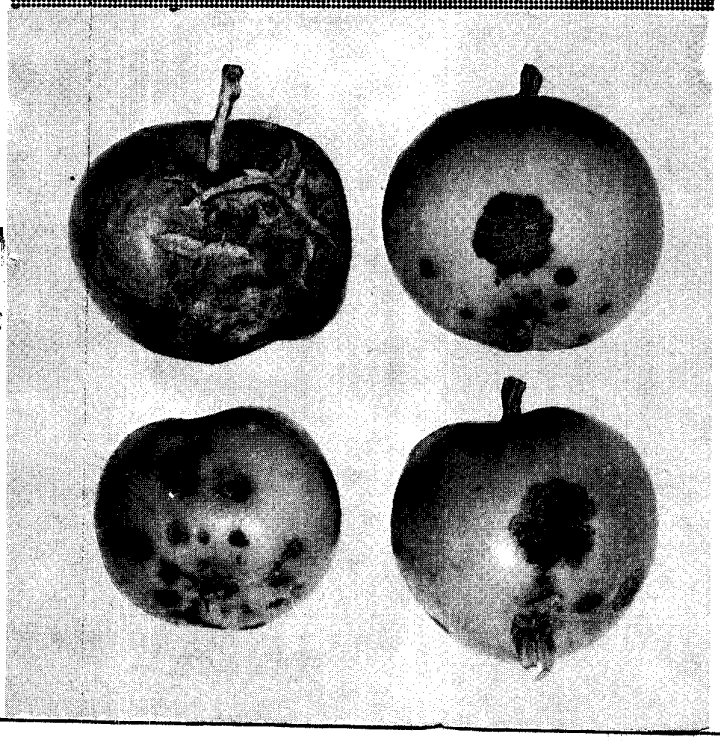
Canadian Plant Disease Survey



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CANADIAN PLANT DISEASE SURVEY

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CONTENTS

Leaf rust (Puccinia recondita), accompanied by hot, dry weather, caused reductions in yield and quality of wheat in the Prairie Provinces. Late-seeded fields in particular were affected. Stripe rust (Puccinia striiformis) was unusually common and caused losses in winter wheat crops in south-west Alta. Crown rust of oats (Puccinia coronata) occurred generally in Man. and Sask. with heavy infections occurring south of Winnipeg. There was an alarming increase in the prevalence of races virulent to Rodney and Garry. These races threaten the value of the oat-breeding program in western Canada in which the Landhafer and Santa Fe sources of resistance play a predominant role. Heavy infections of stem rust (Puccinia graminis f. sp. avenae) were also common on Rodney in Man.

The most serious outbreak of wheat streak mosaic ever to occur in southern Alta. developed on winter wheat in the fall of 1963. Losses are predicted to be heavy. The incidence of common root rots (Bipolaris sorokiniana, Fusarium spp.) of both wheat and barley was at a comparatively high level in Sask. Barley was also severely affected in P.E.I. Infection of barley by net blotch (Drechslera teres) was heavy in central Alta., Sask. and northwestern Man. Scald (Rhynchosporium secalis) also affected barley crops in central Alta. Aster yellows infections were severe in some barley fields in southern Man.

Anthracnose (Colletotrichum destructivum) of alfalfa was reported for the first time from western Canada. The incidence of bacterial wilt (Corynebacterium insidiosum) increased in alfalfa crops in Alta. Witches' broom virus was commonly encountered in alfalfa fields in northern B.C. and winter killing was responsible for considerable damage to both alfalfa and sweet clover crops in northern Sask.

Very severe infections of sooty blotch (Cymadothea trifolii) caused damage to white and alsike clovers in P.E.I. and northern anthracnose (Kabatiella caulivora) was destructive in red clover seed fields in central Alta. Rust (Uromyces nerviphilus) was collected on Ladino clover in Que. A survey revealed the presence of white clover mosaic, clover yellow mosaic, bean yellow mosaic and alfalfa mosaic viruses in clovers in B.C. Ladino clover was heavily infected with clover phyllody virus in northeastern Que. and phyllody was commonly seen in red and white clovers in N.S. and P.E.I.

Aster yellows was more commonly seen in flax, rape and sunflower crops in western Canada than at any time since 1957. White rust (Albugo cruciferarum) and ring spot (Mycosphaerella brassicicola) were more than normally prevalent on rape in the parkbelt areas of Sask. Rapeseed from northern Sask. carried unusually high amounts of Alternaria brassicae. Leaf mottle (Verticillium albo-atrum) was widespread in sunflower plantings in Man.

Severe infections of leaf spot (Cercospora beticola) occurred in many sugar beet fields in Man. whereas the disease was much less severe than usual in western Ont. Symptoms of boron deficiency were prominent in many Ont. plantings. The incidence of northern leaf blight (Bipolaris turcicum) on field corn in western Ont. was exceptionally low. Leaf spots caused by Alternaria spp. and others of undetermined origin were the most serious field diseases of tobacco in Ont. although some losses were caused by sore shin (Rhizoctonia solani) and black root rot (Thielaviopsis basicola).

Leaf blotch (Drechslera bromi) and leaf spot caused by Selenophoma bromigena were common and occasionally severe on bromegrass in Alta. and Sask. Stripe blight (Xanthomonas translucens f. sp. cerealis) on brome grass was reported, for the first time in Canada, from Sask. Crazy top (Sclerophthora macrospora) was also reported, for the first time on brome in Canada, from Alta.

Gall nematode (Anguina graminophila) was collected, for the first time in Canada, on Calamagrostis canadensis at two localities in Que. Anthracnose (Colletotrichum graminicola) was widespread and sometimes serious on Festuca rubra in Sask. Melting out, caused by Bipolaris sorokiniana and Drechslera poae caused considerable damage to lawns and turf in the Prairie Provinces. Fairy rings (Marasmius oreades) were destructive in lawns in southern Alta. and snow mold caused by species of Typhula and other low-temperature organisms caused widespread damage to lawns in eastern Ont.

Pod spot (Bipolaris sorokiniana) of beans, previously unreported in Canada, was serious in N.B. and stem canker (Rhizoctonia solani) caused extensive losses in canning beans in the same province. Leaf blights (Alternaria dauci, Cercospora carotae) caused losses in carrot crops in Que. and N.S. Carrots in Que. were sometimes seriously damaged by root-knot nematode (Meloidogyne hapla). Aster yellows affected carrots, celery, lettuce and onions in Man. Losses in unsprayed lettuce fields were high.

Brown spot (Cephalosporium apii) rendered some celery crops in Man. unfit for processing and bacterial blight, particularly on the variety Utah-10B, continues to cause losses in celery in Que. Stem canker (Botrytis cinerea) was serious in fall greenhouse crops of cucumbers and tomatoes in western Ont. Scab (Cladosporium cucumerinum) caused heavy losses in greenhouse cucumber crops in western Ont. and in field crops in Que., N.B. and N.S. Losses in Que. were particularly heavy. Angular leaf spot (Pseudomonas lachrymans) was severe in Que. Losses in lettuce crops from bottom rot (Rhizoctonia solani) were moderate in Ont. and heavy in N.B.

Stored onions in Man. were affected by purple blotch (Alternaria porri) and neck rot (Botrytis allii). Bulb rot (Fusarium oxysporum f. cepae) has become prevalent on hybrid onions in B.C. where smut (Urocystis cepulae) also was very destructive. Pea crops were damaged by powdery mildew (Erysiphe polygoni) in Sask., N.B. and P.E.I. Verticillium wilt (V. dahliae) was more serious and widespread than usual in pepper crops in western Ont.

The incidence of both bacterial ring rot (Corynebacterium sepedonicum) and blackleg (Erwinia atroseptica) in potatoes decreased in Que. and the Maritime Provinces. Dry rot (Fusarium caeruleum) caused some losses in stored potatoes in N.S. and leak (Pythium ultimum) caused heavy losses in B.C. and Alta. Despite widespread infections of late blight (Phytophthora infestans) in all the major potato-producing areas, losses were kept to a minimum by the efficient use of fungicides. Development of potato wart (Synchytrium endobioticum) was extensive in Nfld.

Late plantings of sweet corn in western Ont. suffered heavily from northern leaf blight (Bipolaris turcicum). Early blight (Alternaria solani) was a problem in tomato crops in B.C., Que. and the Maritime Provinces. Gray mold (Botrytis cinerea) was severe in field-grown tomatoes in N.S. and P.E.I. Some tomatoe fields in Que. were seriously affected by bacterial speck (Pseudomonas tomato). Damage to tomatoes from wilt (Verticillium dahliae) was less than usual in western Ont.

Surveys in western Ont. showed that many orchards of both apples and pears were infected with fire blight (Erwinia amylovora). Pears in B.C. were also seriously affected. Phyllosticta solitaria was reported from N.B., for the first time in Canada, as causing a twig and trunk canker of apple trees. Apple scab (Venturia inaequalis), despite favorable conditions for development, caused little damage as the result of vigorous spray programs. Some pin-point scab developed in Que. and N.S. Symptoms of virus diseases of apple, with the exception of dapple apple, were generally mild in B.C. Losses to stored pears were caused by Rhizopus nigricans in B.C. and by Phytophthora cactorum in Ont. The condition known as freckle pit in pears in B.C. was shown to be of a virus nature.

Monilinia demissa, previously reported only on Prunus demissa, caused an early-season blight of leaves, petioles and twigs of apricot in B.C. Fruit infection of apricot by coryneum blight (Stigmina carpophila) was common in the same province. Unusually heavy infections of brown rot (Monilinia fructicola) occurred in sweet cherries in B.C. where both brown rot and Rhizopus rot (R. nigricans) caused losses in harvested peaches that had not been treated with a fungicidal dip. Bacterial spot (Xanthomonas pruni) affected peaches, plums and prunes in the Niagara Peninsula, Ont.

Anthracnose (Elsinoë veneta) was widespread on raspberry in N.B. where the virus diseases mosaic and leaf curl were also prominent. Blossom and twig blight (Botrytis cinerea) was common in lowbush blueberry fields in N.B. Two virus diseases of grape, fan leaf and leaf curl, previously unreported in Canada, were recognized in B.C.

Gray mold (Botrytis cinerea) was responsible for heavy losses of strawberry fruit in the Maritime Provinces. Leaf spot (Mycosphaerella fragariae) was general and occasionally severe in the same area. Powdery mildew (Sphaerotheca macularis) caused injury in strawberry plantings in P.E.I.

Wilt (Verticillium albo-atrum) was reported affecting maples in Ont. and Que. and Catalpa in Que. Apioporthe corni was reported for the first time on Cornus alba in Ont. Hawthorns in a nursery in B.C. were severely infected with powdery mildew (Podosphaera oxyacanthae). Severe infections of rust (Cumminsiella mirabilissima) were seen on Mahonia in Ont. Fire blight (Erwinia amylovora) was destructive on ornamental species of Malus and Pyrus in western Canada.

Septomyxa tulasnei, previously unreported in Canada, caused moderate damage to mulberry trees in Que. Yellow leaf blister (Taphrina populina) was common on Lombardy poplars in B.C. Black knot (Dibotryon morbosum) was widespread on native cherries in the Atlantic Provinces. Bacterial blight (Pseudomonas syringae) continues to cause damage to ornamental cherry trees in B.C. Myxosporium lanceolata was reported, for the first time in Canada, as the cause of twig canker of oak in Ont.

