paradise was heavily infected (C.D. McK.).

BEAN

GRAY MOLD (Botrytis cinerea). Light losses were incurred in field beans at Pokiok, York Co., N.B. and the disease was also present in home gardens (S.R. Colpitts). Slight damage from pod rot was also seen on snap beans for freezing at East Florenceville, N.B. (K.M. Graham). Gray mold was sev. on canning beans in Kings Co., N.S. with up to 10% of the pods affected at harvest (K.A. Harrison).

ANTHRACNOSE (Colletotrichum lindemuthianum) was repeatedly found, mainly as tr. infections on Michelite, in fields in w. Ont. (M.D. Sutton, V.R. Wallen). Infection was 80% in 2 fields of the variety King Horn at St. Damasse, Que. The seed had been grown locally (R. Crête). It was sev. at Arvida, Que. (D. Leblond). Little infection was seen in fields grown from imported seed in York Co., N.B. but second-year seed had a mod. amount of infection (S.R.C.). At Canning, N.S. 22 acres of snap beans were so badly infected that they were ploughed down. Infection apparently originated in a nearby field of Jacob's Cattle beans (K.A.H.)

ROOT ROT (Fusarium solani f. phaseoli). Trace infections were seen in a few fields in w. Ont. (R.M.S., V.R.W.). Damage was sl. in a 2-acre field at Ste. Clothilde, Que. (R. Crête, J. Simard, T. Simard).

HALO BLIGHT (Pseudomonas phaseolicola) was 1-sl./3 commercial fields and 1-sl. 1-sev. in garden plantings nr. Lethbridge, Alta. (F.R. Harper). Trace infections occurred in plantings of the Soldier variety in York Co., N.B. (S.R.C.). Commercial plantings were relatively free of the disease until late Aug. in Kings Co., N.S. A heavy infection, however, was seen in a home garden at Kentville (K.A.H.).

SCLEROTINIA WILT (S. sclerotiorum). Lush growth and high moisture levels favored an unusual amount of infection in n. and c. Alta. (W.P. Skoropad). In w. Ont. it was found in most fields, ranging from tr.-sl. but occasionally sev. on succulent growth on low-lying ground (R.M.S., V.R.W.). It was sev. in plots at the Muck Soils Exp. Sta., Ste. Clothilde, Que. (D.W. Creelman). Up to 100% infection, such that beans could not be harvested and dried, occurred in some fields in the Canaan, N.S. district (K.A.H.).

RUST (Uromyces phaseoli) was sev. in 1 field of Michelite in w. Ont. (R. M. S., V. R. W.).

COMMON BLIGHT (Xanthomonas phaseoli) was sl. on pole beans at Lavington, B. C. (G. E. Woolliams).

MOSAIC (virus). Both common and yellow mosaic were prevalent in many fields in w. Ont. (R. M. S., V. R. W.). It was 2% in a garden at Salisbury, N. B. (S. R. C.).

CHEMICAL INJURY. Dry weather apparently prevented the complete breakdown of pre-merge weed killer and some injury occurred to beans when the trifoliate leaves were expanding in early July. The symptoms resembled mosaic but the plants eventually recovered (K. A. H.).

FROST INJURY caused sl. -mod. damage to 4 fields in early May at Ste. Clothilde, Que. (R. C., J. S., T. S.).

MAGNESIUM DEFICIENCY caused sl. -sev. damage over half a 2-acre field at Chipman Corner, N. S. In some spots plants produced only one-quarter normal growth (K. A. H.).

OEDEMA (excess moisture) resulted in pods with numerous watery pimples that showed reddish cells when the skin was broken. The crop of 28 acres involved at Canning, N. S. could not be canned since the discoloration remained after processing (K. A. H.).

WIND INJURY. High winds in late May caused heavy damage to bean fields along Lake Erie, south of Harrow, Ont. Some 30-40 acres had to be reseeded (J. Rainforth).

BEET

LEAF SPOT (Cercospora beticola) was mod. -sev. in a field nr. Guelph, Ont. (D. W. Creelman) and tr. in a field at Sherrington, Que. (R. Crête, J. Simard, T. Simard). It affected from tr. -10% of the leaf surface of most plants at the Peat Substation, Colinet, Nfld. (O. A. Olsen).

LEAF SPOT (Phoma betae). Infection was about 10% at Lower Canard and Sydney, N. S. (C. O. Gourley).

BROAD BEAN

WILT (Fusarium oxysporum f. fabae) caused about 40% loss in 2 fields at Saguenay and Chicoutimi, Que. (Gy. Ola'h).

BROCCOLI

BORON DEFICIENCY resulted in some blackening of the center of heads at Canning and Kentville, N. S. (K. A. Harrison).

BRUSSELS SPROUTS

VASCULAR DISCOLORATION AND HEAD ROT (Xanthomonas campestris) affected 10% of the plants on 80 acres at Rogersville, N.B. The pathogen is suspected of being seedborne on the hybrid variety Jade Cross, the seed of which had been grown in Japan (K. M. Graham).

CABBAGE

DOWNY MILDEW (Peronospora parasitica) developed on plants under hotcaps at Eastport, Nfld. Unprotected plants were not affected. Dusting with a copper fungicide arrested the spread of the disease (O.A. Olsen).

CLUB ROOT (Plasmodiophora brassicae). was sev. in a market garden on muck soil nr. Cloverdale and sl. in a market garden on clay soil nr. Ladner, B.C. (H.N.W. Toms). Damage was sev. in a field at Ste Clothilde, Que. (J. Simard, R. Crête, T. Simard). Light infections were seen or reported from several areas of Kings Co., N. S. (K. A. Harrison).

WIRE STEM (Rhizoctonia solani). A light, general infection occurred over a 4-acre field at Avonport, N.S. (K.A.H.).

SCLEROTINIA ROT (S. sclerotiorum) occurred to an unusual degree in n. and c. Alta. (W.P. Skoropad). Trace-sl. amounts were observed on the Bradford Marshes, Ont., at Macdonald College, Que. and in the Ste Clothilde area of Que. (D.W. Creelman).

OEDEMA (improper water relations) was common and sev. on the outer leaves of cabbage in the Quebec City region in late June and early July. It seemed to be related to extremes of day and night temperatures (D. Leblond). It was also common in plantings in Sunbury Co., N.B. (S.R. Colpitts).

CARROT

LEAF BLIGHT (Alternaria dauci) was commonly seen in fields on the Bradford Marsh, Ont. (D.W. Creelman). It was rated 1-tr. 4-sl. -mod./14 fields surveyed in the muck soil area in s. -w. Que. (J. Simard, R. Crête, T. Simard).

LEAF BLIGHT (Cercospora carotae) occurred along with A. dauci in most plantings on the Bradford Marsh, Ont. (D.W.C.). It was rated 4-tr. -mod/ 14 muck soil fields in s. -w. Que. (J.S., R.C., T.S.). Infection was first noted in fields in Kings Co., N.S. in late July. A spray program based on 4

sprays of zineb, where followed, gave excellent control. In an untreated field at Port Williams there was a 60% loss of foliage by late Sept. The disease was also seen in the Sydney and Port Morien areas on Cape Breton Island (K. A. Harrison). Alternaria and Cercospora leaf blights seem to occur in equal intensity on the Bradford Marsh in Ont. and in crops on muck soils in s.-w. Que. They assume a greater importance, however, in Que. for two reasons; first, a larger proportion of the Que. crop reaches the market as bunching carrots where blemishes on the foliage detract from the saleability of the product and, second, most of the harvesting of mature roots in Que. is done by mechanical means, in contrast to hand harvesting on the Bradford Marsh. Even moderate infection by leaf blight weakens the tops to such an extent that they break off when harvested mechanically and many roots are left in the ground. No figures are available for any estimate of reduction in yield caused by the two organisms (D. W. Creelman).

SOFT ROT (Erwinia carotovora). Most of the roots of plants with symptoms of aster yellows in a field at Ste. Clothilde, Que. showed extensive rotting (D. W. C.).

ROOT-KNOT NEMATODE (Meloidogyne hapla). Trace-mod. infestations were seen in many fields examined on the Bradford Marsh, Ont. (D. W. C.). Infections were rated 4-tr.-sev./7 fields in the Ste. Clothilde region and 2-sl./4 at Sherrington, Que. (J. S., R. C., T. S.).

SCLEROTINIA ROT (S. sclerotiorum). A considerable amount developed in storage in n. and c. Alta. (W. P. Skoropad). Several specimens from the 1961 crop in storage were received at Kentville and field rotting, an unusual occurrence in N. S., was seen in a large field at Port Williams, N. S. (K. A. H.).

ASTER YELLOWS (virus). Trace infections were seen in fields on the Bradford Marsh and in the Guelph, Ont. district (D. W. C.). Infections were 1-tr./7 at Ste. Clothilde and 2-tr./2 in the Farnham area, Que. (J. S., R. C., T. S.) and it was tr. in the region of La Pocatière, Que. (H. Généreux). No infections were seen in Kings Co., N. S. until late Aug. after which time they developed rapidly and some fields showed sev. infection. Larger fields tended to have more yellows than small plantings. The disease was more sev. than in 1961 but not as sev. as in 1960 (K. A. H.). Infection was less than 1% in the Notre Dame Bay and St. John's districts in Nfld. (O. A. Olsen).

CHEMICAL INJURY (herbicide). Excess application of pre-merge herbicide was suspected to be the cause of many misses and poor growth on a farm nr. Cloverdale, B. C. (H. N. W. Toms).

CAULIFLOWER

BORON DEFICIENCY was responsible for loss of plants in a planting at Kentville, N.S. Stems were hollow and broke down with soft rot (K. A. Harrison).

CELERY

ROOT-KNOT NEMATODE (Meloidogyne hapla). Slight-mod. infestation was seen in one end of a large planting on the Bradford Marsh, Ont. (D. W. Creelman). Ratings were 1-sl./5 fields surveyed in the Ste. Clothilde region, Que. (J. Simard, R. Crête, T. Simard).

BACTERIAL BLIGHT (Pseudomonas apii). Specimens were received from Ste. Clothilde, Que. (D. W. C.).

PINK ROT (Sclerotinia sclerotiorum) was tr. in plots at Ste Clothilde, Que. (J. S., R. C., T. S.).

LATE BLIGHT (Septoria apii) was mod.-sev. at one end of a 1-acre field on muck soil nr. Cloverdale, B. C. (H. N. W. Toms). Light infections were seen in several fields on the Bradford Marsh, Ont. (D. W. C.). Ratings were 1-sev./5 fields at Ste. Clothilde and 5-sl./9 at Sherrington, Que. (J. S., R. C., T. S.).

ASTER YELLOWS (virus). Traces were seen in celery fields in the Bradford Marsh, Ont. (D. W. C.). and in 2 of 5 fields at Ste. Clothilde, Que. (J. S., R. C., T. S.).

MOSAIC (virus) was trace in plots at the Muck Soils Substation, Ste. Clothilde, Que. (J. S., R. C., T. S.).

CORN

SEEDLING BLIGHT (Fusarium moniliforme). The pathogen was isolated from diseased seedlings in localized spots in a field of late-planted sweet corn in Essex Co., Ont. (R. E, Wall).

NORTHERN LEAF BLIGHT (Bipolaris turcicum). Heavy infections were common on late plantings of sweet corn in Essex Co., Ont. (J. Rainforth).

SMUT (Ustilago maydis) was tr. in plots at Fort Garry, Man. (W. L. Gordon). A few infected ears were seen in plantings in w. Ont., at Macdonald College and in the Montreal Botanic Gardens (D. W. Creelman). It caused mod. losses in a planting at La Pocatière, Que. (H. Généreux) and a specimen was received from Ste. Monique, Que. (D. Leblond).

MAGNESIUM DEFICIENCY. Very sev. symptoms were seen in the Waterville district of Kings Co., N. S. It was more common in the county than usual (K. A. Harrison).

CUCUMBER

LEAF SPOT (Alternaria cucumerina) was mod.-sev. in several home gardens inspected in the Ottawa, Ont. area (D. W. Creelman) and was sl.-mod. at St. Nicolas, Levis Co., Que. where a Phyllosticta was also present in some spots (D. Leblond). Numerous specimens were received at Kentville, N. S. including one from River Philip, Cumberland Co., where the grower reported 100% infection and a total loss of the crop. This is a very troublesome disease in N. S. (K. A. Harrison).

STEM ROT (Botrytis cinerea) became a problem in many greenhouses in Essex Co., Ont. during cloudy weather in Feb. and March. Where careful control measures were applied the loss was not substantial (J. Rainforth).

SCAB (Cladosporium cucumerinum). Considerable scab was seen on some lots of locally-grown cucumbers on the farmers' market at Ottawa, Ont. (D. W. Creelman). Trace-mod. amounts occurred in 6 fields surveyed in the Farnham area (R. Crête) and damage was 10% in a planting at Quebec and 15% in 2 fields at Massabielle, Wolfe Co., Que. (G. Ola'h). Table cucumbers of non-resistant varieties were almost a complete loss in N. B. (S. R. Colpitts). A field of Marketer was abandoned as a complete loss at Centerville, N. S. Even the growing tips of the vines were killed. The disease was general throughout the province (K. A. H.).

ANTHRACNOSE (Colletotrichum lagenarium) caused some defoliation in a large greenhouse at Leamington, Ont. Weekly applications of maneb brought the disease under control (C. D. McKeen). Trace infections were seen in all 6 fields surveyed in the Farnham area, Que. (R. C.).

DODDER (Cuscuta sp.). At Oromocto, N. B., greenhouse flats became infected. After transplanting, about 60% of the plants were killed before fruit was formed (S. R. C.).

BACTERIAL WILT (Erwinia tracheiphila) killed a few plants in a small field nr. St. Catharines, Ont. (J. F. Bradbury). Wilt was present in most gardens in the regions of La Pocatière, Que. Up to 25% of the plants were affected (H. Généreux).

POWDERY MILDEW (Erysiphe communis) was observed on greenhouse cucumbers as early as 10 Feb. in Essex Co., Ont. and continued to be a problem during the remainder of the growing season. Losses from mildew were substantial. Abnormally cloudy weather in Feb. and March resulted in soft tissues in the cucumber plants which were very susceptible to injury from chemicals used in control (J. Rainforth). Sl. infection was seen in a greenhouse at Falmouth, N. S. (K. A. H.).