Heavy infections of willow scab and blight (Venturia saliciperda, Physalospora miyabeana) occurred in Que. Spot anthracnose (Sphaceloma symphoricarpi) caused defoliation of Symphoricarpos in N.S. Further range extensions of Dutch elm disease (Ceratocystis ulmi) were recorded in Ont., Que. and N.B.

Stem rot (Phytophthora cactorum) killed potted snapdragon plants in Ont. Smut (Entyloma polysporum) was destructive on Calendula in N.S. This occurrence represents a first report from Canada. Aster yellows was serious on late-planted China asters in Sask. and N.S. Root-knot nematode (Meloidogyne incognita) affected Alternanthera, Coleus, Cyclamen, Impatiens, and Peperomia in various parts of Canada. Crown gall (Agrobacterium tumefaciens) damaged dahlias in Man. and Que.

Corm rot (Fusarium oxysporum f. gladioli) and dry rot (Stromatinia gladioli) caused losses in gladiolus in Que. and N.S. Botrytis elliptica was severe on lilies in Sask. and scorch (Stagonospora curtisii) was prevalent on narcissus in B.C. as were the virus diseases mosaic and white streak. Bacterial leaf spot (Xanthomonas pelargoni) caused damage to florists geraniums in B.C. Blight (Alternaria zinniae) developed on zinnias late in the season in N.S.

Maladies nouvelles ou d'importance notable

Thomas Simard

La rouille des feuilles (Puccinia recondita), accompagnée de sécheresse, a diminué le rendement et la qualité du blé dans les provinces des Prairies, surtout dans les champs ensemencés tardivement. La rouille striée (Puccinia striiformis) s'est développée d'une façon inhabituelle et a provoqué des pertes dans le blé d'hiver du sud-ouest de l'Alberta. La rouille couronnée de l'avoine (Puccinia coronata) s'est généralisée au Manitoba et en Saskatchewan. Des infections sérieuses ont été notées au sud de Winnipeg. On a observé une augmentation alarmante dans la distribution des races qui peuvent attaquer la Rodney et la Garry. Ces races représentent une menace à l'efficacité du programme d'hybridation de l'avoine dans l'Ouest canadien, la source de résistance en provenance de la Landhafer et de la Santa Fe jouant un rôle prédominant dans ce programme. Au Manitoba, la Rodney fut aussi gravement affectée par la rouille de la tige (Puccinia graminis f. sp. avenae).

A l'automne 1963, la mosaïque-bigarrure du blé s'est développée de façon grave dans le blé d'hiver du sud de l'Alberta. C'est l'épidémie la plus sérieuse notée jusqu'ici et on prévoit que les pertes seront élevées. Les piétins du blé et de l'orge (Bipolaris sorokiniana, Fusarium spp.) ont atteint un développement relativement important en Saskatchewan. L'orge fut également affectée de façon sérieuse dans l'Île du Prince-Édouard. La rayure réticulée de l'orge (Drechslera teres) s'est développée de façon grave dans le centre de l'Alberta, en Saskatchewan et dans le nord-ouest du Manitoba. Dans le centre de l'Alberta, l'orge fut aussi affectée par la tache pâle (Rhynchosporium secalis). Des infections sérieuses de jaunisse de l'aster ont été observées dans quelques champs d'orge du sud de l'Alberta.

On a rapporté pour la première fois dans l'Ouest canadien l'anthracnose de la luzerne (Colletotrichum destructivum). La fréquence de la flétrissure bactérienne (Corynebacterium insidiosum) a augmenté dans les champs de cette culture en Alberta. Le virus responsable du balai de sorcière a été couramment décelé dans les luzernières du nord de la Colombie-Britannique. Les gélures ont causé des dommages considérables dans la luzerne et le mélilot du nord de la Saskatchewan.

De très sérieuses infections de tache de suie (Cymadothea trifolii) ont endommagé les trèfles blanc et alsike, dans l'Île du Prince-Édouard. L'anthracnose (Kabatiella caulivora) a sévi de façon funeste dans les champs de trèfle rouge pour la semence au centre de l'Alberta. Dans le Québec, on a récolté la rouille (Uromyces nerviphilus) sur le trèfle Ladino. L'examen des champs de trèfle de la Colombie-Britannique a révélé la présence des virus responsables de la mosaïque du trèfle blanc, de la mosaïque jaune du trèfle, de la mosaïque jaune du haricot et de la mosaïque de la luzerne. Dans le nord du Québec, le virus de la phyllodie a sévèrement infecté le trèfle Ladino. On a aussi souvent remarqué la présence de la phyllodie sur les trèfles rouge et blanc, en Nouvelle-Écosse et dans l'Île du Prince-Édouard.

La jaunisse de l'aster a été décelée dans les champs de lin, de navette et de tournesol de l'Ouest canadien, à une fréquence jamais vue depuis 1957. On a également noté la fréquence anormale de la rouille blanche (Albugo cruciferarum) et de la tache annulaire (Mycosphaerella brassicicola) dans les champs de navette du "parkbelt" de la Saskatchewan, de même que des quantités anormalement élevées d'Alternaria brassicae sur les graines de cette culture en provenance du nord de la même province. La marbrure verticillienne (Verticillium albo-atrum) s'est généralisée dans les champs de tournesol du Manitoba.

De graves infections de tache cercosporéenne (Cercospora beticola) ont été observées dans plusieurs champs de betterave sucrière du Manitoba. Cependant, cette maladie s'est développée d'une façon beaucoup moins sérieuse que d'habitude dans l'ouest de l'Ontario. Des symptômes de carence de bore étaient facilement décelables dans plusieurs champs de cette culture en Ontario. La tache helminthosporienne (Bipolaris turcicum) s'est maintenue à un niveau exceptionnellement bas dans le maïs fourrager de l'ouest de l'Ontario. Diverses taches foliaires causées par Alternaria spp. ou d'origine indéterminée ont été les maladies les plus sérieuses observées dans les champs de tabac de l'Ontario. On a cependant noté quelque dommage par la tige noire (Rhizoctonia solani) et la pourriture noire (Thielaviopsis basicola).

Les taches foliaires du brome (Drechslera bromi, Selenophoma bromigena) se sont communément développées, occasionnellement de façon sérieuse, en Alberta et en Saskatchewan. De la Saskatchewan, on a rapporté pour la première fois au Canada la strie bactérienne du brome (Xanthomonas translucens f. sp. cerealis) et de l'Alberta, également pour la première fois au pays, le mildiou de cette même espèce de graminée (Sclerophthora macrospora).

Le nématode Anguina graminophila a été repéré, pour la première fois au Canada, sur Calamagrostis canadensis à deux localités du Québec. Sur Festuca rubra en Saskatchewan, on a noté un développement général et parfois sérieux de l'anthracnose (Colletotrichum graminocola). La fonte due à Bipolaris sorokiniana et Drechslera poae a été cause de dommages considérables dans les gazons et pelouses des provinces des Prairies. Les ronds de sorcière (Marasmius oreades) ont été néfastes dans les pelouses du sud de l'Alberta tandis que dans l'est de l'Ontario, les dommages ont été causés surtout par des espèces de Typhula et autres moisissures des basses températures.

Une tache des gousses du haricot (Bipolaris sorokiniana), rapportée pour la première fois au Canada, a été observée à l'état grave au Nouveau-Brunswick. La rhizoctonie (Rhizoctonia solani) a fait des ravages dans les haricots de conserve de la même Province. Les brûlures foliaires de la carotte (Alternaria dauci, Cercospora carotae) ont causé pertes au Québec et en Nouvelle-Écosse. Dans le Québec, on a également noté des dommages parfois sérieux dus au nématode de la nodosité des racines (Meloidogyne hapla). La jaunisse de l'aster a affecté carottes, céleri, laitue et oignons au Manitoba. Des pertes élevées ont été notées dans les champs de laitue non traités.

La tache brune (Cephalosporium apii) a rendu inutilisables certains champs de céleri du Manitoba. Dans le Québec, la brûlure bactérienne, surtout sur la variété Utah-10B, continue de causer des pertes. En Ontario, la moisissure grise (Botrytis cinerea) s'est révélée sérieuse dans les cultures de concombre et de tomate de serre. La gale (Cladosporium cucumerinum) a été responsable de pertes considérables dans les concombres de serre de l'ouest de l'Ontario et, en plein champ, dans le Québec, le Nouveau-Brunswick et la Nouvelle-Écosse. Les pertes furent particulièrement élevées au Québec où la tache angulaire (Pseudomonas lachrymans) fut également sérieuse. Les pertes dues à la pourriture basale (Rhizoctonia solani) de la laitue ont été modérées en Ontario et élevées au Nouveau-Brunswick.

La tache pourpre (Alternaria porri) et la pourriture du col (Botrytis allii) ont affecté les oignons entreposés, au Manitoba. La pourriture fusarienne du bulbe (Fusarium oxysporum f. cepae) s'est développée de façon générale dans les champs d'oignons hybrides de la Colombie-Britannique où le charbon (Urocystis cepulae) exerça également des ravages. Les champs de pois ont été endommagés par le blanc (Erysiphe polygoni) en Saskatchewan, au Nouveau-Brunswick et dans l'Île du Prince-Édouard. Dans l'ouest de l'Ontario, la flétrissure verticillienne (V. dahliae) a été plus sérieuse et s'est généralisée plus que de coutume dans les champs de piment.

L'importance de la flétrissure bactérienne (Corynebacterium sepedonicum) et de la jambe noire (Erwinia atroseptica) a diminué dans les champs de terre du Québec et des Maritimes. Dans les entrepôts de pomme de terre de la Nouvelle-Écosse, la pourriture sèche (Fusarium caeruleum) a causé quelque dommage tandis que dans les entrepôts de la Colombie-Britannique et de l'Alberta, la pourriture molle (Pythium ultimum) fut responsable de pertes élevées. En dépit du développement généralisé du mildiou (Phytophthora infestans) dans toutes les principales régions à pomme de terre, les pertes furent maintenues à un minimum par l'emploi judicieux des fongicides. A Terre-Neuve, la tumeur verruqueuse (Synchytrium endobioticum) s'est développée de façon extensive.

Dans l'ouest de l'Ontario, la brûlure helminthosporienne (Bipolaris turcicum) a sérieusement affecté les champs de maïs sucré ensemencés tardivement. La brûlure alternarienne (Alternaria solani) s'est révélée un problème dans les champs de tomates de la Colombie-Britannique, du Québec et des Maritimes et la moisissure grise (Botrytis cinerea), dans ceux de la Nouvelle-Écosse et de l'Île du Prince-Édouard. Quelques plantations du Québec ont été sérieusement affectées par la moucheture bactérienne (Pseudomonas tomato). Par contre, les dommages dus à la flétrissure verticillienne (Verticillium dahliae) ont été moindres que d'habitude dans l'ouest de l'Ontario.

Des enquêtes dans l'ouest de l'Ontario ont révélé la présence de la brûlure bactérienne (Erwinia amylovora) dans plusieurs vergers de pommiers et de poiriers. Cette maladie a aussi sérieusement affecté les poiriers de la Colombie-Britannique. Pour la première fois au Canada, on a observé sur les pommiers du Nouveau-Brunswick un chancre du tronc et des rameaux causé par Phyllosticta solitaria. En dépit des conditions favorables à son

développement, la tavelure du pommier (Venturia inaequalis) n'a causé que peu de dommage, résultat de vigoureux programmes de répression. On a noté la présence d'un peu de tavelure d'automme dans le Québec et en Nouvelle-Écosse. A l'exception de la panachure (dapple apple), les maladies virales du pommier n'ont été observées qu'à l'état bénin en Colombie-Britannique. Les poires entreposées ont été affectées par Phytophthora cactorum en Ontario et Rhizopus nigricans, en Colombie-Britannique. Dans cette dernière province, il a été démontré qu'un virus était responsable de la maladie des poires connue sous le nom d'éphélide ou tache de rousseur (freckle pit).