ANGULAR LEAF SPOT (Pseudomonas lachrymans). Infection was about 5% in a commercial field at Osoyoos, B.C. (G.E. Woolliams) and was sev. in 2 garden plantings at Lethbridge, Alta. (P.E. Blakeley, F.R. Harper). A 2-acre portion of an 8-acre field at Harrow, Ont. was sev. infected (C.D. McKeen). Damage was mod. in a field of several acres at Brantford, Ont. (C.B. Kelly) and was mod.-sev. in 6 fields examined in the Farnham district and sev. in 1 field at Sherrington, Que. (J.S., R.C., T.S.). The disease was sev. at Ste. Foy, St. Nicolas and Joly, Que. (D.L.). Infection was 5% at Gagetown, N.B. (S.R.C.).

SCLEROTINIA ROT (S. sclerotiorum) was unusually prevalent in n. and c. Alta. (W.P. Skoropad) and was mod. in a greenhouse at Medicine Hat, Alta. (P.E.B.).

MOSAIC (virus) was sev. at Arvida and Caplan, Que. (D.L.).

BLOSSOM-END BLIGHT (cause unknown) caused sev. reduction in the marketable yield in a greenhouse at Lethbridge, Alta. The stem end of fruits was normal but the blossom end was shrivelled (J.B. Lebeau, P.E.B.).

CHEMICAL INJURY. In 2 greenhouses in Essex Co., Ont., cucumber crops were planted in soil treated with the fumigant "Vorlex" before the gas had escaped from the soil. The crops were killed. Reworking the soil and replanting resulted in the loss of approximately 3 weeks' production (J.R.). Injury similar to that caused by 2,4-D occurred on cucumbers planted near tomatoes to which a "fruit set" hormone had been applied at Falmouth, N.S. (K.A.H.). A field of pickling cucumbers in Essex Co., Ont., plants where black walnut trees had been removed the previous year suffered sev. wilting. Some injury was also seen near standing trees. It was first noticed in early July as harvesting was about to commence (J.R.).

EGGPLANT

WILT (Verticillium dahliae) varied from tr.-100% in fields in Essex Co., Ont. Yield losses in heavily infected fields were considerable (C.D. McKeen).

LETTUCE

GRAY MOLD (Botrytis cinerea) was sev. on lettuce in variety trials on peat soil at Aylesford, N.S. (K.A. Harrison) and affected 3% of the plants in plots at St. John's West, Nfld. (G.A. Nelson).

DOWNY MILDEW (Bremia lactucae). Infection was rated 4-tr.-sl./7 fields examined at Ste. Clothilde, Que. (J.S., R.C., T.S.) and was sev. in several fields in the Sydney area, N.S. (K.A.H.).

BIG VEIN (Olpidium sp. and TMV associated). Many fields at Leamington, Ont. showed varying degrees of incidence. No crop was free of the disease (C. D. McKeen).

STUNT (Pythium sp.) was sev. in a 3-acre field on the Bradford Marshes, Ont., causing a loss of 25% of the plants. Trace amounts were observed in 2 other fields (L. V. Busch).

BOTTOM ROT (Rhizoctonia solani). Infection was 3-tr.-sl./7 fields examined at Ste. Clothilde, Que. (J.S., R.C., T.S.).

DROP (Sclerotinia sclerbtiorum) was 4-tr.-sl./7 fields at Ste Clothilde, Que. (J.S., R.C., T.S.). Trace infections were seen at Kentville, Grand Pré and Sydney, N.S. (K.A.H.).

ASTER YELLOWS (virus). Trace amounts were observed on the Bradford Marsh, Ont. (D. W. Creelman). In Que, it was 4-tr./7 fields at Ste. Clothilde and 1-tr./1 at Sherrington (J.S., R.C., T.S.).

MOSAIC (virus) was 2-tr./7 fields at Ste Clothilde, Que. (J.S., R.C., T.S.).

MELON

LEAF SPOT (Alternaria cucumerina) was present in fields in Essex Co. Ont. where regular applications of fungicidal sprays were not applied (C. D. McK.).

POWDERY MILDEW (Erysiphe communis) was prevalent on most melon crops in Essex Co., Ont. Protective sprays containing maneb, where applied, held it under fairly good control (C. D. McK.).

MUSKMELON

SCAB (Cladosporium cucumerinum) was sev. on the Early Champlain variety growing near infected cucumbers at Kentville, N.S. (K.A. Harrison).

ANTHRACNOSE (Colletotrichum lagenarium) was serious in a few unsprayed muskmelon fields nr. Harrow, Ont. It was not present in sprayed fields (C. D. McKeen).

ONION

PURPLE BLOTCH (Alternaria porri). Trace infection was seen in 1 field at Napierville, Que. (J. Simard, R. Crête, T. Simard).

NECK ROT (Botrytis spp.).(B. allii was common in storage in the Okanagan Valley, B.C. (G.E. Woolliams). Specimens yielding B. cinerea were

received throughout the winter from the local markets in Quebec City (D. Leblond).

BLAST (Botrytis spp.) was generally distributed in onion fields in the Winnipeg, Man. area. Infection was sev. in portions of some fields (W. L. Gordon). A considerable amount of infection was seen in fields at Leamington and on the Bradford Marsh, Ont. (D. W. Creelman). In s.-w. Que. it was rated 2-mod./3 fields at Ste. Clothilde, 2-sl./9 at Sherrington and 3-sl./3 at Napierville (J. S., R. C., T. S.). Blast was sev. and growth seriously retarded in fields in Kings Co., N. S. early in Aug. (K. A. Harrison).

BULB ROT (Fusarium oxysporum f. cepae) caused up to 50% rot in the newer hybrid varieties in the Oliver district and about 1% in the Kelowna, B. C. districts. The disease appeared to be more prevalent on new hybrids than on the older, standard varieties such as Yellow Globe Danvers, etc. (G. E. W.). It was rated 3-tr./3 fields at Napierville and 2-sl./5 fields at Farnham, Que. (J. S., R. C., T. S.).

PINK ROT (Fusarium solani) was quite general in the Kelowna, B. C. district (G. E. W.).

ROOT-KNOT NEMATODE (Meloidogyne hapla) was observed to be 3-tr./9 fields at Sherrington, 1-tr./3 at Napierville and 1-sl./5 at Farnham, Que. (J. S., R. C., T. S.).

DOWNY MILDEW (Peronospora destructor) was rated 2-sl./3 fields examined at Ste. Clothilde (J. S., R. C., T. S.); it was observed at Champigny (Gy. Ola'h) and was sev. in most gardens at La Pocatière, Que. where it appeared exceptionally early in the season (D. Leblond).

PINK ROT (Pyrenochaeta terrestris) occurred in a number of fields of set onions in the Leamington, Ont. area. Damage was restricted to small areas in the affected fields (J. Rainforth).

WHITE ROT (Sclerotium cepivorum). One field in the Sherrington, Que. district was mod.-sev. infected and 2 others showed sl. infection (J. S., R. C., T. S.). This is the first report of S. cepivorum in Eastern Canada. It had previously been reported from Man. (C. P. D. S. 39:50. 1960). The onions at Sherrington had been grown from seed, the origin of which was not known to the growers. Rotational practices have been recommended (D. W. C.).

SMUT (Urocystis cepulae) occurred in most commercial onion fields at Kelowna, B. C. (G. E. W.). It was present in some fields on the Bradford Marshes, Ont. (D. W. C.).

ASTER YELLOWS (virus) was tr. in 2/2 fields in the Farnham region, Que. (J. S., R. C., T. S.).

YELLOW DWARF (virus). Early bunching onions in 2 fields at La Salle, Ont. were slightly infected with yellow dwarf (C. D. McKeen).

CALCIUM DEFICIENCY was tr. in 1 field in the Farnham, Que. region (J.S., R.C., T.S.).

CHEMICAL INJURY. Arsenical injury occurred in a field of Spanish onions in Essex Co., Ont. The field was 2 years removed from an apple orchard. Circular areas of very poor growth, roughly 10 ft. in diameter and corresponding to tree location occurred throughout the field. Subsequent analysis showed arsenic to be present in toxic amounts near the trunks of standing trees in an adjoining orchard.

PARSNIP

LEAF SPOT (Cercospora pastinacae). Trace infections were observed on small leaves in mid-July at Port Williams and Kingsport, N.S. By the first of Aug. sev. infections had developed in all parsnip fields in the area. Good control was obtained by spraying with either maneb or zineb. Very deep lesions developed on petioles but the foliage remained green and functioning until late Oct. (K.A. Harrison).

ASTER YELLOWS (virus). Infection was 5% in a field adjacent to a moderately infected carrot field at Port Williams, N.S. (K.A. Harrison).

PEA

FOOT ROT (Ascochyta pinodella) was present in all fields surveyed in the Ottawa Valley, Ont. with losses ranging from tr. -30%. The variety B.C. Blues seemed very susceptible (V.R. Wallen).

LEAF AND POD SPOT (Ascochyta pisi). All vines in 3 fields totalling 100 acres at East Florenceville, Centerville and Royalton, N.B. were affected with the average damage moderate. Weather conditions were exceptionally favorable for its development and piles of pea vines were left undisturbed after harvest. Defoliation of lower leaves and pot spotting were severe. (K.M. Graham, F. Harding). Infection was 4% on the variety Sprite in trials at Kentville, N.S. It was not seen in commercial fields (K.A.H.).

GRAY MOLD (Botrytis cinerea). Some early pea fields at South Berwick, N.S. showed about 10% damage from stalk and pod infection. Later-planted fields were not affected (K.A.H.).

POWDERY MILDEW (Erysiphe polygoni). Specimens were received from Berthier, Que. (D. Leblond). It was prevalent in home gardens in the Fredericton, N.B. area but field peas were not affected to any degree (S.R. Colpitts). A heavy infection developed on foliage of Fenland Wonder at Kentville,

N. S. after pods were harvested (K. A. H.).

ROOT ROT AND WILT (Fusarium spp.) was very destructive in a garden at Vancouver, B. C. (H. N. W. Toms).

MYCOSPHAERELLA BLIGHT (M. pinodes) caused sev. spotting of 20% of the pods of Chancellor at Rosenfeld, Man. (W. A. F. Hagborg). It was sl. in 1 field of Creamette in the Ottawa Valley, Ont. (V. R. W.). A sev. infection occurred in variety trial plots at the Research Station, Kentville, N. S. (K. A. H.).

DOWNY MILDEW (Peronospora pisi). Infection was sl. in 3/3 plantings examined at Taber, Alta. (F. R. Harper). Two large fields were heavily infected at Morristown, N. S. Little injury was apparent except that Botrytis cinerea became established in many of the old mildew lesions (K. A. H.).

BACTERIAL BLIGHT (Pseudomonas pisi) was associated with lesions on unfilled pods in a field nr. Taber, Alta. (F. R. H.).

SEEDLING BLIGHT (Pythium spp.) caused sev. reduction in stand in part of a field planted with chloranil-treated seed stored for 1 year. No stand reduction occurred in the remainder of the field planted with captan - treated seed that had not been stored (F. R. H.).

ROOT ROT (Pythium and Fusarium spp.) was of no economic importance in s. Alta. in 1962 in contrast to 1961 when mod.-sev. damage was recorded. The growing season in 1962 was abnormally cool whereas it was abnormally warm in the early part of the 1961 season (F. R. H.).

STEM ROT (Sclerotinia sclerotiorum) was reported in several fields of canning peas in Kings Co., N. S. A 10-acre field at Somerset had a number of infected areas (K. A. H.).

LEAF BLOTCH (Septoria pisi) was sev. in a field at Caplan, Que. (D. Leblond).

RUST (Uromyces fabae). Tr.-sl. infections were seen in 2 fields in the Ottawa Valley, Ont. (V. R. W.). It was tr. and caused no damage at Morristown, N. S. (K. A. H.).

STREAK (virus). Infection was as high as 15% in some plantings of Chancellor in the Ottawa Valley, Ont. (V. R. W.).

PEPPER

WILT (Verticillium dahliae) affected up to 20% of the plants in some fields at Kelowna, B. C. (G. E. Woolliams). Infection ranged from tr.-30% in several fields in the Harrow, Ont. area (C. D. McKeen).

BACTERIAL SPOT (Xanthomonas vesicatoria) caused slight damage in 2 fields in Essex Co., Ont. (C. D. McK.).

TOBACCO ETCH (virus) affected most pepper fields in the Harrow, Ont. district. It was estimated that losses in yield were in excess of 30% (C. D. McK.).

PEPPERMINT

WILT (Verticillium albo-atrum) caused sev. damage nr. Grand Bend, Huron Co., Ont. (J. Bradbury).

POTATO

The data presented in Tables 1-3, pertaining to Seed Potato Certification in Canada were supplied by the Plant Protection Division, Production and Marketing Division, Canada Department of Agriculture. As in 1960 and 1961, the principal causes of rejection of seed fields were the virus diseases mosaic and leaf roll and the bacterial diseases ring rot and blackleg. Ring rot incidence in seed crops was greatly reduced in 1962 but blackleg incidence increased threefold. The big increase in blackleg occurred in crops grown in Prince Edward Island (D. W. Creelman).

EARLY BLIGHT (Alternaria solani). Incidence in seed fields in B.C. was rated 51-sl. 4-mod./383, being most prevalent in the Pemberton and Okanagan districts (N. Mayers). It was generally present but slight in n. Alta. (R. P. Brandrith) and ranged from sl.-sev. in 48/133 s. Alta fields with 1 field 95% infected (R. P. Stogryn). In Sask. it was sev. in some fields by the end of the season (A. Charlebois) while in Man. and n.-w Ont. it was sl. late in the season (D. J. Petty). Early blight was sev. in the Simcoe, Sudbury and Algoma districts of Ont. (H. W. Whiteside) and was 9-sl. 6-mod. 1-sev./69 fields in e. Ont. where it caused tuber rot in 1 field (E. H. Peters). In Que. it was rated 101-sl. 29-mod. 2-sev./926 seed fields, mostly occurring in the Lake St. John and Chicoutimi districts (G. Ethier). It was 2-tr./4 table stock fields in the Sherrington-Napierville, Que. area (J. Simard, T. Simard). It was rarely observed in N.B. in 1962 (C. E. Robinson) and was sl.-mod. throughout N.S. by mid-Aug. where the new variety Hunter appeared to be susceptible (R. C. Layton). Infection was extremely heavy at Brigus and Bay Roberts, Nfld. but not elsewhere in the province (O. A. Olsen).

BLACK DOT (Colletotrichum coccodes) caused early and sev. wilting of Kennebec nr. Estevan, Sask. (R. J. Ledingham). Infection ranged from 0-34% in 3 fields examined in Kamouraska Co., Que (J. Santerre).

Table 1. Seed Potato Certification - Acreage passed by variety and Province - 1962.

Variety	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Total
Sebago	17,940	32	758	72	327			2	19	19,150
Kennebec	2,207	147	7,117	539	128	362		6	57	10,563
Katahdin	444	11	4,332	169	109					5,064
Netted Gem	31	20	1,196		4	1,041	141	1,167	1,201	4,801
Red Pontiac	208	23	2,313		24	229	4	95	36	2,932
Irish Cobbler	1,492	20	111	58	31	167		9		1,889
Green Mountain	407	19	73	968	1				40	1,508
Norland	1		14		12	538	114	2	13	694
Keswick	44	11	326	182	23				3	589
Cherokee	315	16	59	16	35	3		6		450
Warba	21	1	3	8	10	55	11	142	37	288
Hunter	141	14	32		1		1			189
Fundy	38	25	44	1	3		5		1	117
Waseca						80	9	2	8	99
Avon	5	8	49		14		1			77
Manota						60	10		1	71
Chippewa	3		19		46	1				69
White Rose									48	48
Russet Rural			41							41
Others	21	15	17	17	1	40	33	13	43	200
Totals	23,318	362	16,504	2,030	769	2,576	329	1,444	1,507	48,839

Table 2. Seed Potato Certification.
Summary of fields and acres entered and passed - 1962

Province	FIELDS			ACRES		
	Entered	Passed	Percent Passed	Entered	Passed	Percent Passed
P.E.I.	5,222	4,391	84.0	29,595	23,318	79.0
N.S.	275	220	80.0	440	362	82.0
N.B.	2,182	2,003	91.4	18,818	16,504	87.7
Que.	926	496	53.5	3,830	2,030	53.9
Ont.	408	310	75.9	1,133	769	67.9
Man.	175	141	80.5	3,082	2,576	83.5
Sask.	92	83	90.2	411	329	80.1
Alta.	190	182	95.7	1,619	1,444	89.2
B.C.	383	305	79.6	2,019	1,507	74.7
Totals	9,853	8,131	82.5	60,947	48,839	80.1

Table 3. Seed Potato Certification
Fields rejected on field inspection - 1962

Prov.	Leaf Roll	Mosaic	Bacterial Ring Rot	Black Leg	Wilts	Adjacent Diseased Fields	Misc.	Total
P. E. I.	14	86	3	491	11	14	109	728
N. S.	2	6	7	5	1	4	1	26
N. B.	10	33	69	11	-	2	12	137
Que.	20	186	84	52	-	16	10	368
Ont.	20	23	2	28	11	2	2	88
Man.	-	-	4	18	-	-	12	34
Sask.	-	-	-	1	2	-	3	6
Alta.	-	-	-	-	-	-	-	-
B. C.	45	1	-	1	2	4	15	68
Total	111	335	169	607	27	42	164	1,455

Black Dot (Colletotrichum coccodes) caused early and sev. wilting of Kennebec nr. Estevan, Sask. (R. J. Ledingham). Infection ranged from 0-34% in 3 fields examined in Kamouraska Co., Que. (J. Santerre).

BACTERIAL RING ROT (Corynebacterium sepedonicum) was found in only 1 seed crop in B. C. It was reported on 9 farms growing tablestock (N. M.). Only 1 infected seed field was found in Alta. and 5 others rejected because of suspected contact (R. P. B., R. P. S.). The disease continues to be widespread in Sask. (R. J. L.). Four/174 fields were rejected in Man. (D. J. P.). It was found in a table stock field in the London area (F. J. Hudson) and in 1 seed field in e. Ont. (E. H. P.). In Que. 84/926 seed fields and 13 bin lots were rejected (G. E.). At La Pocatière, Que., Fredericton seedling F 59, Hunter and many other varieties showed wilt symptoms and striking tuber symptoms when knife-inoculated. Teton, Saranac and Merrimack exhibited no tuber symptoms (H. Généreux). Ring rot increased slightly in N. B. with 69/2,182 fields being rejected. Twenty-eight additional fields were rejected for contact (C. E. R.). Ring rot showed a marked decrease over 1961 in P. E. I. (G. C. R.). The striking decrease in ring rot in P. E, I. and Que. is attributed to extensive programs of disinfection of planting machinery (D. W. C.). Seven/275 fields were rejected in N. S. The variety Katahdin was the most seriously affected with percentages of 5-10% (R. C. L.). It was observed in fields in the Notre Dame Bay and Conception Bay districts of Nfld. (O. A. O.).

BLACKLEG (Erwinia atroseptica). Infection in seed fields in B. C. was rated 122-tr. 4-sl. 1-sev./383. Its incidence increased in the Kootenays and Pemberton areas. (N. M.). Blackleg was found in 90% of the acreage inspected in n. Alta. but no fields were rejected (R. P. B.) and in s. Alta. it was rated 98 tr. -1%/133 fields (R. P. S.). Twenty/93 fields were diseased in

Sask. (A. C.) and 18 fields were rejected in Man. (D. J. P.). In the Barrie district of Ont., 21/245 fields were rejected. Lesser amounts of disease were found where treated seed was used and also in fields planted with a tuber unit planter (H. W. W.). Blackleg was found in 18/69 fields inspected in e. Ont. and 3 were rejected (E. H. P.). In Que. 447/926 fields were diseased and 55 rejected (G. C.). Trace infections were found in 26% of the fields inspected in N. B., 11 were rejected (C. E. R.). Blackleg incidence increased markedly in P. E. I. where 491 fields were rejected. Ratings in fields passed were 1504-sl. 1210-mod. 46-sev./ 4,391 (G. C. R.). It was more general than usual in N. S., appearing in 73/275 fields. The highest incidence was in Sebago and Huron (R. G. L.). Blackleg was widespread throughout Nfld. and tuber infection was frequently encountered. It seemed most prevalent on Sebago (O. A. O.).

SEED PIECE DECAY (Erwinia atroseptica). Losses of 50% of the seed pieces were common in fields planted in warm weather at Alliston, Ont. There was a definite correlation between decay and the presence of bean maggot (L. V. Busch).

SOFT ROT (Erwinia carotovora) caused less than the usual losses in the Barrie, Ont. district (H. W. W.). In N. S. it was responsible for losses of 15-40% of potatoes held at high temperatures for chipping (R. C. L.).

DRY ROT (Fusarium spp.) was found in 12 storage bins in e. Ont. (E. H. P.) and was sl. in 4 bin lots of Keswick in Que. (G. E.).

SILVER SCURF (Helminthosporium atrovirens) was present in storages in the Barrie, Ont. area (H. W. W.). Slight-sev. infections were seen on specimens from local markets in Quebec City (D. Leblond) and it was sl. on a few lots of Green Mountain and Kennebec in the lower St. Lawrence areas of Que. (G. E.). Tubers of 11 varieties from north Gaspé, Que. were examined. Infection ratings were as follows: Erie, 70%; Saranac and Irish Cobbler, 50%; Keswick, 47%; Katahdin, 43%; Fundy, 30%; Teton and Kennebec, 26%; Merrimac, Sebago and Avon, 10% (J. Santerre).

GOLDEN NEMATODE (Heterodera rostochiensis) was discovered infesting areas on the south and west shores of Conception Bay, Nfld. (O. A. O.).

RHIZOCTONIA (Pellicularia filamentosa) occurred in all districts of B. C. and was rated 196-sl. 141-mod. 19-sev./383 seed fields. It caused some economic losses due to downgrading (N. M.). It was present in all n. Alta. fields and significant in 10% (R. P. B.) and was tr. in most and mod. in a few fields in s. Alta. (R. P. S.). Incidence in Sask. was higher than in 1961 with 40% of the infections being classed as mod. (A. C.). It was sl. -mod. in 11% of Man. fields (D. J. P.) and present on all varieties, particularly on Sebago, in the Barrie, Ont. district (H. W. W.). Infections were rated 8-sl. 12-mod. 1-sev./69 fields in e. Ont. (E. H. P.). Sixty-six/926 fields in Que. were diseased and at bin inspection it was rated 158-sl. 40-mod. 3-sev. (G. E.).

Losses from rhizoctonia were negligible in N.B. (C.E,R.). It was responsible for some destruction of sprouts in the Scott's Bay, N.S. district (R.C.L.). Rhizoctonia stem canker was seen in many Nfld. fields resulting in yield reductions (O.A.O.).

PINK ROT (Phytophtlora erythroseptica) was found in 4 bin lots of Keswick in Que. (G.E,) and caused losses in Kennebec held for chipping in Kings Co., N.S. (K.A. Harrison).

LATE BLIGHT (Phytophthora infestans). Many table stock growers in the lower Mainland area of B.C. suffered losses from tuber rot. Infection in seed fields was rated 8-sl. 3-mod. 2-sev./383 (N.M.). It was sev. in early Sept. in table stock fields at the Lakehead, Ont. (D.J.P.) and in s.-w. Ont. (F.J. Hudson). Only 5/69 seed fields were affected in e. Ont. (E.H.P.). In seed fields in Que. it was rated 213-sl. 48-mod. 16-sev./926. Tuber rot in bins was rated 197-sl. 18-mod. 5-sev. Losses in a few lots were up to 30% (G.E.). Specimens of tuber rot were received from local markets in Quebec City, Que. (D.L.). Losses were sl. in N.B. (C.E.R.). It was first reported on 28 July in N.S. but despite abnormally high rainfall, the low prevailing temperature kept it in check until mid.-Aug. when it became widespread and sometimes serious on foliage. Intensive spraying and top-killing programs kept tuber rot to a minimum (R.C.L.). Its incidence was very light in e. Nfld. and no reports of its occurrence were received from the western part of the province (O.A.O.).

LEAK (Pythium ultimum). Light infections occurred in seed crops in the Interior of B.C. (N.M.). It was seen in 1 crop of Netted Gem at Prince Albert, Sask. (A.C.). In Ont., it developed under poor storage conditions in north Simcoe Co. (H.W.W.); was reported from widely separated points in the Guelph area (G.B. Scott), and was found in 2 bins in the Ottawa valley (E.H.P.).

STEM ROT (Sclerotinia sclerotiorum). Trace infections were seen in fields of Arran, Victory in the Notre Dame Bay area of Nfld. (O.A.O.).

POWDERY SCAB (Spongospora subterranea). There was a striking increase in the incidence of this disease in the lower St. Lawrence area of Que. It was found in 15% of the bin lots examined, mostly as sl.-mod. infections but a few lots carried infections of up to 40-50% (G.E.). A light infection was observed in a 10-acre field at La Pocatière, Que. (H.G.). Tubers of a few seedlings under test at St. John's West, Nfld. bore tr.-40% infections (O.A.O.).

COMMON SCAB (Streptomyces scabies) was found in crops in the Cariboo and c. B.C. but was sev. in only 1 field (N.M.). A severely infected specimen was received from Bonnington Falls, B.C. (G.E. Wolliams). Scab was generally present and sev. on Warba and Netted Gem in the Lacombe, Alta. district (R.P.B.) and was mostly mod.-sev. though occasionally sev. in crops in Sask. (R.J.L.). There was considerable sev. scab in North Simcoe Co., Ont. (H.W.W.) while in the London, Guelph and Ottawa areas it was

generally sl. (F. J. H., G. B. S., E. H. P.). It was rated 218-sl. 81-mod. 38-sev./926 Que. fields. Some lots were 70-80% affected (G. E.). Slight infections were seen at harvest and shipping inspections in N. B. (C. E. R.) and it averaged about 1% in 10/49 bins inspected in N. S. (R. C. L.). Scab was prevalent and sometimes sev. in e. Nfld. (O. A. O.).

WART (Synchytrium endobioticum). Trace -sl. infections were observed along the Labrador coast (H. G.). Infection by wart was widespread and heavy in e. Nfld. In many cases infection was sev. on stalks but tubers escaped infection and some crop was produced. In other cases the entire crop was destroyed (O. A. O.).

WILT (Verticillium albo-atrum, Fusarium spp.). Fusarium wilt was 8-tr. 3-sl. 2-sev./383 seed fields in B. C. (N. M.). In n. Alta. 6% of the inspected acreage showed tr. amounts and in s. Alta. it was tr. -sl. in 36 fields (R. P. B., R. P. S.). Wilts were tr. -sl. in 23/92 Sask. fields and sl. in Man. and n. -w. Ont. (A. C.), (D. J. P.). It was found principally in Kennebec, in the Barrie and London districts (H. W. W., F. J. H.) and in 3/69 e. Ont. fields (E. H. P.). Wilts were not as common as in 1961 in Que. (G. E.) and infection averaged tr. in 65/2,182 fields in N. B. (C. E. R.). Incidence in both P. E. I. and N. S. was considerably below that in 1961 (G. C. R., R. C. L.).

CURLY TOP (virus) was observed on Warba at Normandin, Que. (D. L.).

LEAF ROLL (virus) was rated 97-tr. 16-sl. 2-mod. 23-sev./383 seed fields in B. C. where it was the greatest single cause of rejection. The acreage of seed potatoes on the lower Mainland was reduced 50% in 1962 largely because of the susceptibility of Netted Gem to leaf roll and high aphid populations (N. M.). It was tr. -sl. in 93% of the acreage in n. Alta. (R. P. B.) and was 8-tr./133 fields in s. Alta. (R. P. S.). Leaf roll was observed in 53% of the fields inspected in Sask. (A. C.). It was fairly general in the Barrie, Ont. district where 12 fields were rejected (H. W. W.) and was found in 21/69 fields inspected in e. Ont. (E. H. P.). Twenty Que. fields were rejected and the disease was found in 278/926 fields (G. E.). In N. B. 117/2,182 fields showed some infection (C. E. R.). Ratings were 464-sl. 272-mod. 132-sev. in the 4,391 fields passed in P. E. I. (G. C. R.). It increased in incidence in N. S. in 1962. All fields of Hunter were infected (R. C. L.). It was found in a field of Irish Cobbler at Winterbrook, Nfld. Ordinarily, very little leaf roll is seen in the province (O. A. O.).