Précédemment repéré seulement sur Prunus demissa, Monilinia demissa a provoqué, en début de saison, une brûlure des feuilles, des pétioles et des rameaux, sur les abricotiers. Des infections anormalement élevées de pourriture brune (Monilinia fructicola) ont affecté les cerises sucrées en Colombie-Britannique. Dans la même province, les pêches entreposées sans bain fongicide préalable, ont été endommagées par la pourriture brune et la moisissure chevelue (R. nigricans). La tache bactérienne (Xanthomonas pruni) a affecté pêchers et pruniers de la péninsule du Niagara, Ont.

Dans les framboisières du Nouveau-Brunswick, on a relevé la présence générale de l'anthracnose (Elsinoë veneta), de la mosaïque et de la frisolée. Le champignon de la moisissure grise (Botrytis cinerea) s'est communément développé dans les plantations de bleuets nains du Nouveau-Brunswick, causant la brûlure des fleurs et des rameaux. En Colombie-Britannique, on a identifié deux maladies à virus de la vigne, nouvelles pour le Canada: la feuille en éventail (fan leaf) et la frisolée (leaf curl).

Dans les fraisières des Maritimes, la moisissure grise (Botrytis cinerea) a été cause de pertes élevées, tandis que la tache commune (Mycosphaerella fragariae) était générale et occasionnellement grave. De plus, le blanc (Sphaerotheca macularis) a causé quelques dégâts dans les plantations de l'Île du Prince-Édouard.

On a rapporté des infections de flétrissure verticillienne (Verticillium albo-atrum) sur les érables de l'Ontario et du Québec, et sur le catalpa, dans le Québec. On a rapporté pour la première fois Apioporthe corni sur Cornus alba en Ontario. Des infections sévères de blanc (Podosphaera oxyscanthae) se sont développées sur les aubépines d'une pépinière de la Colombie-Britannique. On a observé des infections graves de rouille (Cumminsiella mirabilissima) sur Mahonia en Ontario. Dans l'Ouest canadien, la brûlure bactérienne (Erwinia amylovora) a ravagé les espèces ornementales de Malus et de Pyrus.

Rapporté pour la première fois au Canada, Septomyxa tulasnei a causé des dégâts modérés sur les mûriers, dans le Québec. La cloque des feuilles (Taphrina populina) a été communément observée sur les peupliers de Lombardie, en Colombie-Britannique. Dans les provinces de l'Atlantique, les espèces locales de cerisiers ont été communément affectées par le nodule noir (Dibotryon morbosum). La brûlure bactérienne (Pseudomonas syringae) continue d'endommager les espèces ornementales de cerisiers en Colombie-Britannique. Pour la première fois au Canada, on a rapporté Myxosporium lanceolata comme agent causal d'une brûlure des rameaux des chênes, en Ontario.

Dans le Québec, on a noté des infections graves de deux brûlures des bouleaux (Venturia saliciperda et Physalospora miyabeana). L'anthracnose (Sphaceloma symphoricarpi) a provoqué la défoliation de Symphoricarpos en Nouvelle-Écosse. On a observé que l'aire d'extension de la maladie hollandaise de l'orme (Ceratocystis ulmi) continue de progresser dans l'Ontario, le Québec et le Nouveau-Brunswick.

En Ontario, le pourridié (Phytophthora cactorum) a été cause de mortalité dans les mufliers cultivés en pot. En Nouvelle-Écosse, le souci a été gravement affecté par le charbon (Entyloma polysporum). Les plantations tardives de reines marguerites ont été sérieusement affectées par la jaunisse de l'aster en Saskatchewan et en Nouvelle-Écosse. En diverses régions du Canada, Alternanthera, Coleus, Cyclamen, Impatiens et Peperomia ont subi les attaques du nématode de la nodosité des racines (Meloidogyne incognita). La tumeur du collet (Agrobacterium tumefaciens) a endommagé les dahlias au Manitoba et dans le Québec.

La pourriture fusarienne (Fusarium oxysporum f. gladioli) et la pourriture sclérotique (Stromatinia gladioli) des bulbes du glaïeul ont causé des pertes au Québec et en Nouvelle-Écosse. La brûlure botrytique (Botrytis elliptica) a sérieusement affecté les lis, en Saskatchewan. En Colombie-Britannique, les narcisses ont communément souffert de grillure (Stagonospora curtisii) et de déclin viral. La tache bactérienne du pélargonium (Xanthomonas pelargoni) a causé des pertes en Colombie-Britannique. En arrière saison, la brûlure bactérienne (Alternaria zinniae) est apparue sur les zinnias, en Nouvelle-Écosse.

The Weather and its Influence on Plant Disease

The early months of 1963 were cool in coastal British Columbia. A minimum of 14°F was recorded at the seacoast on January 11 and the last frost occurred during the first week in April. Spring rainfall was below average and a cool April and early May delayed the planting of some field crops. After mid-May the temperatures rose and bright sunshine exceeded its long-term average. Rainfall was low and temperatures cool in June.

Temperatures in July continued to be cool and rainfall was in excess, favoring such crops as canning peas but hindering the growth of corn. Late-crop potatoes grew well but a necrosis of pith cells in young tubers was observed in late July; subsequent tuber growth resulted in extensive hollow heart in crops grown on heavily fertilized soil. Extensive blackleg infections were noted in potato fields. Bacterial blights of ornamental cherry and lilac were commonly encountered.

Some peculiar effects attributed to the cool temperatures were: abnormal curling and browning of leaves of ornamental dogwood, tuliptree and the native cascara tree; the arrested development of some annuals, including asters and snapdragons, after the formation of flower buds and lateral shoots, resulting in a condition resembling phyllody; the development of chlorotic foliage, accompanied by a red-leaf condition, in oat fields and the production of yellow-green terminal growth in tomatoes.

Late blight appeared in tomato fields in early August but below-average rainfall and normal sunshine prevented its development and spread in adequately sprayed fields. September temperatures were well above average and rainfall below average. The first killing frost occurred at the seacoast on November 10 (H.N.W. Toms).

The winter of 1962-63 was mild and dry in the British Columbia interior. There was snow on the ground only 4 days at Summerland and the total rainfall from November to February was only 55 percent of normal. The mild weather was broken twice, by a 2-day period with minima of -3°F in mid-January and 2 days with zero minima at the end of the same month. The mid-month drop of about 30 degrees resulted in little tree damage but caused bud damage that contributed to light cropping of stone fruits in most districts. The low temperatures had no apparent effect on the overwintering of powdery mildew which was severe in most districts throughout the season.

Rainfall in April was more than 3 times normal. Early apple scab foliage infections occurred during this period and brown rot blossom blight appeared in some orchards. Peach leaf curl was unusually severe. May was dry and unusually hot, providing no apple scab infection periods. June, however, was cool and cloudy and scab infections of fruits were reported from the north and south Okanagan districts as well as from the Kootenays. The recommended spray program was fully effective.

The weather continued cloudy with frequent light rains through July and the first half of August. The sweet cherry crop was reduced approximately 20 per cent by splitting, and brown rot was serious for the first time in many years. Fire blight appeared in early June, and continued to spread through

most of the summer, the worst outbreak since 1948. Peach and apricot growers who ignored recommendations for protective sprays suffered losses from brown rot. Coryneum blight was more serious than usual in apricot and peach. Serious losses from Rhizopus rot in cannery peaches were avoided by the application of fungicidal drenches in packing-houses. September and October were mild, and provided ideal harvesting conditions, except for two short, heavy rainfalls in September. First frost (29°F) occurred October 30. The apple crop was the largest since 1946, and of unusually high quality.

Several virus diseases affecting apple fruits produced very mild symptoms. McIntosh leaf pucker was severe on leaves produced before mid-May, but the accompanying fruit symptoms were mild in some orchards, absent in others. Ring russetting symptoms on Newtown, Delicious, and Golden Delicious fruits were very mild, or absent. This added to accumulating evidence that high heat units in the last half of May, during and immediately after the blossom period, suppress fruit symptoms. Dapple apple symptoms appear to be unaffected by seasonal differences in weather.

Grapes growing on light gravelly soils suffered cold temperature damage to roots, and there was some bud injury. Undamaged vines had good cane growth, and heavy crops of large fruits. Ripening conditions were good in late August and September, but bunch rots were fairly common.

Most vegetable crops, especially tomatoes and corn, matured late because of cool weather in June, July and early August. However, the tomato picking season extended until the end of October, so that total tonnages were high. Early blight was fairly severe in potato and tomato. A bacterial blight, new to the Okanagan Valley, seriously affected some fields of corn. Onion mildew was unusually severe (M. F. Welsh).

A sudden drop in temperature to -30°F in central Alberta in February resulted in a considerable amount of poor foliage and bud drop in cold-sensitive fruit trees, especially plums. The more northerly areas had a dry, warm spring and the southern part of the district had early spring rains and somewhat cooler temperatures. Consequently, foliage diseases of cereals such as scald and netblotch of barley, while practically non-existent in the north, developed to a serious degree in the southern areas.

Summer was characterized by good rainfall and high temperatures. Cereal crops ripened very rapidly after heading, a condition that contributed to an extremely low incidence of stem rust. Bacterial diseases, such as bacterial blight of cereals, black leg of potatoes and fire blight were favored by the warmer-than-usual summer weather. High temperatures and high humidity favored the development of anthracnose on lawn grasses (W. P. Skoropad).

One of the most severe droughts ever recorded in southern Alberta occurred in the spring of 1963. However, rains came in the latter part of June (4.5 inches) and moist conditions continued throughout July and August followed by an unusually warm September and October.

This sequence of weather favored the development of wheat streak mosaic. It encouraged late volunteer growth of wheat and provided an exceptionally long period for the vectors to transmit the virus. Conditions were also favorable for the development of stem and leaf rust of cereals and these diseases also reached epiphytotic proportions in many areas in southern Alberta (J.B. Lebeau).

The crop season of 1963 in Saskatchewan was notable for unusually favorable moisture conditions in most areas. By July 9 rainfall was much above normal in all districts except in some areas in the northeast and northwest. Leaf spots on grasses appeared early and increased rapidly. Leaf rust of wheat was present at Saskatoon very early in July and the almost continuous warm, moist weather favored its spread. By the time the wheat was in head most of the leaves were heavily infected, and were dead when the heads were filling. The abundant moisture also favored lawn diseases of many kinds normally not present. The number and severity of diseases on stems and leaves of legumes also increased over that of other years (B.J. Sallans).

Precipitation from April 1 to June 30, in Manitoba in 1963, was considerably above normal. Frequent rains kept the soil moist and in the Red River Valley and eastern Manitoba it was saturated. From the beginning of July to the end of harvest the precipitation was much below normal with infrequent light showers.

Temperature, on the other hand, was normal from April to June and considerably above normal during July and August. Under these conditions both field and garden crops developed lush and heavy growth with shallow root systems. These conditions also favoured rapid multiplication and spread of plant diseases and pests with the result that crops that indicated heavy yields before the onset of the hot, dry period, matured early or were killed prematurely with disappointing yields (W.J. Cherewick).

The weather of 1963 had a marked effect on certain diseases and non-pathological disorders in crops in southwestern Ontario. The severely cold winter caused much winter injury in peaches in Essex and Kent counties. Mortality was highest in older trees where it ranged from 10 to 80 per cent. Great variations in mortality occurred among orchards, and the variation among varieties was somewhat less pronounced.

In the absence of an aphid infestation a very low incidence of tobacco etch virus in burley tobacco and pepper crops was observed. The cool, dry and late spring season did not favour early-season activity of the aphids.

A low incidence of foliage diseases of many field and orchard crops was correlated with the spring and summer drought. On the other hand, the severe drought incited boron deficiency in sugar beets. Despite the prolonged drought an excellent canning tomato crop was harvested. The long frost-free period in the autumn, together with the absence of precipitation to cause cracking, reduced losses of harvestable fruit (C.D. McKeen).

An extended damp period from May 6-10 provided the only potential infection period for brown rot of stone fruits in the Niagara Peninsula of Ontario in 1963. It resulted in trace infections that were visible on May 13 and 14. Ensuing dry weather prevented the spread of infection and crops of cherries and peaches were virtually free of fruit rot. A heavy frost on May 24-25 caused considerable damage and resulted in generally poor quality cherry crops at harvest. Continued rains in July and August favored heavy infections of bacterial spot of stone fruits in several areas in the Peninsula (J.H. de Ronde).

Dry conditions prevailed in May and June in the lower St. Lawrence district of Quebec and were not favorable for the initiation of apple scab. Some misses, noted in potato fields, were probably due to these conditions. Mean temperatures for July were two degrees above normal; rainfall was also above normal. Green petal of strawberry was much less prevalent than in the previous year but phyllody of clover was more abundant.

Cool and wet conditions in August and September favored the development of loose smut of oats and barley but loose smut of wheat was virtually absent. The prevailing conditions favored the slow development of late blight of potatoes and eventually tuber rot was more prevalent in this than in other areas of the province. Striking symptoms of bacterial ring rot were evident in both foliage and tubers. Early blight was serious on potatoes grown in sandy soils (H. Genereux).

The crop season in New Brunswick was somewhat delayed due to the heavy snowfall of the previous winter. May was relatively cool and wet and conditions in June were normal except for the occurrence of frequent light rains and high humidity at the end of the month. July was hot and dry, followed by an exceptionally rainy August and September when hours of sunshine were at a record low.

Apple scab infections occurred in mid-May and many infection periods took place when it was impossible to move spray machinery in the orchards. Only vigorously applied control measures subsequent to this period kept fruit scab in check. Frequent rains and high humidity at bloom and harvest favored a high incidence of gray mold rot of strawberries which reached serious proportions in all producing areas. Gray mold was also prevalent on crops such as beans, tomatoes, lettuce and potatoes.

The excessive rainfall and high humidities in August and September were favorable to late blight in potato and tomato crops. It reached epidemic proportions in unsprayed or poorly sprayed fields. Bottom rot of lettuce was widespread and soft rot of brussels sprouts occurred in several fields. An early frost in late September severely damaged many crops, particularly beans for processing, tomatoes and late corn (S.R. Colpitts).

The growing season of 1963 was about normal for vegetable production in N.S. The spring was dry and it was necessary to irrigate extensively in late June to maintain strawberry production. The rainfall was in deficit in July but three well-spaced periods of rainfall in August replaced part of the

earlier water deficit. September was normal for rainfall and October was a bright, sunny month that enabled farmers to harvest crops in good condition. A frost early in September caused extensive damage to the tobacco crop and, in some areas, cut off production of tomatoes. Another frost on October 10th did extensive damage to the apple crop in low-lying areas on the floor of the Annapolis Valley

Late blight of tomatoes and potatoes was found on a cull pile on July 11, about the average time for this area. There were a number of very humid periods when it threatened to spread but spraying and the return of good weather checked its development. Carrot leaf blights appeared as usual, but spraying held them in check. There were serious losses from soft rot when affected potatoes were stored. Aster yellows increased over 1962 but did not develop until late in the season and was not destructive to the carrot crop.

Apple scab was not difficult to control when a full spray schedule was carried out. Ascospores were somewhat later maturing than usual due to a cool, backward April. The first discharge was recorded on May 6, at which time the apple buds were still closed. Buds opened very slowly until about May 23, which was followed by a week of very warm weather. This resulted in full bloom at about the usual time, during the first week in June. The most serious apple scab infection period was on June 6-7, towards the end of bloom, at which time some orchards were not well protected. There were four infection periods in May, four in June and five in July. Some late scab showed up near harvest, particularly on McIntosh and Cortland (R.G. Ross).

In Prince Edward Island, moisture conditions were ideal for plant growth during the entire growing season. A warm July was followed by a relatively cool August so that there was some delay in maturity of tomatoes, corn, tobacco and grain. Excellent fall weather aided in the harvesting of high quality, disease-free crops. Late blight of potatoes and tomatoes did not reach serious proportions where sprays were regularly applied (G.W. Ayers).

1. DISEASES OF CEREAL CROPS

WHEAT

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BACTERIAL BLACK CHAFF (Xanthomonas translucens). Infection averaged sl. in 7/174 fields in Sask. It was most prevalent in the southeast but 1 sev. affected specimen was seen from the northeast part of the province (R.D.T.).

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

STREAK MOSAIC (virus). The most sev. outbreak of wheat streak mosaic ever to occur in s. Alta. developed on winter wheat in the fall of 1963. Infection was especially sev. in the Claresholm, Barons, Granum, Lethbridge, Wrentham and Warner areas. In contrast, no sev. affected crops were found in the Spring Coulee, Cardston, Glenwood or Pincher Creek districts. Losses are expected to be heavy (R.G. Atkinson, J.T. Slykhuis). It was rated 1-tr. 1-sl. 1-mod. 3-sev./17 spring wheat fields in s. Alta. (J.S.H., R.G.A.).

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

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

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

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

SPLOTCH (physiological) was sev. in 1 field of durum wheat in s.-e. Sask. (R.D.T.).

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

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

OATS

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

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

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

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

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

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

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

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

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

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

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

BARLEY

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

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

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

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

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

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

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

LEAF RUST (Puccinia hordei) was 3-tr. 1-sl. 1-mod./51 fields surveyed in Sask. (B.J.S.). It was sl. and late on spring barley and tr. on winter barley in the Ottawa, Ont. area (R.V.C.).

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

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

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

LOOSE SMUT (Ustilago nuda, U. nigra). Infection in s. Alta was 1-tr./8 fields (J.S.H., T.G.A.) and in Sask. was 3-tr./54 fields (B.J.S., R.D.T.). In Man. 22/57 fields were infected with U. nigra with rates from tr-3% and 25/57 with U. nuda at rates from tr.-7% (J.N.). Loose smut was tr.-sl. in spring barley in the Ottawa, Ont. district (R.V.C.).

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

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

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

TIP DIEBACK (cause unknown) was tr. in 1 field nr. Pincher Creek, Alta. (J.S.H., T.G.A.).

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

RYE

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

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

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

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

II DISEASES OF FORAGE AND OTHER FIELD CROPS

A. FORAGE LEGUMES

ALFALFA

BLACK STEM (Ascochyta imperfecta) was found in all 35 fields examined in Sask. It was sl. in fields cut for hay early in July but sev. in fields left for seed (H.W. Mead).

WINTER CROWN ROT (low-temperature basidiomycete) was rated 2-tr.-sl. 1-sl.-mod. 1-mod.-sev./4 fields surveyed in the Edmonton - Lacombe districts, Alta. (J.B. Lebeau). It was less sev. in Sask. than in the 2 previous years (H.W.M.).

SUMMER BLACK STEM (Cercospora zebrina). Infection was sl. in 5/35 fields in Sask. (H.W.M.).

ANTHRACNOSE (Colletotrichum destructivum). This organism was obtained from blackened stems in Petri dish culture in Sask. (H.W.M.). Previous reports, to the Survey, of this organism have all been from eastern Canada (D.W. Creelman).

BACTERIAL WILT (Corynebacterium insidiosum). Infections were 24-tr.-sl. 13-sl.-mod, 15-mod.-sev./88 fields surveyed in s. Alta. This represents an increase over its incidence in 1962 (E.J. Hawn). Slight infection was found in 2/35 fields in Sask. (H.W.M.).

STEM NEMATODE (Ditylenchus dipsaci) was rated 6-sl, 4-mod. 2-sev./88 irrigated stands examined in s. Alta. (E.J.H.).

CROWN BUD ROT (Fusarium spp., Rhizoctonia solani, Ascochyta imperfecta) was widespread in irrigated fields in s. Alta., being recorded as 44-tr.-sl. 36-sl.-mod. 2-mod.-sev./88 fields surveyed (E.J.H.).

YELLOW LEAF BLOTCH(Leptotrochila medicaginis) caused minor damage in a field at Lacombe and in 2/3 fields west of Red Deer, Alta. (B. Berkenkamp). Trace -sl. infections were seen in Queens Co., P.E.I. (C.B. Willis).

BLACK STEM (Phoma sp.). Moderate -sev. infections were general and caused a mod. amount of damage in P.E.I. (C.B.W.).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. medicaginis-sativae) was general in P.E.I. where sl.-mod infections caused mod. damage (C.B.W.).

ROOT AND CROWN ROT (various organisms) was encountered throughout P.E.I. in tr.-sl. amounts (C.B.W.).

WITCHES' BROOM (virus) was widespread in the north Okanagan, Cache Creek and Prince George districts of B.C. (M.J. Pratt).

WINTER KILLING caused mod.-sev. losses in 10/35 fields surveyed in Sask. where records showed lower than usual soil temperatures. Most varieties were damaged in plots at Saskatoon where Rambler was the most resistant. Distinct varietal differences were evident at Indian Head. Reports from other provincial points indicated losses as high as 80% (H.W.M.).

COMMON CLOVERS

SNOW MOLD (low-temperature basidiomycete). A sl.-mod. infection was observed in a field of T. pratense and damage was sev. in a field of T. hybridum in the Lacombe, Alta. district (J.B. Lebeau).

SOOTY BLOTCH (Cymadothea trifolii) was tr. on T. repens at Lacombe, Alta. (B. Berkenkamp) and very sev. infections, causing mod-sev. damage, developed on T. repens, T. pratense and T. hybridum in P.E.I. as the season progressed (C.B. Willis)

POWDERY MILDEW (Erysiphe polygoni). Light infections, discernable only with a hand lens, developed on T. hybridum in the Vancouver, B.C. area. This disease has not previously been observed on the B.C. coast (H.N.W. Toms). Infection was 5-10% in 2 fields of T. hybridum and 10% in 3/4 stands of T. pratense west of Red Deer, Alta. (B.B.). Trace-sl. infections were general on T. hybridum, T. pratense and T. repens in P.E.I. (C.B.W.).

NORTHERN ANTHRACNOSE (Kabatiella caulivora). Damage ranged from 5-20% in 6/7 fields of T. pratense examined west of Red Deer, Alta. Severe infections developed in seed fields (B.B.). Trace-sl. infections were general on the same host in P.E.I. (C.B.W.).

BLACK STEM (Phoma sp.) was rated tr.-mod. in many fields of T. pratense and T. hybridum in P.E.I. and caused a slight amount of damage. It was more prevalent on T. pratense (C.B.W.). see note on Phoma trifolii in C.P.D.S. 42: 2.39. 1962 (D.W. Creelman).