MOSAIC (virus). Incidence in B. C. was rated 13-tr. 1-sev./383 fields (N. M.) and was negligible in Alta. (R. P. B., R. P. S.). It was sl. in 27% of the fields inspected in Sask. (A. C.). Sixteen fields, mainly of Keswick and Norland, were rejected in the Barrie, Ont. district (H. W. W.) and 6 were rejected in e. Ont. (E. H. P.). Mosaic in Que. increased considerably over 1961, mainly in the lower St. Lawrence region. It was found in 510/926 fields with 166 fields rejected (G. E.). It was rated 319 tr. -sl./2,182 fields

inspected in N. B. Thirty-three fields were rejected, mostly Green Mountain, Keswick, Fundy and Chippewa (C. E. R.). It increased in incidence in P. E. I. where it was rated 321-sl. 190-mod. 116-sev./4,391 fields passed and was responsible for 86 rejections (G. C. R.). Mosaic was recorded in 109/275 seed fields in N. S. Six were rejected (R. C. L.). It was seen in many fields in Nfld. in 1962. Symptoms were sev. in some fields grown from seed stocks not renewed for several years (O. A. O.).

PURPLE TOP (virus) was seen in 2/133 s. Alta. fields (R. P. S.). Incidence was lower than in 1961 in the Barrie, Ont. area (H. W. W.). It was mod. in a field at Normandin and sl. in one at Peribonka, Que. (D. L.). Trace infections were seen in a few N. B. fields (C. E. R.). Incidence ran as high as 10% in a few Sebago fields but the average was not above 5%. Purple top was negligible in varieties other than Sebago (G. C. R.).

SPINDLE TUBER (virus) occurred in 10% of the fields inspected in Sask. Two fields were rejected (A. C.) and 3 fields were rejected in Man. (D. J. P.). It was observed in the Barrie, Ont. district in Sebago, Huron and Kennebec (H. W. W.). Its incidence in N. B. and N. S. was considerably lower than in 1961 (C. E. R., R. C. L.). In P. E. I. it was rated 126-sl. 84-mod. 71-sev./4,391 fields passed. Eighteen were rejected (G. C. R.).

WITCHES' BROOM (virus). Infection was 17-tr. 1-sev./ 383 B. C. fields, mainly in the Interior (N. M.). It was tr. in 50% of the acreage inspected in n. Alta. and tr. in 3/133 fields in s. Alta. (R. P. B., R. P. S.).

GIANT HILL (genetic) was found in 12/133 fields in s. Alta. (R. P. S.), in the Cochrane and Temiskaming districts in Ont. (H. W. W.) and in many seed fields in N. S. (R. C. L.).

ENLARGED LENTICELS occurred in a 9-acre field with excessive soil moisture at Eamer's Corners, Ont. (E. H. P.).

FROST INJURY affected 4/69 seed fields in e. Ont. (E. H. P.) and caused losses of 3-10% in 144 bin lots in Que. (G. E.).

HOLLOW HEART occurred in trace amounts in several crops in the Kootenays, B. C. (N. M.).

LIGHTNING caused stem splitting and typical blackening of the pith was seen in a field in Que. The affected area was about 25 feet in diam. (D. L.).

MAGNESIUM DEFICIENCY. Moderate symptoms were observed in a field at Sherrington, Que. (R. Crête). Slight symptoms were seen at Peribonka and specimens were received from Deschambault, Que. (D. L.).

MANGANESE TOXICITY was mod.-sev. on a number of varieties, principally Keswick and Katahdin on sandy loam in l'Islet Co., Que. (H.G.).

PUMPKIN

BACTERIAL WILT (Erwinia tracheiphila) was observed in the La Pocatière region, Que. (H. Généreux).

POWDERY MILDEW (Erysiphe communis) became quite prevalent late in the season at Summerland, B.C. (G.E. Woolliams).

FRUIT BLOTCH (various organisms). Pumpkins from 1 field nr. Lethbridge, Alta. developed large, dark brown to black blotches during storage. A species of Fusarium and an unidentified bacterium were consistently isolated from affected tissues. Sunscald may have been a predisposing factor (F.R. Harper).

RADISH

BLACK ROOT (Aphanomyces raphani) seriously affected the variety White Icicle in a garden at Kentville, N.S. (K.A. Harrison).

DOWNY MILDEW (Peronospora parasitica) was sl. in 2 fields at Ste. Clothilde, Que. (J. Simard, T. Simard).

RHUBARB

LEAF SPOT (Ascochyta rhei) was sev. with killing of 50% of the leaves in a planting at Kentville and sl. with no damage at Black Brook, Cape Breton Co., N.S. (C.O. Gourley).

RED LEAF (cause unknown) caused slight damage in Sask. It is a major problem in rhubarb plantings in this province (R.J. Ledingham).

SQUASH

SCAB (Cladosporium cucumerinum) was sev. on Acorn squash in a garden at Ottawa, Ont. (W.P. Campbell, D.W. Creelman) and was light on Hubbard and Buttercup in a garden at Kentville, N.S. (K.A. Harrison).

STORAGE ROT (Cladosporium herbarum). Losses, averaging 6%, were lighter than usual at Berwick and Grand Pré, N.S. despite the late development of the crop (K.A.H.).

POWDERY MILDEW (Erysiphe communis) became quite general late in the season on all kinds of squash in the Okanagan Valley, B.C. (G.E. Woolliams)

WILT (Verticillium dahliae). Several plants in a garden at Kelowna, B.C. were affected (G. E. W.).

SWEDE TURNIP

GRAY MOLD (Botrytis cinerea) affected about 3% of the roots in storage at Grand Pré, N.S. Typical rotten spots occurred on the necks (K.A. Harrison).

SOFT ROT (Erwinia carotovora) caused sev. damage at the RCAF Station, St. Margaret's, N.B. (K.M. Graham).

DOWNY MILDEW (Peronospora parasitica) was observed affecting 70-100% of the plants in the Bonavista Bay, Notre Dame Bay, Terra Nova and St. John's districts of Nfld. in Aug. and Sept. Usually about 5% of the leaf area was affected. Cool, wet weather was responsible for its widespread occurrence in the province (O.A. Olsen).

BLACK LEG (Phoma lingam). Infection was about 15% in a field of Laurentian at Grand Pré, N.S. The source of seed could not be traced (K.A.H.).

CLUB ROOT (Plasmodiophora brassicae) caused 20-40% damage in 14/14 fields examined at the following locations in Que: Pontrouge and Neuville, Portneuf Co.; Albanel, Roberval Co.; Beauport and Ste. Foy, Quebec Co.; Plessisville, Megantic Co.; Baie St. Paul, Charlevoix Co.; St. Evariste Village, Frontenac Co.; Ile Orleans St. Laurent, Montmorency Co.; l'Isletville, l'Islet Co. and St. Nicolas, Levis Co. (Gr. Ola'h). Swedes planted for the second consecutive year were a complete loss in a field at Woodstock, N.B. Trace amounts were general throughout the province (S.R. Colpitts). Clubroot was mod. in Queen's Co., P.E.I. though not as sev. as expected in view of the high soil moisture levels. Lower than normal soil temperatures probably limited spore germination and the activity of swarm spores (G.W. Ayers).

SKIN ROT (Rhizoctonia solani) was reported from several localities in n. and c. Alta. (W.P. Skoropad). Infection was rated 5% in a storage at Sydney, N.S. Reports from farmers would indicate that the disease is serious in the Cape Breton area (K.A.H.). It caused 15% damage to Wilhelmsburger in storage nr. St. John's, Nfld. (O.A.O.).

SCLEROTINIA ROT (S. sclerotiorum). Isolations from small sunken lesions around the necks of swedes in a field at Port Williams, N.S. yielded predominantly Sclerotinia. Five % of the roots were affected (K.A.H.).

SCAB (Streptomyces scabies) was tr. at Oromocto, N.B. (S.R.C.) and affected 50% of the roots of Laurentian nr. Sydney, N.S. Infection was generally light with 1-5 lesions per root (K.A.H.).

MAGNESIUM DEFICIENCY was observed at 9 localities in Portneuf, Quebec, Montmorency, l'Islet, Levis, Charlevois and Frontenac counties, Que. (G.O.).

TOMATO

EARLY BLIGHT (Alternaria solani) occurred in most sections of the Okanagan Valley, B.C. but it was particularly serious in the Vernon area where both foliage and fruit were affected. A. solani was responsible for 95% of all fruit rots and it was estimated that it was responsible for losses of 5 tons of fruit per acre (G. E. Woolliams). Infection was widespread in Sunbury Co., N.B. but losses were kept low by spraying (S. R. Colpitts). It was present, though not severe where spraying was adequate, at Kentville, N.S. Several flats of seedlings were 100% infected at Berwick, N.S. in May (K. A. Harrison).

GRAY MOLD (Botrytis cinerea). During the cloudy weather of Feb. and March, Botrytis stem rot became a problem in many greenhouses in Essex Co., Ont. Losses were not great where control measures were carefully applied (J. Rainforth). Trace infections were observed in plots at the Muck Soil Sub-station at Ste. Clothilde, Que. (D. W. Creelman). Stem rot infections ranged from 20-100% in 6 greenhouses at Falmouth, N.S. with a consequent loss of 3-5% of the crop. In 2 houses, fruit rot was causing additional losses. (K. A. H.).

LEAF MOLD (Cladosporium fulvum) occurred in some greenhouses in the Okanagan Valley, B.C. (G. E. W.). Infection was 2-sl. 2-sev./5 greenhouses visited at Falmouth, N.S. in July. Infection was also sev. in 1 greenhouse at Grand Pré. Fruit was not sizing (K. A. H.).

ANTHRACNOSE (Colletotrichum coccodes) was general but not serious in the Vernon, B.C. area. It was responsible for about 5% of the total fruit rot (G. E. W.). It was tr. on fruits from plots at the Central Experimental Farm, Ottawa, Ont. (W. L. Seaman). Fruit ripened late in Kings Co., N.S. and little anthracnose was encountered (K. A. H.).

BACTERIAL CANKER (Corynebacterium michiganense) caused significant losses in some fields in the Okanagan and Thompson Valleys, B.C. (G. E. W.). One 2-acre greenhouse at Kingsville, Essex Co., Ont. was heavily infected. The disease was first noticed in Feb. and it continued to spread until the crop was removed in early July at which time 75% of the plants were affected and 50% were dead. Six other greenhouse crops in the district were infected but, as infection appeared later in the season, damage was less sev. Numerous houses had some infected plants in the fall crop (J. Rainforth).

WILT (Fusarium lycopersici) was tr. at Medicine Hat, Alta. (P. E. Blakeley) and sl. at Saskatoon, Sask. (R. J. Ledingham).

ROOT-KNOT NEMATODE (Meloidogyne hapla). A trace infestation was seen in a greenhouse at Calgary, Alta. (P. E. B.).

LATE BLIGHT (Phytophthora infestans). Considerable defoliation and fruit infection occurred by mid-October in plots at the Exp. Farm, Agassiz, B.C. (H. N. W. Toms). Late blight became serious near the end of the picking season in Sunbury Co., N.B. Fruit infection was general (S. R. C.). The heaviest losses from late blight in many years were experienced in N. S. in 1962. Continued wet weather throughout the growing season prevented adequate spraying and crops were infected early. Experimental plots that received 6 applications of maneb or zineb were well protected. The newly-released variety Fundy which is partially resistant to late blight became infected by the end of the season (K. A. H.).

SCLEROTINIA ROT (S. sclerotiorum). Infection in spray plots at Kentville, N. S. was rated at 25% and resulted in death of leaves and stalks. Fruit was also rotted in many instances. No degree of control was apparent from any of the 18 spray treatments (K. A. H.).

LEAF SPOT (Septoria lycopersici) was extremely sev. in 2 large gardens at Altona, Man. The tops of the plants were destroyed (W. L. Gordon). Trace infections of leaves were seen at the C. E. Farm, Ottawa, Ont. (W. L. S.).

VERTICILLIUM WILT (Verticillium dahliae, V. albo-atrum). Infection by V. dahliae ranged from 0-100% in fields and greenhouses in the Okanagan and Thompson Valleys, B. C. Crops were reduced in infected fields but death of plants seldom occurred (G. E. W.). Wilt was tr. at Cardston, Alta. (P. E. B.). Virtually every field of early tomatoes on sandy loam in the Harrow - Leamington area in Ont. showed a high incidence of V. dahliae. Wilt was also a problem on heavier soils planted to the canning crop, especially where wilt-susceptible crops followed one another in the rotation (C. D. McKeen, J. R.). Sev. damage was observed in a field of staked tomatoes at Kingsville, Ont. (D. W. Creelman). Symptoms of wilt, V. albo-atrum were evident on 60% of the plants of Stokesdale in spray plots at Kentville, N. S. The area had borne several successive crops of tomatoes (K. A. H.).

BACTERIAL SPOT (Xanthomonas vesicatoria) was seen in a few crops of both basket and canning tomatoes in Essex and Kent counties. On one farm there was conclusive evidence that the pathogen had overwintered in the soil following an infected crop the previous year (C. D. McK.).

BLOTCHY RIPENING (virus) was general, but not serious in early pickings in Queens and Sunbury counties, N. B. The incidence fell off as the crop progressed (S. R. C.). Its incidence in greenhouse crops at Falmouth, N. S. was lower than usual. Growers consider that increased applications of potash help to reduce its intensity (K. A. H.).

BROWN WALL (tobacco mosaic virus). A 25-acre field of the canning variety Glamor nr. Harrow, Ont. was almost 100% infected at harvest in mid-Aug. Crop loss was estimated at 10-15 tons per acre. Fruit symptoms were

so sev. that half the fruit was unacceptable for canning (C. D. McK.).

DOUBLE STREAK (TMV + potato X virus) occurred in Essex Co., Ont. in a few greenhouses during the spring and in numerous houses in the fall crop. The Spartan varieties 8 and 10 appeared especially susceptible (J. R.).

MOSAIC (virus) was found in most fields and greenhouses in the Okanagan and Thompson valleys, B. C. Occurrence was more frequent in greenhouses (G. E. W.). It was sl. in a greenhouse crop at Hampstead, N. B. (S. R. C.). Infection ranged from 0 in 1 greenhouse to 100% in others in Hants, Kings and Annapolis counties, N. S. Symptoms were frequently severe (K. A. H.).