ROOT ROT (Plenodomus meliloti) caused tr.-sl. damage on clovers north and northwest of Edmonton (W.P. Skoropad) and minor damage in 2/3 clover fields in the Lacombe, Alta. district (B.B.).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. trifolii-pratensis). Slight-mod. infections on T. pratense and T. hybridum caused sl. damage throughout P.E.I. It was particularly prevalent on newly-seeded red clover (C.B.W.).

TARGET SPOT (Stemphylium sarcinaeforme) was general as tr.-sl. infections on T. pratense in P.E.I. (C.B.W.).

RUST (Uromyces nerviphilus (Grognot) Hotson). Ladino clover (T. repens) was 10% infected at La Pocatiere, Que. This is the first report, to the Survey, of this rust although there is a collection in DAOM, Ottawa from the same locality as well as another from Que., 1 from Ont. and 2 from B.C. A collection from La Pocatiere, taken in mid-Oct. clearly demonstrated the presence of repeating aecia in this species (H. Genereux, D.B.O. Savile, D.W.C.).

RUST (Uromyces trifolii) was sl. on T. hybridum in the Vancouver, B.C. area (H.N.W.T.) and tr. on T. repens at Lacombe, Alta. (B.B.). Traces were found on T. pratense var. Dollard at Ste. Anne de Bellevue, Que. (H.G.). and infections, though slight, were quite extensive in older plantings of T. pratense, T. repens and T. hybridum in P.E.I. (C.B.W.).

ROOT AND CROWN ROTS (various organisms) caused extensive damage to stands of T. pratense, T. repens and T. hybridum throughout P.E.I. (C.B.W.).

MOSAIC (virus). White clover mosaic virus (WCMV) and clover yellow mosaic virus (CYMV) were found affecting T. repens, both the white Dutch and Ladino strains, T. pratense and T. hybridum near the sea coast of the Lower Fraser Valley, B.C. Bean yellow mosaic virus (BV-2) was found in some fields of T. pratense in the Lower Fraser Valley and in the Okanagan Valley. WCVM, CYMV and alfalfa mosaic virus, in that order of importance, were widespread on Ladino in the Okanagan Valley (M.J. Pratt). Mosaic affected up to 70% of T. pratense in an experimental plot and was tr. in 1 field at Lacombe, Alta. (B.B.). Symptoms on T. pratense in P.E.I. included a distinct vein clearing (C.B.W.).

PHYLLODY (clover phyllody virus). Trace infections were seen on T. repens (White Dutch) at Lacombe, Alta. (B.B.). At La Pocatiere, Que. a plot of ladino was 80% affected and damage was sev. (H.G.). Severely infected plants of both T. hybridum and T. pratense were common in hay fields and strawberry plantings at Kentville, N.S. (K.A. Harrison). Trace - 5% infections were commonly encountered in T. pratense, T. repens and T. hybridum in P.E.I. The last species was the most affected (C.B.W.).

BLACK MEDIC

MOSAIC (virus). Bean yellow mosaic virus was commonly seen on black medic escapes in the Okanagan Valley, B.C. (M.J. Pratt).

SWEET CLOVER

STEM CANKER (Ascochyta caulicola) caused slight damage to most varieties at Saskatoon, Sask. (H.W. Mead).

SUMMER BLACK STEM (Cercospora zebrina). Average damage was mod. in 8/10 fields observed in Sask. Severe stem lesioning and early defoliation occurred in varietal tests at Saskatoon. Infection was least on the varieties Madrid and Gold Top and most sev. on selections N-10 and N-13 (H. W. M.).

ROOT ROT (Fusarium spp.) caused mod.-sev. damage in 5/10 fields surveyed in Sask. In plots at Saskatoon, flowering plants wilted suddenly. An examination of the roots showed a complete rotting of the cortex. Fusarium acuminatum, F. oxysporum and F. solani were isolated (H. W. M.).

ROOT ROT (Phytophthora cactorum) was sev. in a stand nr. Lethbridge, Alta. (J.B. Lebeau).

MOSAIC (virus) Bean yellow mosaic virus was observed in sweet clover escapes in the Okanagan Valley, B.C. (M.J. Pratt).

WINTER KILLING caused mod.-sev. damage in 5/10 fields surveyed in Sask. It was especially sev. in plots at Saskatoon where soil temperatures were lower than normal in the early part of the 1962-63 winter (H. W. M.).

B. OIL SEED CROPS

FLAX

ALTERNARIA BLIGHT (A. linicola) caused slight injury at Davidson, Sask. (T. C. V.).

RUST (Melampsora lini) was rarely encountered in Sask. The susceptible variety Redwing is no longer recommended for n. Sask. (T. C. Vanterpool).

SEEDLING BLIGHT (Rhizoctonia praticola) was sl. in late June at Davidson and sl.-mod. in mid-July at Melfort, Sask. (T. C. V.).

PASMO (Septoria linicola) was more commonly seen than usual at Ottawa, Ont. Infections were rated tr.-mod. (R. V. Clark).

LATE ROOT ROT (various organisms) caused slight damage at Saskatoon (T. C. V.).

ASTER YELLOWS (aster yellows virus). Trace amounts were found in all fields examined in the Lacombe, Alta. district (B. Berkenkamp). There was up to 50% infection in late-seeded fields in the Inter-lake region of Man. but very little infection outside the Red River Valley (W. C. McDonald).

ZINC DEFICIENCY caused stunting and white or pale brown leaf spotting nr. Perduc, Sask. The affected areas in the field corresponded to old burned straw piles. It is probable that the last burnings occurred in the late 1930's. Samples were also received from Ogema (T. C. V.).

MUSTARD

WHITE RUST (Albugo cruciferarum) was observed on mustard in the Parkbelt district of Sask. (T.C. Vanterpool).

LEAF SPOT (Alternaria spp.) was present in the Parkbelt area of Sask. (T.C.V.).

WILT (Fusarium spp.) was seen on mustard in Sask. (T.C.V.).

DOWNY MILDEW (Peronospora parasitica) caused severe distortion to plants near a shelter belt west of Lacombe, Alta. (B. Berkenkamp).

BASAL STEM ROT (Sclerotinia sclerotiorum) was seen in the Parkbelt district of Sask. (T.C.V.).

RAPE

WHITE RUST AND STAGHEAD (Albugo cruciferarum). Moist conditions in Sask. in 1963 accounted for a greater than usual prevalence of this disease. Five fields with 3-10% infection were found at Valparaiso, Tisdale, Nipawin, Spalding and Meadow Lake. A field at Glaslyn showed sl. infection of the late green side branches (T.C. Vanterpool).

BLACK AND GRAY SPOT (Alternaria brassicae, A. raphani). Alternaria spp. were isolated from pod lesions, sometimes penetrating and infecting the seed, at Lacombe, Alta. (B. Berkenkamp). Stem lesioning was conspicuous in some northern fields in Sask. and the disease extended further south than usual. Platings of seed from Dorintosh, Meadow Lake, North Battleford, Nipawin, Carrot River and Melfort showed all samples to be carrying unusually high percentages of A. brassicae. A. raphani was less commonly encountered. The higher incidence of Alternaria lesioning in swathed than in standing fields was shown to be due to A. tenuis (T.C.V.).

POWDERY MILDEW (Erysiphe polygoni). Two late-maturing plots at Saskatoon, Sask. were heavily infected in Oct. (T.C.V.).

RING SPOT (Mycosphaerella brassicicola) was very prevalent in fields in n. Sask. where it was the most common rape disease in the parkbelt. It develops late in the life of the plant and does not seem to be of great importance (T.C.V.).

BASAL STEM ROT (Sclerotinia sclerotiorum). Infection in Sask. was rated tr. in several fields, 1-5% in 1 and 5-20% in 1 (T.C.V.).

ASTER YELLOWS (aster yellows virus). Traces could be found in most fields in Sask. just before harvest. One field with 5% infected plants was seen nr. Spalding. Incidence was the highest since 1957 (T.C.V.). Trace infections were common in Man. (P.H. Westdal, H.P. Richardson).

SAFFLOWER

LEAF SPOT (Alternaria carthami) was prevalent on all varieties at Ottawa, Ont. (R.V. Clark).

HEAD BLIGHT (Botrytis cinerea). Slight infections occurred at Ottawa, Ont. (R.V.C.).

RUST (Puccinia carthami). Infection at Ottawa, Ont. was rated generally slight (R.V.C.).

SOYBEAN

ROOT INFECTION (corynespora cassiicola (Berk. & Curt.) Wei). This organism was found fruiting on roots of soybean plants in experimental plots at Ottawa, Ridgetown and Harrow, Ont. There was no evidence of foliar symptoms or root rot as reported in the U.S.A. (W.L. Seaman).

STEM CANKER (Diaporthe phaseolorum var caulivora) affected up to 10% of Lincoln at Ridgetown, Ont. and less than 1% of Harmon, Hawkeye and Ford. It was observed on Lincoln and Clark at Harrow (W.L.S.).

POD AND STEM BLIGHT (Diaporthe phaseolorum var sojae) was less prominent than in 1962 at Ottawa, occurring primarily on the early-maturing varieties Comet and Merit. At Ridgetown, only the varieties Merit and Chippewa were affected. Stems of Merit were moderately affected at Harrow (W.L.S.).

SUNFLOWER

DOWNY MILDEW (Plasmopara halstedii) was tr. in 14 fields of hybrid varieties and sev. in 1 field each of Mennonite and Peredovik. Losses in these 2 fields were high (J.A. Hoes, E.D. Putt).

RUST (Puccinia helianthi). Intensity of infections ranged from tr.-60% on 80-100% of the plants in all fields of Mennonite and Peredovik. It was sl. in 1/14 fields of hybrid varieties (J.A.H., E.D.P.).

BASAL STEM ROT (Sclerotinia sclerotiorum) was mod. in isolated localities throughout c. Alta. (W.P. Skoropad). Infection was 5-10% at Codette and 5-15% at Tisdale in n.-e. Sask. (T.C. Vanterpool). In Man. it was rated 17-tr.-2%. 2-5%/49 fields surveyed (J.A.H., E.D.P.).

LEAF SPOT (Septoria helianthi). Trace infections were found in 5/49 fields in Man. (J.A.H., E.D.P.).

LEAF MOTTLE (Verticillium albo-atrum) was widespread in Man. though losses were less than in 1962. Infections were rated 36-sl. 5-mod. 5-sev./49 fields (J.A.H., E.D.P.).

WILT (Verticillium dahliae) was found, for the first time on sunflowers, at Summerland, B.C. in a field that had previously grown Verticillium - susceptible crops (G.E. Woolliams).

ASTER YELLOWS (aster yellows virus). Trace infections were seen in Man. (P.H. Westdal, H.P. Richardson).

LIGHTENING INJURY caused sev. damage in a localized area in a field at Morden, Man. (J.A.H., E.D.P.).

C. ROOT CROPS

SUGAR BEET

LEAF SPOT (Alternaria tenuis) caused slight damage in 2 fields at Sherrington, Que. (R. Crête).

LEAF SPOT (Cercospora beticola) occurred on 100% of the plants in some fields in Man. and caused moderate damage. The importance of crop rotation was clearly demonstrated. All of the seriously affected fields had been cropped to sugar beets or were adjacent to fields that had been (W.C. McDonald). A lighter than usual infection was observed in Kent Co., Ont. Drought conditions mitigated against disease development (C.D. McKeen).

BORON DEFICIENCY. Patches in a 14-acre field nr. Chatham, Ont. showed symptoms of sev. boron deficiency accentuated by drought conditions. Several other fields in Kent Co. showed sl.-mod. symptoms (C.D. McK.).

D. MISCELLANEOUS CROPS

BUCKWHEAT

DAMPING-OFF (Rhizoctonia solani) was sev. at Fredericton in soil, probably potato soil, brought from Bath, N.B. (K.M. Graham).

ASTER YELLOWS (aster yellows virus). Trace infections were observed in buckwheat fields in Man. (P.H. Westdal, H.P. Richardson).

FIELD CORN

NORTHERN LEAF BLIGHT (Bipolaris turcicum). Incidence was exceptionally low in s.-w. Ont. probably due to the lack of prolonged periods of dew during Aug. and Sept. (R.E. Wall).

ROOT AND STALK ROT (Gibberella zeae) was less frequently encountered than in 1962 in Essex and Kent counties. Ont. although infections of up to 30% were seen. In 1962 root invasion was general but in 1963 more of the stalk rot resulted from infection through the leaf sheaths and ear stalks (R.E.W.).

TOBACCO

LEAF SPOT (Alternaria spp.). Spots caused by Alternaria spp. and others of undetermined origin constituted the most serious field diseases of tobacco in s.-w. Ont. in 1963. Losses were incurred through lowering of the grade in infected crops (Z.A. Patrick, L.W. Koch).

BLUE MOLD (Peronospora tabacina) has not been found in Ont. for 9 years. Preventative spray measures are still recommended because air-borne inoculum from the U.S.A. poses a constant threat (Z.A. Patrick, L.W. Koch).

DAMPING-OFF AND SORE SHIN (Rhizoctonia solani, Pythium spp.). Damping-off was the most common seed-bed disorder, occurring in patches in most s.-w. Ont. greenhouses. The overall loss was estimated at 5%. Sore shin was sev. in the field immediately following transplanting (Z.A.P., L.W.K.).

BLACK ROOT ROT (Thielaviopsis basicola) occurred in a few improperly sterilized seedbeds. Field losses in some instances were extremely heavy, as high as 30%. Environmental conditions in 1963 were favorable to the pathogen and even normally-resistant varieties were attacked. Yellow Gold showed high resistance even in fields where the disease was most sev. in 1962 (Z.A.P., L.W.K.).

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

WEATHER FLECK (air pollution) caused slight losses, late in the season, in s.-w. Ont. (Z.A.P., L.W.K.).

YELLOW PATCH (excess nutrients). Losses from this disorder were insignificant in s.-w. Ont. in 1963 (Z.A.P., L.W.K.).

E. CULTIVATED AND OTHER GRASSES

AGROPYRON

Ergot (Claviceps purpurea). Severe infections were seen on A. repens west of Red Deer, Alta. (B. Berkenkamp).

Powdery mildew (Erysiphe graminis). Slight-mod infections were general on A. repens in P.E.I. (C.B. Willis).

Speckled leaf blotch (Septoria elymi). Trace-sl. infections on A. repens were common on P.E.I. (C.B.W.).

Stem smut (Ustilago spegazzinii) occurred generally on A. repens at Trout Creek Point, nr. Summerland, B.C. (G.E. Woolliams).

ALOPECURUS

Leaf fleck (Mastigosporium album). Light infections occurred on A. pratensis at St. John's West, Nfld. (G.A. Nelson).

AVENA

Crown rust (Puccinia coronata). Fifteen -20% infection was noted on A. fatua in Man. in July (W.A.F. Hagborg).

BROMUS

Ergot (Claviceps purpurea) was observed in 4/48 fields of B. inermis surveyed in Sask. One sev. infection was recorded nr. Codette (C. Noviello).

Leaf blotch (Drechslera bromi). Infection averaged 5% in 3/4 fields of B. inermis at Lacombe, Alta. (B. Berkenkamp). Ten/48 Sask. fields showed varying degrees of infection. Infected fields were at Chamberlain, Melfort, Nipawin, Regina and Unity (C.N.).

Powdery mildew (Erysiphe graminis) was tr. in 2 brome fields in the Unity, Sask. district (C.N.).

Bacterial blight (Pseudomonas coronafaciens var atropurpurea) was sl.-mod. in 6/48 fields of B. inermis in Sask., occurring at Craik, Regina, Saskatoon and Unity (C.N.).

Scald (Rhynchosporium secalis). Infection in B. inermis fields in Sask. was rated 4-tr.-sl. 1-mod./48. It occurred at Nipawin, Saskatoon and Unity (C.N.).

Crazy top (Sclerophthora macrospora) was collected on B. inermis in the Edmonton, Alta. district (A.W. Henry, W.P. Skoropad). This is the first report, to the Survey of S. macrospord on Bromus. The Index of Plant Diseases in the United States (U.S.D.A. Agr. Handbk.165) records its occurrence of B. commutatus in Key., Tenn. and possibly Oreg. (D.W. Creelman)

Leaf spot (Selenophoma bromigena). Infection averaged 5% in 3/3 fields of Manchor brome examined at Lacombe, Alta. (B.B.). It was observed in 45/48 brome fields surveyed in Sask. and it was very sev. in 9 fields at Melfort, Regina, Unity, Saskatoon and Zealandia. Great differences in susceptibility were evident among clones at Saskatoon (C.N.). Infection was mod. on B. inermis at St. John's West, Nfld. (G.A. Nelson).

Leaf spot (Septoria bromi) was sl. in 1 brome field at Prince Albert and in 1 at Saskatoon, Sask. (C.N.).

Smut (Ustilago bullata) was common on B. tectorum at Summerland, B.C. (G.E. Wooliams).

Stripe blight (Xanthomonas translucens f. sp. cerealis) was observed on B. inermis in plots at Saskatoon and was sev. in 1 field nr. Unity, Sask. (C.N.). This disease of brome has not been previously reported to the Survey (D.W.C.).

CALAMAGROSTIS

Gall nematode (Anguina graminophila (Goodey, 1933) Christie, 1959) was collected on C. canadensis at Rupert and St. Martin, Que. (B.E. Hopper). This nematode has not previously been reported from Canada. Anguina agrostis (Steinbuch, 1799) Filipjev, 1936 was collected on Agrostis tenuis and Poa pratensis at 3 locations in N.S. in 1942. see C.P.D.S. 22:34 1943 (D.W. Creelman).

DACTYLIS

Leaf spot (Mastigosporium rubricosum) was tr. on D. glomerata in a single planting nr. Charlottetown, P.E.I. (C.B. Willis)

FESTUCA

Anthracnose (Colletotrichum graminicola) was widespread and sometimes serious on F. rubra in lawns at Saskatoon, Sask. (C. Noviello).

HORDEUM

Head smut (Ustilago bullata) was sev. in a field of H. jubatum at Brooks, Alta. (J.S. Horricks, T.G. Atkinson).

PHLEUM

Leaf speckle (Selenophoma donacis). Moderate infections were found on P. pratense at St. John's West, Nfld. (G.A. Nelson).

Stripe smut (Ustilago striiformis). Infection was tr. on a half-acre plot of timothy, var. Drummond at Macdonald College, Que. (H. Genereux)

Chemical injury. Distortion of heads at Nipawin, Sask. was attributed to herbicide injury (B.J. Sallans).

POA

Powdery mildew (Erysiphe graminis). Trace infections were seen on P. pratensis (Kentucky blue grass) at Lacombe, Alta. (B. Berkenkamp). Infection was very heavy on Merion blue grass in a large, new lawn at Aylmer, Que. in Oct. It was also observed on P. pratensis, especially in

shady areas, in many Ottawa lawns (D.W. Creelman). Slight infections were general in Queens Co., P.E.I. (C.B. Willis).

Stem rust (Puccinia graminis) was sev. causing considerable browning and death of Merion blue grass at Aylmer, Que. (D.W.C.).

Leaf rust (Puccinia poae-nemoralis) was observed on P. pratensis in several lawns at Saskatoon, Sask. in Aug. Damage was generally light but 1 infection was rated sev. (C. Noviello).

SETARIA

Kernel smut (Ustilago neglecta) occurred extensively on S. viridis growing as a weed at Summerland, B.C. (G.E. Woolliams).

LAWNS AND TURF

Snow mold (low-temperature basidiomycete).. Damage to turf in s. Alta. was rated 1-tr. 4-sl. 1-mod. (J.B. Lebeau). Several lawns in Saskatoon, Sask. were affected. Damage was mostly mod. and most lawns recovered (C. Noviello).

Melting-out (Bipolaris sorokiniana, Drechslera poae (Baudys) Shoem. = D. vagans (Drechs.) Shoem.) (see Shoemaker, R.A. Can. J. Bot. 40: 808-846, 1962). Infection by B. sorokiniana was rated 5-sev. on turf grass at Lethbridge, Alta. (J.B.L.).

The two organisms caused mod. damage to many lawns at Winnipeg, Man. especially where rotary mowers were used and the clippings not removed (W.C. McDonald). D. poae caused a trace of injury nr. Charlottetown, P.E.I. (C.B.W.).

Anthracnose (Colletotrichum graminicola) caused browning of several lawns at Edmonton, Alta. Damage was associated with high temperatures and high humidity that favored a heavy thatch (W.P. Skoropad).

Powdery mildew (Erysiphe graminis). Late-season infections were common at Saskatoon, Sask., particularly in shaded areas. It was prevalent on Merion blue grass but damage was light (C.N.).

Leaf, root and crown diseases ("Helminthosporium" spp.) At Saskatoon, Sask. there was a widespread occurrence of leaf, crown and root lesions caused by "Helminthosporium" species. These developed from May through to fall. Damage was sev. in some cases and some lawns required reseeding or resodding. Merion blue grass, generally considered resistant, was sev. affected (C.N.).

Fairy ring (Lepiota naucina, Marasmius oreades, Agaricus arvensis). The two first-named species were common, but not serious, in lawns at Saskatoon, Sask. (C.N.). M. oreades caused sev. damage in 8 lawns at Lethbridge, and fairy rings caused by A. arvensis were present on rangeland at Stavely, Alta. (J.B.L.).

Brown patch (Rhizoctonia solani) was sev. in 2 turf areas at Lethbridge, Alta. (J.B.L.) and caused 10% damage in a planting of Poa pratensis at Fredericton, N.B. (K.M. Graham, R.G. White).

Dollar spot (Sclerotinia homeocarpa) was isolated from golf course turf at Harrison, nr. Agassiz, B.C. (H.S. Pepin).

Snow mold (Typhula sp.). Damage was widespread and sev. in the Ottawa, Ont. district in the spring of 1963. Typhula sp. was isolated in the one case investigated but other organisms may have been involved in the overall outbreak (D.W. Creelman).

Blight (various organisms). Dead patches of varying sizes were observed in lawns in Saskatoon, Sask. in late April and early May. Isolations yielded Bipolaris sorokiniana, Pythium spp., Drechslera poae, Fusarium culmorum, F. acuminatum and F. equisiti (C.N.).

III DISEASES OF VEGETABLES

ASPARAGUS

CROWN INJURY (low winter temperatures). Extreme winter temperatures, dry soil conditions, and lack of cover combined to cause 10-15% injury in some fields in Colchester Twp., Ont. Yields were reduced and growers discontinued cutting early. Subsequent fern growth was good (J. Rainforth).

FROST INJURY. Heavy frosts on May 7 and 13 froze asparagus shoots in Annapolis and Kings counties, N.S. (K.A. Harrison).

BEAN

POD SPOT (Bipolaris sorokiniana) was mod. on approx. 1000 acres of snap beans at Florenceville, N.B. late in Aug. causing black lesioning on the pods. The weather was extremely wet in the area (K.M. Graham, S.R. Colpitts, R.A. Shoemaker). This organism has not been previously reported to the Survey as a pathogen on Phaseolus (D.W. Creelman).