SHOESTRING (cucumber mosaic virus). A heavy infection occurred early in a crop of Stokesdale at Kentville, N. S. but it did not spread noticeably during the summer. Some affected plants were very bushy and the fruit badly malformed (K. A. H.).

SPOTTED WILT (virus). Early infection caused severe stunting and partial destruction of 1 plant at Kentville, N. S. Spread to other plants was limited by harvest time in Oct. (K. A. H.).

BLOSSOM-END ROT (physiological) was tr. at Warner, Alta. (P. E. B.) and was general in the Trois Rivières district, Que. It was also seen in a greenhouse crop at Portneuf, Que. (J. Santerre).

CAT FACE (physiological) occurred in a garden crop at Trois Rivières, Que. (J. S.). At least 50% of the tomato crop in Kings Co., N. S. was malformed as a result of cold, wet weather. Fruit from early-set trusses was unmarketable (K. A. H.).

GROWTH CRACKS were common in most plantings in Sunbury Co., N. B. (S. R. C.).

IV. DISEASES OF FRUIT CROPS

A. POME FRUITS

APPLE

FIRE BLIGHT (Erwinia amylovora). There were considerably fewer infections in n. and c. Alta. than in 1961 (W. P. Skoropad). It was sev. in 5/5 plantings at Lethbridge and in 1 at Calgary, Alta. (F. R. Harper, P. E. Blakely). Specimens were received from Indian Head, Regina and Saskatoon, Sask. It is widely prevalent in the province but recently introduced varieties appear to have considerable resistance (R. J. Ledingham). Infections ranged from tr-7%, depending on variety, at Winnipeg, Man. (B. Peturson). Specimens were received from Grand'Mère and Compton, Que. (D. Leblond).

RUST (Gymnosporangium globosum). Aecia were found on 1 fruit and pycnia on several leaves on crab apple at Fort Garry, Man. (B. P.).

EUROPEAN CANKER (Nectria galligena). Serious trunk damage was present on 15% of the trees in a newly-planted orchard of Spartan and McIntosh at Penticton, B. C. Copper-chromate paint applied late in May appeared to eradicate the disease. Two-year old trees of Spartan at Kelowna were heavily damaged. Canker had apparently been spread by pruning from a few trees infected when received from the nursery (L. E. Lopatecki).

PERENNIAL CANKER (Neofabraea perennans). Very heavy infections of young trees occurred at Kelowna, B. C. when they were interplanted in a badly cankered mature orchard (L. E. L.).

BULL'S EYE ROT (Neofabraea perennans). was at its lowest ebb for years in the Okanagan Valley, B. C. (L. E. L.).

COLLAR ROT (Phytophthora cactorum). The rootstocks MM106 and MM 104 in the Summerland, B. C. area, M VII in several districts and M II at Vernon were infected and death of the trees resulted. Losses of M VII stocks in one Vernon orchard were particularly heavy (D. L. McIntosh).

FRUIT ROT (Phytophthora cactorum). A few green fruits of Delicious on one tree at Keremos, B. C. were rotted early in the summer (D. L. McI.).

POWDERY MILDEW (Podosphaera leucotricha). Specimens were received from the Vancouver, B. C. area (H. N. W. Toms). Foliage infection was common on Jonathan, Yellow Transparent and McIntosh in the B. C. Interior (D. L. McI.).

CALYX-END ROT (Sclerotinia sclerotiorum) was found as tr. -1% infections in scattered orchards throughout the Annapolis Valley, N. S. (R. G. Ross).

SCAB (Venturia inaequalis) was mod. -sev. in home gardens in the Vancouver, B.C. area. Less defoliation was reported than in past years; perhaps related to the moist summer (H. N. W. T.). Weather conditions in the B.C. Interior favored scab development throughout the season but losses were kept at a low level by the timely use of Cyprex sprays (D. L. McI.). No serious infection periods were experienced in Essex Co., Ont. and scab was practically non-existent in the 1962 crop (J. Rainforth). Infection was very light in the Niagara Peninsula, Ont. Unsprayed trees at St. Catharines had only 4% fruit infection while sprayed plots were completely clean or had less than 1% fruit scab (G.C. Chamberlain). In the Farnham district of Que. there were 10 primary infection periods and a number of secondary ones between 29 April and 24 May. A survey in Aug. showed fruit scab ranging from tr. -90% although most orchards were "commercially clean" (R. Desmarteau). Scab was prevalent and moderate on unsprayed trees in the La Pocatière, Que. region (H. Généreux). Spore discharge was heavy in late May and early June in York, Sunbury and Queens counties, N.B. Spraying kept fruit infection, including pin-point scab, at a low level (S.R. Colpits). The first spore discharge at Kentville, N.S. was recorded on 4 May and the first infection period 24-25 May. Scab lesions were first found on 7 June. Another infection period occurred 31 May - June 1 followed by 3 more in June. In July, 3 infection periods of 111, 51 and 74 hours occurred in the first half of the month followed by 5 additional infection periods in the latter half. Wet periods continued to occur frequently during Aug. and Sept. The rainfall for July, Aug. and Sept. was 5.14, 6.38 and 6.37 in. respectively. In general, despite the extremely wet conditions, growers obtained good control of scab although considerable late scab developed in some orchards. Unsprayed fruit was a total loss (R.G.R.). Numerous infection periods occurred in P.E.I. and scab was generally sev. in Queens Co. (G.W. Ayers).

MOULDY CORE (various fungi) was sev. in a crop of Red Delicious at Sheffield Mills, N.S. Rotting of the core was extensive, reaching sometimes almost to the exterior. Fruit surface was distorted (R.G.R.).

CHAT FRUIT (virus). The occurrence of chat fruit virus, suspected earlier in Lord Lambourne test trees was confirmed at Summerland, B.C. in 1962. Three of the 5 affected trees had served for indexing of trees in local plantings. It is uncertain whether the virus was derived from them or from imported clonal rootstocks (M.F. Welsh, F.W.L. Keane, J. May).

MOSAIC (virus). One affected Fameuse tree was found at St. Paul Abbotsford, Que. The entire tree showed typical symptoms (R.D.).

PUCKER (virus). Symptoms on McIntosh at Kelowna and Summerland, B.C. were the most severe experienced to date. Further south in the Cawston district there were no fruit symptoms on affected trees (M.F.W., F.W.L.K., J.M.). Typical symptoms were observed on a single branch of a McIntosh tree at St. Catharines, Ont. (G.C.C.).

RING RUSSETING (virus). Symptoms on Newtown in the Oliver, B.C. district where blossoming and fruit ripening are early were unusually severe whereas symptoms further north were mild. This may possibly indicate that symptom severity is determined by seasonal weather conditions during a single short period in fruit development. Orchard surveys provided additional evidence of spread of the disease (M. F. W., F. W. L. K., J. M.).

RUSSET RING (virus), recognized in thousands of trees in Washington State was found for the first time in B. C. in a single Delicious tree at Summerland, B. C. The affected tree bore limbs of both Delicious and Golden Delicious and symptoms were evident in fruit of both. This tree has served as a scion source for over 100 young trees in the same orchard (M. F. W.).

DECLINE (? virus) is sev. in commercial crabapple varieties top worked on Hyslop bodystocks in several orchards in the Okanagan Valley, B. C. The bodystocks of about 150 trees show mod. -sev. stem pitting and one-third to one-half are in decline. The foliage of the topworked variety turns light green or yellow and terminal growth ceases. In the following season the leaves are frequently small and light-colored and no terminal growth occurs. The tree is frequently dead by the end of the second season. Patches and pockets of necrotic tissue develop in the bark of the interstock. Transmission tests are underway at Summerland (M. F. W., F. W. L. K., J. M.).

TRUNK PITTING (? virus). The variety Canada Baldwin has had considerable use as a hardy bodystock in B. C. and Washington, the stocks being propagated in B. C. nurseries. Large, deep pits in the Canada Baldwin trunks, first found in Wash. several years ago, were found in young trees at Winfield, B. C. in 1962. In experimental trees at Summerland the abnormality has appeared on 6 trees inoculated with stem pitting and rubbery wood viruses but not in 3 uninoculated check trees (M. F. W., F. W. L. K., J. M.).

CORKY CORE (boron deficiency) affected the entire crop of 11 trees of the Hume variety at St. Benoit, Deux Montagnes Co., Que. (R. D.).

CHEMICAL INJURY (dichlone). McIntosh trees at Farnham, Que. were significantly affected after 3 years treatment with dichlone at 1/4 lb./100 gal. at 4x concentration at a gallonage varying from 35-70 gal./acre. Leaves showed chlorosis in the form of yellowish, undefined spots accompanied by slight marginal curling and stunting. Annual shoot growth was reduced and the general appearange of the trees indicated a lack of vigor (R. D.).

FROST INJURY. Temperatures of 26.5 - 32°F between 8-15 May caused characteristic wrinkling, curling and reduction in size of cluster bud leaves in the Farnham, Que. district (R. D.).

HAIL DAMAGE. A severe hail storm in the Essex - Blytheswood - Wheatly area of s. -w. Ont. caused some damage to apples (J. R.). Hail in

s.-w. Que damaged 100% of the crop on 1500 trees at Ste. Madeleine, 80% on 500 trees at Mont St. Gregoire and 70% of a large crop at Franklin Center. Smaller losses were sustained in other crops at Franklin Center. An orchard of 225 McIntosh trees at St. Hilaire showed 25% of the crop damaged (R. D.).

WINTER INJURY was extensive in n. and c. Alta. (W. P. S.). At St. Hilaire, Que. about 100 trees suffered breaking-off and splitting of heavily-loaded limbs as the result of extreme low temperatures in 1957 and 1958. At Farnham, in an orchard under observation since 1958, 60/1200 trees suffered irretrievable loss from the breaking-off of main limbs (R. D.). Apple trees in many commercial orchards in N.B. continue to die as a result of sev. winter conditions in 1959-60 (S. R. C.).

MAGNESIUM DEFICIENCY was sev. in an orchard at St. Hilaire, Que., affecting 50 trees. Defoliation, early maturity and fruit drop occurred (R. D.).

STORAGE SCALD (physiological). Samples of severe scald affecting 30% of Northwest Greenings were received at St. Catharines, Ont. (G. C. C.).

SUNSCALD caused sev. damage to young apple trees at Morden, Man. The necrotic areas were invaded by fungi (J. A. Hoes). Ten mature Melba trees were affected at Rougemont, Que. Numerous extended but superficial cankers were formed on the trunks and main limbs. The cambium and sapwood were, however, intact (R. D.).

PEAR

FIRE BLIGHT (Erwinia amylovora) was particularly heavy on Bartlett on the bench area between Penticton and Naramata, B. C. where leaves had been lacerated by hail. No early blossom infection was seen. At Summerland, infection in 1 orchard spread from a tree infected the previous season to all trees in the orchard (L. E. Lopatecki). A minor incidence was observed on Bartlett in Colchester Twp., Essex Co., Ont. (R. N. Wensley). A few affected twigs of Flemish Beauty were seen at St. Catharines, Ont. (G. C. Chamberlain).

TRELLIS RUST (Gymnosporangium fuscum) is well established in a localized area in Victoria, B. C. and was also found at Oak Bay, 7 miles from the main center of infection. Rust on individual trees affected from tr. -100% of the leaves. A light but general infection was found extending over an area of one-half a square mile at Chilliwack on the B. C. mainland (W. R. Foster).

FRUIT ROT (Phomopsis ?ambiqua Trow.). The organism was consistently isolated from rot lesions in Bartlett and Sheldon pears held for processing at Kentville, N. S. About 10% of the fruit was infected with 1-5 lesions per fruit (C. L. Lockhart).

DIEBACK (Physalospora obtusa) was sev. on Clapp's Favorite and Bartlett in an orchard at Falmouth, N.S. Most trees were affected with up to one-eighth of the limbs destroyed. The trees were crowded and had had very heavy applications of chicken manure. The conidal stage (Sphaeropsis malorum) was identified by R.H. Arnold at Ottawa (R.G. Ross).

FRUIT ROT (Phytophthora cactorum). Frequent and heavy rains in Sept. were a factor in the development of this rot at St. Catharines, Ont. Approximately 20% of 1 crop of Kieffer were affected (G.C.C.). It affected 12% of the crop of Clapp's Favorite from one orchard at Hantsport, N.S. Rot developed in the ripening room of a cannery. A trace infection was seen in an orchard in Annapolis Co., N.S. (C.L.L.).

POWDERY MILDEW (Podosphaera leucotricha). Specimens of infected foliage from newly-planted trees were received from Yarmouth, N.S. (R.G.R.).

BLAST (Pseudomonas syringe) occurred on a single garden tree at Windsor, Ont. (D.W. Creelman).

FRUIT ROT (Rhizopus nigricans) affected 30% of Kieffer pears in used, half-bushel containers held in ripening rooms at St. Catharines, Ont. (G.C.C.).

SCAB (Venturia pirina). Specimens were received from Vancouver and White Rock, B.C. (H.N.W. Toms). Incidence was much lower than normal in the Niagara Peninsula, Ont. Light scab developed on 12% of unsprayed fruit at St. Catharines and on less than 1% of sprayed fruit (G.C.C.). Trees in York and Sunbury counties, N.B. were heavily infected (S.R. Colpitts).

ANJOU PIT (cause unknown) was found only in a few isolated areas in the Okanagan Valley, B.C. in 1962. Where the condition occurred it affected up to 80% of the fruit (J.M. Wilks). The entire crop of 2/10 Anjou trees in a planting at St. Catharines, Ont. was deformed and severely pitted (G.C.C.).

COTTONY SPOT (cause unknown) was severe in 1 Bartlett orchard at Penticton, B.C. Fruits generally show little or no external symptoms and develop small patches of white, cottony tissue under the skin. At Penticton considerable surface pitting was evident (J.M.W.).

FRECKLE PIT AND GREEN STAIN (cause unknown). Symptoms were very mild in 1962. Orchard surveys over a 3-year period indicate no spread of the condition and transmission tests to date have yielded negative results (J.M.W.).

CHEMICAL INJURY (2,4-D). Severe symptoms developed on 40 trees at Hantsport, N.S. following the application of a herbicide to a nearby lawn. Fruit failed to set (K.A. Harrison).