GRAY MOLD (Botrytis cinerea) affected 1,400 acres of beans at Florenceville, N.B. during wet weather in Aug. Blossoms, foliage and pods became infected and harvested beans left in the field for 12 hours become a complete loss (S.R.C.). Trace amounts only were seen in Kings Co., N.S. (K.A.H.).

ANTHRACNOSE (Colletotrichum lindemuthianum) was widespread in gardens and among small growers in N.B. Large commercial growers had only a trace. Some small plantings were 80% affected (S.R.C.).

ROOT ROT (Fusarium solani f. phaseoli). Moderate damage was recorded in 2/20 fields examined in s.-w. Ont. The affected variety was Michelite (R.M.D. Sutton, V.R. Wallen).

HALO BLIGHT (Pseudomonas phaseolicola) was sev. in 1 field at Coaldale, Alta. in July and 2-tr. 1-sl./5 fields nr. Taber in Aug. Mod. damage was found in 2 gardens at Lethbridge (F.R. Harper). About 40% of the gardens and small plantings in N.B. were affected. Average damage was 10% (S.R.C.).

STEM CANKER (Rhizoctonia solani). Post-emergence damping-off and cankering resulted in poor stands in a commercial planting in the Montreal, Que. area (A.E. Straby). About 40% loss occurred in beans on old potato land in a 250-acre field at Florenceville, N.B. (S.R.C.).

SCLEROTINIA WILT (S. sclerotiorum) occurs on pole beans in peat soils in the Lower Fraser Valley, B.C. It is thought that most of the damage is done at the 2-leaf stage but the white mold is seen each year high up on mature plants (H.N.W. Toms). One/20 fields inspected in

s.-w. Ont. was severely affected. The habit of growth of the affected variety, Saginaw, seems to render it susceptible (R.M.D.S., V.R.W.). Trace amounts of pod infection were found in 1,400 acres at Florenceville, N.B. (S.R.C.).

RUST (Uromyces phaseoli var typica). Three fields of Sanilac, 2 of Seaway and 1 of Saginaw had tr. infections /20 examined in s.-w. Ont. (R.M.D.S., V.R.W.).

BACTERIAL BLIGHT (Xanthomonas phaseoli) was sl. in several gardens at Saskatoon and specimens were received from Montmarte, Sask. (R.J. Ledingham). Trace infections occurred in 10/20 fields surveyed in s.-w. Ont. None was seen in fields planted with Michigan-grown seed. The dry season limited spread in infected fields (R.M.D.S., V.R.W.). Damage was sl.-mod. in 10 acres of a new variety of beans nr. St. Jean, Que. (R. Crête). Brittle Wax, Pencil Pod and Contender were all severely infected late in the season at La Pocatiere, Que. (H. Genereux).

MOSAIC (virus) affected about 20% of the beans planted near gladiolus at Kentville, N.S. Plants were affected as they began to fruit and pods were badly deformed (K.A.H.).

CHEMICAL INJURY. A combination of injuries from fertilizer burn and a pre-merge weedkiller caused the discing-in of 5-acre field at Port Williams, N.S. (K.A.H.).

SUNSCALD affected the upper foliage of 20% of the plants on 1,000 acres at Florenceville, N.B. Yields did not seem to be affected (S.R.C.).

WIND DAMAGE. High winds in late May caused heavy damage to snap beans along Lake Erie south of Harrow, Ont. Thirty-40 acres were reseeded (J. Rainforth).

BEET

LEAF SPOT (Cercospora beticola) is seen in almost all beet fields in the Montreal, Que. region but damage is not sufficiently serious to necessitate the use of fumgicides (E. Lavallée).

LEAF SPOT (Phoma betae) was tr. on Detroit Dark Red at Port Williams, N.S. (C.O. Gourley).

DAMPING-OFF (Phoma betae, Pythium spp.) was responsible in part for a poor stand in a field nr. Taber, Alta. (F.R. Harper).

DAMPING-OFF (Rhizoctonia solani). Late damping-off, when the beets were a few inches high, occurred on a number of farms in Kent Co., Ont. (J. Rainforth).

SCAB (Streptomyces scabies) affected 2% of the variety Ruby Queen in a garden at Kentville, N.S. (K.A. Harrison).

BORON DEFICIENCY caused about 10% loss in a 50-bu. crop at Somerset, N.S. (K.A.H.).

BROCCOLI

BORON DEFICIENCY affected 40% of the plants in 3 fields at Florenceville, N.B. Subsequent breakdown allowed invasion by soft-rot organisms (S.R. Colpitts).

BRUSSELS SPROUTS

CLUB ROOT (Plasmodiophora brassicae). Damage was about 5% in a 7-acre field at Rexton, N.B. (S.R. Colpitts)

SOFT ROT (Rhizoctonia solani, Fusarium spp.) was prevalent in most fields observed in the Rogersville, N.B. area. Cool, wet weather favored the disease (S.R.C.).

BLACK ROT (Xanthomonas campestris). Slight infection was evident as blackening of vascular tissues at Kensington, P.E.I. (G.W. Ayers).

WHIPTAIL (molybdenum deficiency) was tr. in 7 fields observed at Rogersville, N.B. (S.R.C.).

INTERNAL BROWNING (cause unknown) was mod. at Kensington, P.E.I. Over-maturity is suspected to be the cause (G.W.A.).

CABBAGE

SCLEROTINIA ROT (S. sclerotiorum) affected 5% of the plants in a 15-acre field at Napierville, Que. (R. Crête).

BLACK ROT (Xanthomonas campestris) caused slight losses in a market garden at Lethbridge, Alta. (F.R. Harper). Infection was 75% in a field at Winnipeg, Man. (W.A.F. Hagborg).

CARROT

CROWN GALL (Agrobacterium tumefaciens) was identified from symptoms on a specimen received at Winnipeg, Man. (W.A.F. Hagborg).

LEAF BLIGHT (Alternaria dauci) was rated tr.-sl. in 10 fields surveyed at Ste. Clothilde and Sherrington, Que. (R. Crête, J. Simard, T. Simard). Same late-harvested fields in N.S. were defoliated (K.A. Harrison).

STORAGE ROTS (Botrytis cinerea, Sclerotinia sclerotiorum, bacteria) affected 25% of the roots of a lot in storage at Berwick, N.S. Isolations yielded 39% B. cinera, 11% S. sclerotiorum and 33% unidentified bacteria (C.L. Lockhart).

LEAF BLIGHT (Cercospora carotae). Carrots in the St. Janvier district, Terrebonne Co., Que. are often defoliated to a point where machine harvesting is impossible. Three applications of maneb in Aug. and Sept. gave excellent control on one farm in the district (E. Lavallée). Infection was tr.-sl. in 10 fields surveyed at Ste. Clothilde and Sherrington, Que. (R.C., J.S., T.S.) and was sl. on the variety Nantes at Berwick, N.S. (K.A.H.).

ROOT-KNOT NEMATODE (Meloidogyne sp., probably M. hapla). The carrot-producing area of Terrebonne Co., Que. is infested in varying degrees with root-knot nematodes. Some fields have an estimated 60% of the roots deformed through nematode infection (E.L.).

SCLEROTINIA ROT (S. sclerotiorum) caused mod. damage in scattered localities in c. Alta. (W.P. Skoropad). It was sev. in roots in storage at Sheffield and specimens were received from Point du Chêne, N.B. (K. M. Graham, C.E. Smith).

ASTER YELLOWS (aster yellows virus) was tr. in a garden at Ranier, Alta. (F.R. Harper) and sl. at Saskatoon, Sask. (R.J. Ledingham). Losses up to 33% occurred in Man. (P.H. Westdal, H.P. Richardson). Mild foliar symptoms and a slight amount of hairy root were observed in a home garden at Ottawa, Ont. (D.W. Creelman). In Kings Co., N.S., it was not uncommon to find 5% hairy root and 15% top symptoms in Nov. (K.A.H.). Infections of 10-15% caused mod. damage in Queens Co., P.E.I. (L. Thompson).

STORAGE ROT (cause unknown). Carrots held in polyethylene bags in cool storage at Lethbridge, Alta. were affected by a sharply delimited rot that was dark brown and slightly sunken on the surface and colorless in the interior (F.R.H.).

CAULIFLOWER

DOWNY MILDEW (Peronospora parasitica). Infection was extensive in cold frames in Essex Co., Ont. but after transplanting the change in environment seemed to check the disease. Overall damage was slight (J. Rainforth).

LEAF DROP (Rhizoctonia solani) was tr. in the variety Snowball at Kentville, N.S. Infection occurred where midrib of outer leaves touched the soil (K.A. Harrison).

ROOT ROT (Rhizoctonia solani) was seen in a garden at Lethbridge, Alta. (F.R. Harper).

WIRESTEM (Rhizoctonia solani). Several instances of this disease were observed in the Annapolis Valley, N.S. in 1963. Damage was 10% in a field at Canning (K.A.H.).

BLACK ROT (Xanthomonas campestris). In one Man. field 100% of the plants were infected (W.A.F. Hogborg).

WHIPTAIL (molybdenum deficiency). Some varieties and lines in a test at Sheffield Mills, N.S. were 100% affected. Varietal differences in susceptibility were evident throughout the test (K.A.H.).

CELERY

BROWN SPOT (Cephalosporium apii). Moderate infection, sufficient to render the crop unacceptable for soup purposes, occurred in a field nr. Portage la Prairie, Man. on which celery had been grown in 1962. The pathogen was isolated from brown discolorations on the inner surface of the petioles (W.C. McDonald). Two previous reports, to the Survey, of this disease have both been from Ontario (D.W. Creelman).

BACTERIAL BLIGHT (Pseudomonas apii). Infection on the varieties Utah 10-B and Utah 1611 was rated 2-tr. 3-mod./5 fields in the Ste. Clothilde-Sherrington district of Que. A 5-acre field of Utah 10-B was severely infected at St. Hyacinthe, Que. (R. Crête, J. Simard, T. Simard).

ASTER YELLOWS (aster yellows virus) caused losses of about 33% in celery crops in Man. (P.H. Westdal, H.P. Richardson).

CUCUMBER

LEAF SPOT (Alternaria spp.). Cucumbers at Greenwich, N.S. were 100% infected. Some of the infection on the variety Marketeer seemed associated with scab infection. That on Highmoor was a mixture of Alternaria and angular leaf spot (K.A. Harrison).

STEM ROT (Botrytis cinerea) was not a serious problem in the spring crops in Essex Co., Ont. but it was prevalent in the fall crop in both glass and plastic greenhouses. Low night temperatures were a contributing factor (J. Rainforth). There was a tr. infection in a greenhouse at Rogersville, N.B. (S.R. Colpitts).

SCAB (Cladosporium cucumerinum) was observed on fruits of a pickling variety on Lulu Island, B.C. Loss was sl. This disease has not previously been reported from B.C. and it is thought that the infection was the result of contaminated imported seed (H.N.W. Toms). In Essex Co., Ont. scab was occasionally seen in field crops. It was sev. in some plastic greenhouses in the spring crop and in glasshouses in the fall crop (J.R.).