B. STONE FRUITS

APRICOT

CORYNEUM BLIGHT (Stigmina carpophila) caused serious fruit losses in several orchards in the B. C. Interior in 1962. Weather conditions were favorable for infection soon after the initiation of fruit formation (D. L. McIntosh).

VERTICILLIUM WILT (V. dahliae) was prevalent in some orchards in the Okanagan Valley, B. C. slight in others but absent from most (G. E. Woolliams).

CHERRY

LEAF SPOT (Higginsia hiemalis) was sev. in 2 small plantings nr. Moncton, N. B. (S. R. Colpitts). It caused 90% defoliation of Bing at Middleton, N. S. (C. O. Gourley) and 100% defoliation of Montmorency nr. Charlottetown, P. E. I. (G. W. Ayers).

BLACK KNOT (Dibotryon morbosum) was sev. on many trees in York and Sunbury counties, N. B. (S. R. Colpitts).

BROWN ROT (Monilinia fructicola). Blossom infection was rated at 60% on Bing and Lambert in the Lower Arrow Lake district of B. C. Little or no fruit rot developed (L. E. Lopatecki). Infection on the early blooming Black Tartarian and Elkhorn was extremely limited in the Niagara Peninsula, Ont. The later varieties Bing, Windsor, Napoleon, Yellow Spanish and Schmidts were unaffected (G. C. Chamberlain). Two sour cherry hybrids at Fredericton, N. B. showed extensive twig blight infections (K. M. Graham). Losses in sprayed orchards in Kings and Annapolis counties were about 10% of the fruits (C. O. G.).

COLLAR ROT (Phytophthora cactorum) killed several large Lambert trees in an orchard at Oyama, B. C. The bark was infected above ground level (D. L. McI.).

BACTERIAL CANKER (Pseudomonas syringae) severely damaged young trees in a planting on Lulu Island, B. C. (H. N. W. Toms).

VERTICILLIUM WILT (V. dahliae) was found in several sweet cherry orchards in the Okanagan Valley, B. C. Usually only occasional trees are affected in any one orchard but in 2 orchards in the Westbank district the majority of the trees were affected. It was also found for the first time in B. C. affecting sour cherry at Kelowna. About 10% of the trees in one corner of a Montmorency orchard were involved, some being severely affected (G. E. W.).

LITTLE CHERRY (virus). Moderate-severe symptoms were seen on Bing and Lambert throughout the Creston Valley, B.C. Damage was estimated at 50-60% (J.M. Wilks).

CRACKING was severe and general on early cherries in Kings Co., N.S. following an extended rainy period (K.A. Harrison).

PEACH

CROWN GALL (Agrobacterium tumefaciens). The extent of infection of peach nursery stock in the Kelowna, B.C. district was vastly more than normal. One nursery lost approximately 40,000 trees, or 90% of the total planting (L.E. Lopatecki).

BROWN ROT (Monilinia fructicola). Infection was limited to a few fruits at Summerland, B.C. (L.E.L.). Incidence in the Niagara Peninsula, Ont. was much below normal. After 10 days in common storage only about 15% rot developed on Vedette and Elberta at St. Catharines (G.C.C.). Losses were insignificant in Kings Co., N.S. (C.O. Gourley).

RHIZOPUS ROT (R. nigricans) appeared somewhat earlier than usual in cannery peaches in the Okanagan Valley, B.C. and was mostly limited to fruit shipped from the southern areas of the Valley. The amount of rot was variable, depending on the grower lot and maturity (L.E.L.).

CORYNEUM BLIGHT (Stigmina carpophila) caused serious fruit losses in several orchards in the B.C. Interior. Weather conditions soon after the initiation of fruit formation were favorable for infection (D.L. McIntosh).

LEAF CURL (Taphrina deformans). Slight infections occurred on unsprayed trees and infection was tr. on sprayed trees at Kentville, N.S. (K.A. Harrison, C.O.G.).

CANKER (Valsa cincta). More than 80% of 250 young Envoy trees were infected at Harrow, Ont. on arrival from a nursery. Many branches bore several cankers and dieback was common. A survey of Essex Co. orchards in late June showed canker to be prevalent on all varieties. Degree of infection was variable (R.N. Wensley).

HAIL DAMAGE was severe in mid-June on 6-year old trees in 5 blocks in Mersea Twp. Essex Co., Ont. Wood was bared along the full length of trunks and branches. Gumnosis was abundant on limbs and scaffolding. A survey in Aug. showed that the lacerations on small branches were partially healed and dry. Little evidence of ensuing canker was found in this isolated planting though both Valsa leucostoma and V. cincta were present with the first species being the most prevalent. The fungi were found most frequently on June Elberta and Early Elberta (R.N.W.).

PLUM

BLACK KNOT (Dibotryon morbosum). Infection was heavy on old plantings in the Vancouver, B. C. area, especially on Nicomen Island (H. N. W. Toms). Specimens were received from St. Clet, Soulange Co. and Ile aux Coudres, Charlevoix Co., Que. (D. Leblond). Black knot continues to be a problem in non-commercial plantings in N. B. (S. R. Colpitts). New knots formed despite earlier pruning of an orchard at Tupperville, N. S. (K. A. Harrison). Unsprayed trees required extensive pruning for black knot removal at Charlottetown, P. E. I. (G. W. Ayers). Black knot is endemic on native species of Prunus in Nfld. and cultivation of susceptible plums is practically impossible (O. A. Olsen).

PLUM POCKETS (Taphrina communis) was sev. on 4 trees at Sanford, Man. (B. Peturson) and tr. on Burbank at Upper Dyke, Kings Co., N. S. (G. O. Gourley).

WINTER INJURY was extensive in n. and c. Alta. The trees did not harden off properly in the fall of 1961 (W. P. Skoropad).

PRUNE

BLACK KNOT (Dibotryon morbosum). Infection was heavy on Stanley Prune at Wentworth, Ont. causing twig and branch dieback (G. C. Chamberlain).

RUST (Tranzschelia discolor) was collected on trees from a nursery at Yarrow, B. C. (H. N. W. Toms).

HEAT SPOT. Specimens on Fellenberg prune were received from several areas in the Niagara Peninsula, Ont. (G. C. C.).

C. RIBES FRUITS

CURRANT

BLISTER RUST (Cronartium ribicola) was sev. and caused premature defoliation at Trois Pistoles, Que. (D. Leblond) and it was equally sev. on red currants at Kentville, N. S. (K. A. Harrison).

GOOSEBERRY

CLUSTER CUP RUST (Puccinia caricis). Infection was rated at 65% in 2 plantings at Berthier, Montmagny Co., Que. (D. Leblond, G. Ola'h).

POWDERY MILDEW (Sphaerotheca mors-uvae) Severely infected specimens were received at Saanichton, B. C. (R. G. Atkinson). It caused extensive damage to several bushes in a garden at St. Catharines, Ont. (G. C. Chamberlain). Specimens were received from Trois Pistoles, Que. (D. L.) and an 80%

infection was seen in Kamouraska Co., Que. (J. Santerre). Fruit was 50% infected on several plants at Botwood, Nfld. (O. A. Olsen).

D. RUBUS FRUITS

BLACKBERRY

CROWN GALL (Agrobacterium tumefaciens) was sev. on both wild and cultivated blackberries at Mahone Bay and Kentville, N. S. (C. O. Gourley).

RASPBERRY

CROWN GALL (Agrobacterium tumefaciens). Infections were found in all plantings examined in Kings and Annapolis counties, N. S. It is evident that stringent measures will be necessary in order to control this disease under local conditions (K. A. Harrison).

FRUIT ROT (Botrytis cinerea). Moderate losses were sustained in the first picking at Abbotsford, Langley and Yarrow, B. C. (H. N. W. Toms).

GRAY-MOLD WILT (Botrytis cinerea) caused mod. damage at Ste Foy and St. Antoine de Tilley and was sev. at Baie St. Paul, Que. (D. Leblond, G. Ola'h). At Truro, N. S., 75% of the canes in a planting of new varieties and crosses were so badly affected that it was likely that they would not survive. The field involved has a history of sev. outbreaks of this disease. Ten % of the canes were affected in a 2-acre field at Chester Basin, N. S. (K. A. H.).

SPUR BLIGHT (Didymella applanata). Eight/8 plantings visited in Que. averaged 30% infection. Plantings were located at Quebec City; St. Evariste Village, Frontenac Co.; L'Ange Gardien, Ile d'Orléans, St. Laurent, Montmorency Co.; St. Antoine de Tilly, Lotbinière Co.; Pont Rouge, Portneuf Co., and Baie St. Paul, Charlevoix Co. (D. L., G. O.). One planting in Kamouraska Co., Que. was 80% infected (J. Santerre). It was present in Kings' Co., N. S. but was not as sev. as in 1961 (K. A. H.).

ANTHRACNOSE (Elsinoë veneta) caused 20% damage in 2/8 plantings surveyed in Que. (D. L., G. O.) and 10% damage in an unsprayed planting nr. Moncton, N. B. (S. R. Colpitts). Weather conditions in Kings, Hants and Annapolis counties, N. S. were very favorable for spread of anthracnose and many plantings suffered severe outbreaks (K. A. H.).

YELLOW RUST (Kuehneola uredinis) was collected on Rubus laciniatus, the cut-leafed blackberry, at Lulu Island, B. C. (H. N. W. Toms).

WESTERN YELLOW RUST (Phragmidium rubi-idaei) was sev. in a planting at Baie St. Paul, Que. (D. L.).

LATE LEAF RUST (Pucciniastrum americanum). A heavy infection was seen at Caplan, Que. (D. L.). Fruit infections on Viking were not as common as usual in Kings Co., N. S. but by Oct. this variety was partially defoliated (K. A. H.). Viking was severely attacked in Queens Co., P. E. I. and fruit infections were as high as 80%. Rainfall and humidity during July and Aug. were high, favoring infection (G. W. Ayers).

LEAF SPOT (Septoria rubi). Infection was heavy on foliage in a garden at Prince George, B. C. (H. N. W. T.) and sev. at Port Morien, N. S. (C. O. Gourley).

POWDERY MILDEW (Sphaerotheca macularis). Viking was 35% infected in a planting at La Pocatière, Que. (J. S.). Sev. infections were seen on leaves and fruit of some varieties and breeding lines at the Research Station, Kentville, N. S. (K. A. H.).

BLUE STEM (Verticillium albo-atrum). In 1961, a planting of Viking at Kentville, N. S. had 2% infection. The affected plants were rogued and burned. The same planting in 1962 had less than 1% infection. It is possible that careful rogueing may afford an effective means of control (K. A. H.).

MOSAIC (virus) was common in plantings in N. B. Infections ranged from tr. -75% in non-commercial plantings (S. R. C.).

E. OTHER FRUITS

BLUEBERRY

CROWN GALL (Agrobacterium tumefaciens). Ten % of the highbush plants in an experimental planting at Sheffield Mills, N. S. were severely affected (C. O. Gourley).

TWIG AND BLOSSOM BLIGHT (Botrytis cinerea) was tr. in lowbush fields in Kings Co. and less than 1% on the highbush varieties Pioneer, Jersey and others at Kentville, N. S. (C. L. Lockhart).

CANKER (Fusicoccum putrefaciens) was tr. on highbush varieties at Barss Corner, Kentville and Digby, N. S. (C. L. L.).

TWIG AND BLOSSOM BLIGHT (Monilinia vaccinii-corymbosi) was tr. in lowbush fields in Charlotte Co., N. B. (S. R. Colpitts).

WITCHES BROOM (Pucciniastrum goeppertianum) occurred in trace amounts in all fields surveyed in Charlotte Co., N. B. (S. R. C.). A single plant of the highbush variety Kenlate was infected at Kentville, N. S. (C. L. L.).

LEAF RUST (Pucciniastrum myrtilli) infection at Frizzleton and Craignish, Inverness Co., N.S. was rated mod.-sev. in lowbush fields in Sept. (C.L.L.).

CHEMICAL INJURY. A heavy side dressing of ammonium nitrate applied to newly-set highbush plants at Digby, N.S. caused injury and eventual death to about 5% of the plants (C.L.L.).

FROST INJURY caused extensive dieback of highbush canes on Lulu Island, B.C. about 3 months after a February freeze (H.N.W. Toms). Injury to the variety Blueray was tr. at Barss Corner, N.S. (C.L.L.).

GRAPE

FRUIT ROT (Botrytis cinerea) was sev. in a small home greenhouse at New Westminister, B.C. (H.N.W. Toms).

DEAD ARM (Fusicoccum viticola). The variety Seibel 10878 in a large vineyard at Stamford, Ont. showed 25-35% trunk infections. The disease was also found in the same planting on Seibel 7053, Fredonia and Concord in amounts ranging from 5-15% (G.C. Chamberlain).

DOWNY MILDEW (Plasmopara viticola) was less prevalent than usual in the Niagara Peninsula, Ont. Light infections were seen affecting 15.6% of the clusters in a planting of President and 10% of Seibel 7053 (G.C.C.).

POWDERY MILDEW (Uncinula necator) occurred in varying degrees on European varieties and hybrids at the Research Station, Summerland, B.C. (G.E. Woolliams). It was prevalent throughout the Niagara Peninsula, Ont. and spread rapidly in late Aug. and in Sept., especially on French hybrid varieties. Some hybrids had clusters completely infected with cracking of berries. Infection was common on the Seibel varieties, occurring on foliage, canes, fruit stems and berries. Light to moderate infections were seen on Agawam, Delaware, Concord, Elvira, Foch and Pineau Blanc (G.C.C.).

FROST INJURY. Frost on 19 May caused 25-50% damage to grapes in the Niagara Peninsula, Ont., killing buds and shoot growth. In one lowlying area a temperature of 22°F killed 100% of the shoots of the variety Canada Muscat (G.C.C.).

HAIL DAMAGE occurred in localized areas in the Niagara Peninsula, Ont. causing splitting and bruising of up to 25% of the green berries (G.C.C.).

STRAWBERRY

CROWN ROT (Armillaria mellea). Rhizomorphs were found in seedlings in plots at Agassiz, B.C. The land had been newly cleared (H. S. Pepin).

GRAY MOLD (Botrytis cinerea) was present, but not serious, in most fields in the Gagetown, N.B. area (S.R. Colpitts). Infections of up to 12% were recorded in spray plots at the Research Station, Kentville, N.S. Reports were received of growers obtaining only one or two pickings in unsprayed plantings (C.O. Gourley). Gray mold was general and caused substantial losses to growers in P.E.I. Losses of 30-40% of the fruit were recorded at Dromore, Queens Co. (G. W. Ayers).

LEAF AND PETIOLE BLIGHT (Dendrophoma obscurans) was sev. on Sparkle at Fredericton, N.B. It caused sunken lesions up to 1 inch in length at the bases of petioles (K. M. Graham). It was found as trace infections on the hulls, but seldom on the foliage of several varieties at Kentville and Morristown, N.S. (C.O.G.).

LEAF SCORCH (Diplocarpon earliana). A sev. infection was seen at Ste. Foy, Que. (D. Leblond).

LEAF BLOTCH (Gnomonia fructicola) affected 6-10% of the hulls of several varieties at Kentville, N.S. A lesser amount of fruit rot occurred (C.O.G.).

LEAF SPOT (Mycosphaerella fragariae). Several heavy infections were seen in the vicinity of Guelph, Ont. (D. W. Creelman). It was generally sev. on Senator Dunlop in N.B. (S.R.C.) and infection was 25% on Sparkle at Bras d'Or, N.S. (C.O.G.). It developed rapidly in unsprayed fields in July and Aug. in P.E.I. Cavalier seemed particularly susceptible (G.W.A.). Slight infections occurred on most plants at the Exp. Farm, St. John's West, Nfld. (O.A.O.).

LEAF SPOT (Phyllosticta fragariicola) caused numerous whitish spots accompanied by a reddening of the leaves at Grande Baie, nr. Chicoutimi, Que. It was generally severe. (D.L.). This may be a stage of Mycosphaerella fragariae (D.W.C.).

LEAF SPOT (Septoria aciculosa) could be found in trace amounts on old leaves in most plantings in Kings Co., N.S. (C.O.G.).

POWDERY MILDEW (Sphaerotheca macularis) was sl. on Cavalier at Kentville and Chester Basin, N.S. (C.O.G.). Infections were light in Queens Co., N.S. in contrast to the heavy infections in the dry summers of 1960 and 1961 (G.W.A.).

WILT (Verticillium spp.). A home garden at Summerland, B.C. was affected by V. dahliae (G. E. Woolliams). Infection by V. albo-atrum was sev., infecting 60% of the plants in a 2-acre field of Redcoat at St. Léonard, Nicolet Co., Que. (J. Rinquet). A low area in a field of Sparkle at Gagetown, N.B. was infected. The field had formerly been potato land and it is felt that much of the so-called winter injury to strawberries in N.B. stems from infection by V. albo-atrum since potatoes figure so prominently in the rotation (S.R.C.). Grenadier and Sparkle were infected on former potato land at Lower Jemseg, N.B. (K.M.G., W.B. Collins). At Kentville, N.S. Redcoat was more severely affected by V. albo-atrum than was Cavalier in a new planting. Forty % of the plants were infected in a field at Port Williams and 10% of those in a 4-acre field at Melvern Square, N.S. (C.O.G.).

ROOT ROT (various organisms) caused 20% damage in a field at Portage la Prairie, Man. (B. Peturson) and was present in most fields surveyed in N.B. (S.R.C.).

GREEN PETAL (virus). Senator Dunlop was so seriously affected at La Pocatière, Que. that it did not bear fruit. The variety Quatre Saisons was also severely affected. Other varieties showed a lesser degree of infection (H. Généreux). Trace amounts were found throughout the strawberry growing areas of Queens Co., N.B. Rogueing and spraying for insect control have kept its incidence relatively low (S.R.C.). Catskill and Sparkle were 5% infected at Kentville and Berwick, N.S. (C.O.G.). Infection in Queens Co., P.E.I. ranged from tr. -40%. In many cases first, second and third year crops were equally affected. The heaviest infection seen was at Tryon (C.B. Willis).

WITCHES BROOM (virus). Five-10% of the plants showed symptoms in a 1-acre field at Lévis, Que. (J. Rinquet). A new planting of Cavalier at Hampstead, N.B. was 55% infected (S.R.C.).

WINTER INJURY. Low temperature injury to buds resulted in imperfect berries and poor plant growth in Carleton Co., N.B. In some plantings damage was estimated at 60% (S.R.C.). Plants at Yarmouth, N.S. failed to survive the winter. It is thought that infection by Verticillium was at least partially responsible. The organism was readily obtained from moribund plants in the spring (C.O.G.).

V. DISEASES OF TREES AND SHRUBS

ACER - Maple

Tar spot (Rhytisma punctatum) was observed on A. macrophyllum at Hope, B.C. (H. N. W. Toms).

Twig canker (Steganosporium pyriforme). A specimen on A. saccharum was received from Thetford Mines, Que. (D. Leblond).

Powdery mildew (Uncinula bicornis) was collected on A. macrophyllum on the University Campus, Vancouver, B.C. (H. N. W. T.).

Chemical injury. The malformation of leaves and shoots of A. negundo that occurred throughout the agricultural regions of Man. and Sask. is believed to be caused by 2,4-D (C.G. Riley, V. Hildahl).

Deterioration. Dead and dying sugar maples were conspicuous along roadsides in s. Ont. Numerous factors, including weather conditions, are involved in this deterioration (B. W. Dance, D. F. Lynn).

Frost injury. Specimens were received from Charlesbourg and Petite Rivière, Quebec Co. and from McMasterville, Chambly Co., Que. (D. L.).

Leaf scorch. In s. Ont., leaf scorch was common on shade trees, particularly sugar maples (B. W. D., D. F. L.). It was also observed on maples in some areas of Que. (G. B. Ouellette).

AESCULUS - Horsechestnut

Leaf blotch (Guignardia aesculi) caused mod. damage to 1 tree of A. hippocastanum at Deer Island, N. B. (K. M. Graham). It was widespread in N. S. and P. E. I. and occasionally caused mod.-sev. damage (A. W. Chiko, A. G. Davidson & W. R. Newell). Considerable defoliation followed infection at Kentville, N. S. (C. O. Gourley)

Defoliation (excess moisture) occurred on several well-established trees in a low-lying lawn at Vancouver, B.C. with a high water table. The trees subsequently recovered (H. N. W. Toms).

AMELANCHIER

Fire blight (Erwinia amylovora) was recorded at Reesor Lake, Alta. (J. A. Baranyay, R. J. Bourchier).

Leaf blight (Fabraea maculata). Severe infections were seen at Cascumpeque, P. E. I. (A. W. Chiko, A. G. Davidson, W. R. Newell).

Rust (Gymnosporangium clavipes) was very heavy on A. alnifolia (Saskatoon berry) in Man. (B. Peturson). Twenty % of the fruits were infected at St. John's, Nfld. (O. A. Olsen).

AUCUBA

Leaf spot (Botrytis cinerea) Ten plants of A. japonica imported from Holland showed blackish-brown, circular to oval areas, one-half - one inch in diameter. B. cinerea was consistently isolated from the spots (R.G. Atkinson).

BERBERIS - Barberry

Leaf spot (Phyllosticta berberidis). Infection was seen of Berberis sp. at St. Joachim, Montmorency Co., Que. (G. Ola'h).

Rust (Puccinia graminis) was heavy on native barberries, B. vulgaris in e. Ont. (D. W. Creelman).

BETULA - Birch

Rust (Melampsoridium betulinum). Specimens were received from Matane Que. (J. Santerre).

CITRUS

Iron deficiency. Twenty plants of Meyer's orange in a greenhouse at Vancouver, B.C. showed a yellowing of the leaf tissue adjacent to the veins (H. N. W. Toms).

CAMELLIA

Leaf spot (Hendersonia sp.). About 1% of 1000 rooted cuttings of C. japonica from a nursery in Oregon were affected at Victoria, B.C. Lesions were sporulating abundantly. Mod.-sev. leaf spotting also occurred on a shrub at Salt Spring Island, B.C. (R.G. Atkinson).

CRATAEGUS - Hawthorn

Fire blight (Erwinia amylovora) was recorded at Elkwater, Alta. (J.A. Baranyay, R.J. Bourchier). Four trees were infected in a nursery nr. Montreal, Que. (J. Rinquet).

Leaf blight (Fabraea maculata) is particularly common in the north shore residential districts of Vancouver, B.C. where it causes up to 75% defoliation. Control measures are difficult due to a lack of proper spraying equipment. Specimens were also received from Pitt Meadows, Chilliwack and West Vancouver (H. N. W. Toms). A mod. infection was seen at Ottawa, Ont. (D. W. Creelman).

FRAXINUS - Ash

Anthracnose (Gloeosporium aridum) caused extreme browning of leaves of F. americana at Weymouth, N.S. (A.W. Chiko, A.G. Davidson, W.R. Newell).

Rust (Puccinia sparaganioides) caused sev. damage to F. americana between Round Hill, Annapolis Co. and Digby, N.S. (A.W.C., A.G.D., W.R.N.).

HEDERA - Ivy

Leaf spot (Ramularia hedericola) was sl. on 5 plants of H. colchica var dentata imported from Holland at Victoria, B.C. The pathogen fruited in a moist chamber (R.G. Atkinson).

JUNIPERUS - Juniper

Rust (Gymnosporangium clavariaeforme). Telial horns developed in abundance on J. communis in the Edmonton, Alta. district. (W.P. Skoropad).

Trellis rust (Gymnosporangium fuscum). A survey in the Victoria, B.C. area revealed the presence of G. fuscum on the following Juniperus species and varieties: J. chinensis L. var. plumosa Hornibr., J. sabina L. var. sabina, J. sabina L. var. tamariscifolia Ait., J. sabina L. var. variegata (West) Audib., J. squamata Lamb var. fargesii Rehd. & Wils., J. squamata Lamb var meyeri Rehd. and J. squamata Lamb var. prostrata Hornibr. (W.R. Foster).

LONICERA - Honeysuckle

Leaf blight (Herpobasidium deformans) was present on Lonicera spp. in nearly all the nurseries examined in Que. in 1962 (J. Rinquet). Infection was sev. on a hedge of L. tatarica at Caplan, Que. (D. Leblond).

MALUS - Ornamental Crab

Scab (Venturia inaequalis). Infection was mod. in a nursery at Quebec City, Que. (G.B. Ouelette).

PARTHENOCISSUS - Ivy

Leaf spot (Phyllosticta viticola). Infection was heavy on P. tricuspidata at Orsainville, Que. (D. Leblond).

Downy mildew (Plasmopara viticola) was observed, for the first time in Man., on P. quinquefolia at Winnipeg (R.G. Kenneth).

PHOTINA

Powdery mildew (Oidium sp). The oidial stage was seen at Victoria, B.C. on P. serrulata imported from Holland (R.G. Atkinson). Sphaerotheca pannosa is reported on this host from Oregon (D.W.C.).

PITTOSPORUM

Leaf spot (Phyllosticta sp.) was mod. at Victoria, B.C. on all plants of P. tobera in a shipment from Washington state. The fungus was isolated (R.G. Atkinson).

PRUNUS - Native and Flowering Cherries

Black knot (Dibotryon morbosum) was found on P. padus commutata at Morden, Man. P. pensylvanicum was mod.-sev. infected on Campobello Island, N.B. and at Goff's Corner, N.S. It was sev. on plum at Ashmore and on P. virginiana at Avonport, N.S. (A.W. Chiko, A.G. Davidson, W.R. Newell). Black knot was reported on domestic and wild cherry in all areas of Nfld. with the most sev. infections occurring in the western part of the province (W.J. Carrol).

Brown rot (Monilinia demissa) produced leaf infections, particularly of the petiole and midrib, on P. virginiana var demissa at Chase, Kettle River and Deer Park, B.C. It appears to be fairly widespread in the Interior of B.C. (L.E. Lopatecki).

Bacterial canker (Pseudomonas syringae) was reported on Japanese cherry in 2 gardens in North Vancouver, B.C. (H.N.W. Toms).

Leaf spot (Septoria pruni). Infection was very heavy causing 50% defoliation of P. virginiana at Port Morien, N.S. (C.O. Gourley).

Coryneum blight (Stigmina carpophila) is common in reglected hedges of P. lauro-cerasus in the Vancouver, B.C. area. (H.N.W.T.).

Witches' broom (Taphrina cerasi) was observed on P. pensylvanicum at Kentville, N.S. (K.A. Harrison).

Frost damage. Most flowering tips of dwarf double flowering almonds, P. glandulosa, were killed in some Vancouver, B.C. gardens in Feb., 1962 (H.N.W.T.).

PYRUS - Mountain Ash

Fire blight (Erwinia amylovora). In n. and c. Alta. incidence of fire blight was about the same as in 1961 (W.P. Skoropad). It was sev. on P. americana in 2 gardens in Lethbridge and in one each at Three Hills and Cardston in s. Alta. (F.R. Harper, P.E. Blakeley). Slight infections were recorded at Winnipeg, Man. (B. Peturson).

Rust (Gymnosporangium cornutum). Infection of P. americana was heavy at Matlock, Man. (B.P.). Heavy infections were seen on a few trees in the St. John's, Nfld. district (O.A. Olsen).

Lime-induced chlorosis was sev. on several trees in the Winnipeg, Man. area (W.L. Gordon).

QUERCUS - Oak

Powdery mildew (Microsphaera penicillata). Specimens on Q. robur were received from Yarrow, B.C. (H.N.W. Toms).

Leaf blister (Taphrina caerulescens). Severe infections were seen on Q. rubra at Quebec City, Que. (G.B. Ouelette).

Excess moisture. Several trees of Q. rubra on the University Campus, Vancouver, B.C. were affected. Foliage yellowed and then developed brown necrotic spots. Partial defoliation followed (H.N.W.T.).

RHAMNUS - Buckthorn

Crown rust (Puccinia coronata) Infection of R. frangula at Ottawa was lighter than in 1961 (D.W. Creelman). It was mod. on R. cathartica at Pokiok, York Co., N.B. (S.R. Colpitts).

RHODODENDRON

Shoot gall (Exobasidium vaccinii) caused hypertrophy of terminal shoots of 2/100 plants from Holland at Victoria, B.C. (R.G. Atkinson).

Leaf spot (Gloeosporium rhododendri) was mod. - sev. on 10 imported plants at Victoria, B.C. (R.G.A.)

RHUS - Sumac

Verticillium wilt (V. albo-atrum) affected a few trees of R. typhina at Charlottetown, P.E.I. The trees first showed sev. wilt symptoms and then died (C.B. Willis).

RIBES - Flowering Currant

Anthracnose (Gloeosporidiella variabilis) was general on R. alpinum in the Ottawa area. In some instances sev. infections resulted in heavy defoliation (H.S. Thompson). It was encundered in 13 nurseries in Que. Infections were rated 7-sl. 4-mod. 2-sev. (J. Rinquet). Anthracnose was recorded at Chicoutimi, Que. (G. Ola'h).

ROSA - Rose

Crown gall (Agrobacterium tumefaciens). Ten % of the plants in a greenhouse at Falmouth, N.S. were infected (C.O. Gourley) and a single infected plant was seen in a greenhouse at Bridgewater, N.S. (K.A. Harrison).

Gray mold (Botrytis cinerea). Infected samples from Quebec City were received in July (D. Leblond).

Canker (Diaporthe eres). A large shipment of roses from Holland arrived in N.S. in a very wet condition. D. eres was isolated from numerous cankered areas and dead spurs (K.A.H.).

Black spot (Diplocarpon rosae) caused sev. defoliation of hybrid tea roses at Norwood Grove, Man. (W. A. F. Hagborg). Mod.-sev. infections were also seen on hybrid teas at Fort Garry and Winnipeg, Man. (B. Peturson). Specimens were received from St. Andrews, N.B. (S.R. Colpitts).

Canker (Leptosphaeria coniothyrium). At Bridgewater, N.S. infections occurred in a number of plants where blooms had been cut and a stub left. Plants were were weakened and some branches were dying (K.A.H.).

Coral canker (Nectria cinnabarina). A profusely sporulating specimen was received from Coburg, Ont. It could not be determined whether or not the Nectria was the cause of the canker or whether it was secondary. It has not been previously reported on rose in Canada (D. W. Creelman).

Rust (Phragmidium spp.). P. americanum and P. subcorticinum were identified on specimens received from Trois Pistoles, Que. (D. Leblond)

Powdery mildew (Sphaerotheca pannosa) was sev. in a garden at Lethbridge, Alta. (P.E. Blakeley). Specimens with heavy infection of the buds were received from Thetford Mines, Que. (D.L.). Powdery mildew was unusually sev. on susceptible rose varieties in Kings Co., N.S. in 1962. In most cases leaves were curled and browned. Bloom was sparse and often badly distorted (C.O.G.). Infection was sev. on the climber, Dorothy Perkins, at St. John's, Nfld. (O.A.O.).

SALIX - Willow

Canker (Cytospora chrysosperma) killed twig growth of S. niobe at Sardis, B.C. (R.G. Atkinson).

Coral canker (Nectria cinnabarina) caused 10% damage on S. alba var. tristis at La Durantaye, Que. (G. Ola'h).

Scab and Blight (Polaccia saliciperda, Physalospora miyabeana) continued to intensify in previously infected areas in the Fraser River Valley, B.C. (A.C. Molnar) P. saliciperda affected 5% of shrubs of Salix purpurea nana in a nursery at Drummondville (J. Rinquet) and 15% of S. alba var tristis at La Durantaye, Bellechasse Co., Que. (G. Ola'h). The two organisms also caused sev. damage to willow hedges at Haute-Rive, St. Romuald and Ste. Anne de Beaupré, Que. (G.B. Ouelette). Damage was generally light in the Maritime Provinces (A.W. Chiko, A.G. Davidson, W.R. Newell). Some disease developed on trees and young sucker growth late in the season in N.S. (K.A. Harrison).

SPIRAEA

Lime-induced chlorosis was commonly encountered and caused damage to Spiraea and other shrubs in the Winnipeg, Man. area (W.L. Gordon).

SYRINGA - Lilac

Gray mold (Botrytis cinerea) infected 40% of the blooms in 4/4 plantings at Ste. Foy, Que. (G. Ola'h).

Bacterial blight (Pseudomonas syringae) caused sl. damage to lilacs at Elm Creek, Man. (B. Peturson, W.A.F. Hagborg).

Wilt (Verticillium albo-atrum) infected 40% of the plants in 4/4 plantings at Ste. Foy, Que. (G. O.).

THUJA - Cedar

Browning (Winter drying). Specimens were received from Lotbinière, Plessiville and Carleton, Que. (D. Leblond).

TILIA - Linden

Coral canker (Nectria cinnabarina). This organism was found associated with cankers on a number of European lindens at Ste. Foy, Que. (G. B. Ouelette).

ULMUS - Elm

Dutch elm disease (Ceratocystis ulmi). The known limits of the disease in s. Ont. were extended northward to a line between Key Harbor and La Cave (B. W. Dance, D. F. Lynn). A considerable northwest extension of distribution was made in Que. with the discovery of diseased trees at new localities in Temiscouata and Bonaventure counties (G. B. Ouelette). A diseased tree was found at Tidehead, Restigouche Co., N. B. The disease is now known in 7/15 N. B. counties (A. W. Chiko, A. G. Davidson, W. R. Newell).

Black spot (Gnomonia ulmea). Chinese elm hedges and trees were frequently attacked in the Ottawa, Ont. district with damage ranging from sl. -sev. (P. K. Basu, H. S. Thompson).

Coral canker (Nectria cinnabarina). Mod. damage was observed on a hedge of U. pumila at Quebec City and specimens were received from Three Rivers and Luceville (D. Leblond). Several Chinese elms were killed by canker in the Cornerbrook area, Nfld. (W. J. Carrol).

Leaf spot (Phyllosticta melaleuca) was sl. on U. americana at Montreal, Que. (G. Ola'h).

VIBURNUM

Bacterial spot (Pseudomonas viburni). Infection was sl. on a few shrubs of V. carlesii at Village des Aulnaies, l'Islet Co., Que. (J. Rinquet)

VI. DISEASES OF HERBACEOUS ORNAMENTALS

ALTHAEA - Hollyhock

Rust (Puccinia malvacearun) occurred in varying degrees of severity throughout the Okanagan Valley, B. C. (G. E. Woolliams). It was sev. in a garden at Lethbridge, Alta. (T. G. Atkinson). Specimens were received from several locations in Que. (D. Leblond, J. Santerre)

ANTIRRHINUM - Snapdragon

Root rot (Pythium sp.) was tr. in a garden at Cardston, Alta. (P. E. Blakeley).

Fasciation (? genetic) was observed in a planting on the University Campus, Vancouver, B.C. Stems were striated and ribbon-like. The flower parts were replaced by green bract-like structures (H. N. W. Toms).

AQUILEGIA - Columbine

Powdery mildew (Erysiphe communis) was common in the Summerland, B.C. district (G. E. Woolliams).

BEGONIA

Powdery mildew (Erysiphe communis) was common on tuberous begonias at Ottawa, Ont. One large planting showed 100% infection (D. W. Creelman). Specimens were received from Rivière du Loup and Mégantic, Que. (D. Leblond).

CALENDULA

Aster yellows (virus). Heavy infections were seen in beds at the Botanical Gardens, Hamilton, Ont. (D. W. Creelman). Calendulas were less affected than usual at Kentville, N. S. (K. A. Harrison).

CALLISTEPHUS - China Aster

Aster yellows (virus) showed varying degrees of infection at Guelph and Hamilton, Ont. and Montreal, Que. (D. W. Creelman). A sev. infection was recorded at La Pocatière, Que. (H. Généreux) and a light one at Gagetown, N. B. (S. R. Colpitts).

CHRYSANTHEMUM

Leaf nematode (Aphelenchaides ritzema-bosi). Mod.-sev. infection occurred on chrysanthemums in a garden in Eastview, Ont. (H. S. Thompson).

CYCLAMEN

Tuber rot (Erwinia carotovora). Young plants, 1-2 inches high with tubers three-eights inch in diameter showed a killing of the roots and a soft rot of the petioles at Saanichton, B.C. The tubers bore numerous dark-brown, punctate lesions which exuded masses of bacteria (R. G. Atkinson).

DAHLIA

Crown gall (Agrobacterium tumefaciens) was seen on 2 plants at Flin Flon, Man. (R. J. Ledingham).

Gray mold (Botrytis cinerea) was prevalent on dahlias in the Edmonton Alta. district (W. P. Skoropad).

Bud rot (Fusarium spp.) caused 30% damage to a planting at Levis, Que. (G. Ola'h).

Mosaic (virus). Mod. infections were seen in a number of home plantings at Gagetown, N.B. (S.R. Colpitts).

DELPHINIUM - Larkspur

Crown rot (cause undetermined) killed 1/6 plants in a garden at Winnipeg Man. (B. Peturson).

Powdery mildew (Erysiphe polygoni). Stalk and flower blight was sev. in a closely-planted stand at Fredericton, N.B. (K. M. Graham).

DIANTHUS - Carnation

Root and crown rot (Rhizoctonia solani). Plants in 2 large commercial plantings in the Ottawa, Ont. district suffered heavy damage. The cuttings used had been purchased from the same source and it appeared that the disease had been introduced with them (H. S. Thompson).

FICUS - Rubber Plant

Anthracnose (Glomerella cingulata). At Victoria, B.C. 90/100 plants of F. rubra imported from Florida suffered varying degrees of leaf spotting. An accompanying shipment of F. elastica had relatively little anthracnose. A shipment of field-grown plants of F. decora from another Florida location showed 6% infection with 3% of the plants being a complete loss (R.G. Atkinson). Infection was seen of F. elastica at Quebec City, Que. (G. Ola'h).

Leaf scorch (physiological). Three/30 plants of F. pandurata from Florida exhibited sev. symptoms of leaf scorch accompanied by slight oedema (R.G.A.).

GLADIOLUS

Corn rot (Botryotinia draytoni). Of 15 corns showing lesions at Kentville, N.S., 10 were affected by this disease (K.A. Harrison).

Flower blast (Botrytis cinerea). Infection of flowers and flower stalks was unusually sev. in Kings Co., N.S. in 1962. Continuing wet weather favored infection of flower stalks, many of which rotted before the flowers opened (K.A.H.).

Yellows(Fusarium orthoceras f. gladioli) affected 4/15 corms in a lot examined at Kentville, N.S. (K.A.H.).

Scab (Pseudomonas marginata) was sl. in a number of lots of corms examined at Kentville, N.S. (K.A.H.).

Dry rot (Stromatinia gladioli). Losses were unusually heavy in Kings Co., N.S. in 1962 (K.A.H.).

Mosaic (virus). Thirty-five % of the plants from 3000 cormels of the variety Spotlight were rogued at Kentville, N. S. during the summer for mosaic. It is doubtful that all the mild symptoms were recognized. This situation is typical of most commercial stocks available (K. A. H.).

HELIANTHUS - Sunflower

Powdery mildew (Erysiphe communis). Cleistothecia were collected on the lower leaves of H. decapetalus in a hotel garden in Victoria, B. C. (H. N. W. Toms).

HOSTA - Plantain Lily

Leaf spot (Phyllosticta sp.). Infection was light in flower beds in Battlefields Park, Quebec City, Que. (D. Leblond).

HYDRANGEA

Powdery mildew (Erysiphe communis). Specimens were received from Moncton, N.B. (S.R. Colpitts).

Frost injury was recorded at Quebec City and Caplan, Que. (D. Leblond).

IRIS

Leaf spot (Didymellina macrospora) was general in Kamouraska Co., Que. and quite heavy in some instances (J. Santerre). Infection was sev. in a planting of mixed varieties of bearded species at the Research Station, Fredericton, N.B. (K. M. Graham). Heavy late infection destroyed most of the foliage in iris plantings at Kentville, N. S. (K. A. Harrison).

LATHYRUS - Sweet Pea

Root rot (Fusarium spp.) was sev. at Fort Garry and sl. in a planting in Winnipeg, Man. (B. Peturson).

LILIUM - Lily

Botrytis blight (B. elliptica). Infection was mod. on 15% of the plants of the variety Mid-Century in a nursery at Chomedy, Que. (H. S. Thompson). Specimens were received from Rivière du Loup, Que. (J. Santerre). All varieties in a planting at Kentville, N. S. were severely affected (K. A. Harrison).

PAEONIA - Peony

Botrytis blight (B. paeoniae) was prevalent in the Edmonton, Alta. area (W. P. Skoropad).

Stem and rhizome rot (Rhizoctonia solani). A specimen received from Rothesay, N.B. showed sev. rotting. Hyphae and sclerotia of R. solani were abundant (K. M. Graham).

Mosaic (virus) affected 5% of the plants in a nursery at Sherbrooke, Que. (J. Rinquet).

PELARGONIUM - Geranium

Blackleg (Pythium sp.) caused sl. damage in a cutting bed at Saskatoon, Sask. (R. J. Ledingham).

PHLOX

Powdery mildew (Erysiphe communis) was sev. in 3 gardens observed in Lethbridge, Alta. (P. E. Blakeley, F. R. Harper). It was recorded at St. Anselme, Ste. Foy, Trois Pistoles and St. George, Que. (G. Ola'h, D. Leblond) as well as from l'Islet Co., Que. (J. Santerre).

Downy mildew (Peronospora phlogina). Infection was rated at 20% on P. paniculata at Berthierville, Que. (G. O.).

PRIMULA - Primrose

Mosaic (virus) affected 5/200 clumps at Saanichton, B.C. Foliage was pale, yellow-green and the leaves were puckered with a downward curling of the margins. Flowers were smaller than normal and exhibited an upward curling of the petals (R. G. Atkinson).

TULIPA - Tulip

Fire (Botrytis tulipae) was prevalent in plantings in the Edmonton, Alta. area (W. P. Skoropad). It was observed in plantings in Quebec City and specimens were received from Laterrière, Chicoutimi Co., Que. (D. Leblond). Sev. infections developed in Kings Co., N. S. following the heavy rains in July (K. A. Harrison).

VIOLA - Pansy

Leaf blight (Centrospora acerina). A planting of 10,000 seedlings at Coldbrook, Kings Co., N. S. was completely destroyed. This is the second nursery to be forced out of production by this disease (K. A. Harrison).

ZINNIA

Leaf blight (Alternaria zinniae) was sev. in a planting at Ste. Foy, Que. (D. Leblond).