Scab is a major problem in the Montreal area, Que. At L'Assomption, traces were seen on 26 Aug. and the disease gradually increased in severity until 60-70% of the fruits were infected on 12 Sept. At St. Amable, Vercheres Co., the crop of a 4-5 acre field was more than 80% infected. August was particularly rainy, cool and humid. In trials at L'Assomption the variety Wondermoor was significantly less susceptible to scab than Ashley, Hybrid Marketeer and Palomar. It showed 4.1% infection compared to 21.7, 32.9 and 31% for the other varieties. Fungicide trials at the same station with captan, 3 lb.; maneb, 2 lb.; and Polyram 3 lb. resulted in infections of 11.5, 11.5 and 14.3%, respectively, as compared with 20% infection in the unsprayed plots. (E. Lavallée). Scab was general and sometimes sev. in both commercial fields and home gardens in N.B. (S.R.C.). Marketeer was 100% infected at Greenwich, N.S. Highmoor, growing adjacent to it, seemed free of the disease. A trace infection was seen on Burpee Hybrid in a plastic house at Grand Pre (K.A.H.).

BACTERIAL WILT (Erwinia tracheiphila) was tr. in a field of pickling cucumbers in Kent Co., Ont. (C.D. McKeen). This disease is of secondary importance in the Montreal region, Que. since growers are particularly careful to control cucumber beetles with sprays or dust containing methoxychlor. A trace infection was seen at St. Augustin (E.L.).

POWDERY MILDEW (Erysiphe communis) was responsible for substantial damage to greenhouse crops in Essex Co., Ont. Cloudy weather in Feb. and March rendered the plants very soft and susceptible to spray injury. It was also a serious problem in field crops (J.R.). Trace infections were seen in a greenhouse at Falmouth, N.S. (K.A.H.).

ANGULAR LEAF SPOT (Pseudomonas lachrymans) was sl. in a field nr. Taber and caused some fruit rot in a garden at Lethbridge, Alta. (F.R. Harper). Injury was sl. in 2 gardens at Saskatoon, Sask. (R.J. Ledingham). Infection was sev. in 3 fields at Ile Jésus, Que. After scab, this is the most important cucumber disease in the Montreal district. Captan and maneb sprays give some control (E.L.). About 30% of the fields visited in N.B. were affected (S.R.C.).

DAMPING-OFF (Pythium debaryanum). In the Montreal, Que. region, seedlings in greenhouses and cold frames are particularly subject to damping-off each year. Little trouble is encountered where growers disinfect the seed beds with thiram and spray with captan 1-100 at transplanting (E.L.).

SCLEROTINIA WILT (S. sclerotiorum) was tr. in a greenhouse at Falmouth, N.S. (K.A.H.).

ROOT ROT (cause undetermined) caused sev. damage in some greenhouses in Essex Co., Ont. The disease occurs to some extent each year, being most serious in the early part of the growing season. Extremely low temperatures and resulting cold soils appeared to contribute to its severity in 1963 (J.R.).

MOSAIC (cucumber mosaic virus) was tr. on Burpee Hybrid at Kentville, N.S. (K.A.H.).

CHEMICAL INJURY. Planting of cucumbers before all traces of the soil fumigant Vorlex had escaped resulted in the complete loss of plants in 2 greenhouses in Essex Co., Ont. The houses were replanted but 3 weeks of production were lost (J.R.).

FROST INJURY. A June frost caused 40% damage to seedlings at Woodstock, N.B. (S.R.C.).

WALNUT WILT. Pickling cucumbers planted in a field in Essex Co., Ont. where walnut trees had been removed the previous year were severely injured. Some injury was also noted near standing trees (J.R.).

EGGPLANT

WILT (Verticillium spp.). V. dahliae affected 100% of the plants in a commercial planting at Kelowna, B.C. Infection in other plantings in the Kelowna-Vernon district ranged from sl.-sev. (G.E. Woolliams). Two small plantings at Ste. Dorothée, Que. were severely infected with V. albo-atrum (E. Lavallée).

LETTUCE

GRAY MOLD (Botrytis cinerea). Severe infections were seen at La Pocatiere, Caplan and Quebec City, Que. Damage was heavy (H. Gènèreux). Light infections occurred in late plantings at Grand Pre, N.S. (K.A. Harrison).

DOWNY MILDEW (Bremia lactucae) was seen on the basal leaves of plants in most of the 10-15 fields visited north of Montreal (E. Lavallée) and infection was tr.-sl. in 5 fields surveyed in the Ste. Clothilde - Sherrington region, Que. (R. Crête, J. Simard, T. Simard). It was tr. at Port Morien, N.S. (C.O. Gourley).

SOFT ROT (Erwinia carotovora, Rhizoctonia solani) caused serious losses in head lettuce at Maugerville. N.B. after a period of damp weather when the fields were partially flooded. Internal leaves broke down with a slimy, soft rot and the outer leaves were wilted. The vascular tissues of the stem were discolored and invaded by bacteria. Cankers were produced at the leaf bases (K.M. Graham).

ROOT-KNOT NEMATODE (Meloidogyne hapla). Trace infestations were found in 1/5 fields examined in the Ste. Clothilde - Sherrington district, Que. (R.C., J.S., T.S.).

BIG VIEW (Olpidium sp. and tobacco necrosis virus associated) occurred in a number of fields in Essex Co., Ont. The degree of infection and amount of damage seemed about the same as in the past few years (J. Rainforth). In C.P.D.S. 43:3. pp. 62 and 89 the virus associated with this disease was erroneously listed as tobacco mosaic virus. This should be amended to read tobacco necrosis virus (D.W. Creelman).

RUST (Puccinia extensicola). Large aecia were found on a plant of the variety Premier at Kentville, N.S. (K.A.H.).

BOTTOM ROT (Rhizoctonia solani) destroyed about 3% of the plants in 1 field of early head lettuce at Leamington, Ont. (C.D. McKeen). It was widespread in N.B. A 1-acre field, continuously cropped to lettuce for several years at Oromocto was 60% affected (S.R. Colpitts).

DROP (Sclerotina sclerotiorum) caused varying amounts of damage to lettuce in cold frames at Ile Jesus, Que. (E. Lavallée). Traces were observed at Grand Pre and losses were about 10% at Abercrombie, N.S. (K.A.H., C.O. Gourley).

ASTER YELLOWS (aster yellows virus) was more prevalent in Man. than in any year since 1957. Losses of 100% were sustained in untreated lettuce crops (P.H. Westdal, H.P. Richardson). Trace infections were seen in 5 fields in the Ste. Clothilde - Sherrington district of Que. (R.C., J.S., T.S.). Infections of 30-70% caused mod.-sev. damage in Queens Co., P.E.I. The disease was common in all plantings in the province (L. Thompson).

MOLYBDENUM DEFICIENCY. A 3-acre field at St. Andrews, N.B. failed to develop heads and excessive vegetative growth occurred. The few heads that formed were loose and of no value (S.R.C.).

TIP BURN (physiological) was seen at Grand Pre, N.S. but losses were insignificant (K.A.H.).

MUSKMELON

WILT (Fusarium oxysporum f. melonis) a few fields cropped to susceptible varieties in s.-w. Ont. showed varying amounts of wilt. In one severely infected field 30% of the plants were dead or wilting at the time of first harvest (C.D. McKeen).

FRUIT ROT (Fusarium sp.). At Kentville, N.S. 50% of the fruits of Harper Hybrid developed infections of the blossom ends (K.A. Harrison).

LEAF SPOT (Septoria cucurbitacearum) affected 25% of the foliage in a garden at Kentville, N.S. (C.L. Lockhart).

ONION

PURPLE BLOTCH (Alternaria porri) was prevalent in stored onions from the 1963 crop in Man. Severe culling was necessary to remove affected bulbs. Infections were evident on the neck tissues and also as discrete lesions near the base of the bulb. The pathogen produced typical spores when incubated at 60°F. (W.C. McDonald).

NECK ROT (Botrytis allii) occurs each year in stored onions in the B.C. Interior. The amount of rot varies from 10-30% (G.E. Woolliams). Only one case of neck rot was seen in Sask. in 1963. A warm, dry Sept. was probably responsible for the unusually low incidence (R.J. Ledingham). It was common on stored onions from the 1963 crop in Man. The crop matured slowly because of the extended warm fall (W.C. McD.).

LEAF FLECK (Botrytis cinerea) was rated 6-tr. 3-mod./18 fields in the Sherrington - Napierville - Farnham district of Que. (R. Crête, J. Simard, T. Simard). Autumn Spice was 100% infected at Kentville, N.S. Tops died down prematurely in Aug. (K.A. Harrison).

BULB ROT (Fusarium oxysporum f. cepae) has become quite prevalent on hybrid varieties of onions in the Okanagan Valley, B.C. Significantly less loss is encountered in the older standard varieties which seem to possess considerable resistance (G.E.W.). It was rated 4-tr./12 fields in the Sherrington, Que. region (R.C., J.S., T.S.). Loss was about 3% in set onions at Kentville, N.S. Locally-produced transplants were not affected (K.A.H.).

PINK ROOT (Fusarium solani) was general throughout the Okanagan Valley, B.C. and affected a high percentage of the bulbs (G.E.W.).

DOWNY MILDEW (Peronospora destructor). Damage ranged from sl.-sev. at different localities in the Okanagan Valley, B.C. (G.E.W.). Infection was rated 3-tr./12 fields at Sherrington, Que. (R.C., J.S., T.S.).

PINK ROOT (Pyrenochaeta terrestris) occurred in patches in a number of fields of set onions in Essex Co., Ont. (J. Rainforth).

SMUT (Urocystis cepulae) was very destructive at Kelowna, B.C., affecting up to 20% of the plants in fields where adequate control measures had not been applied (G.E.W.).

ASTER YELLOWS (aster yellows virus). Losses averaged about 5% in onion crops in Man. (P.H. Westdal, H.P. Richardson).

MANGANESE DEFICIENCY was quite general in onion crops at Ste. Clothilde, Que. Losses, however, were generally light (R.C.).

PARSNIP

LEAF SPOT (Cercospora pastinaceae). Heavy infection occurred at Somerset, N.S. on one side of a field next to an area where parsnips were produced in 1962. Only trace amounts were seen on the side farthest from the source of infection (K.A. Harrison).

ROOT-KNOT NEMATODE (Meloidogyne hapla). An infected specimen was received from North Gower, Ont. (B.E. Hopper).

SCAB (Streptomyces scabies). Infected specimens were received Aylesford, N.S. (K.A.H.).

PEA

FOOT ROT (Ascochyta pinodella). Infection was tr. in a 1-acre planting at the Central Exp. Farm, Ottawa, Ont. (V.R. Wallen).

LEAF AND POD SPOT (Ascochyta pisi) caused slight damage in Sask. (R.J. Ledingham), was seen as trace infections in Man. (W.A. **F. Hagborg**) and was tr. at Florenceville, N.B. (S.R. Colpitts).

GRAY MOLD (Botrytis cinera) caused some damage in Kings Co., N.S. but not nearly so much as in 1962 (K.A.H.).

POWDERY MILDEW (Erysiphe polygoni). Moderate but general infections were noted on late-maturing varieties at Taber and Vauxhall, Alta. (F.R. Harper). It was also mod. in Sask. where it is a major disease of peas. The period of production was markedly shortened in affected fields (R.J.L.). The variety Arthur was 5% infected at the Central Exp. Farm, Ottawa, Ont. (V.R.W.). It was widespread in N.B. where damage averaged 25% (S.R.C.) and tr. in Kings Co., N.S. on late-season varieties (K.A.H.). A 100% infection at Stanley Bridge, P.E.I. caused moderate damage (C.B. Willis).

MYCOSPHAERELLA BLIGHT (M. pinodes) was tr. in plantings of Chancellor and Creamette at Ottawa, Ont. (V.R.W.). Several varieties showed tr. infection at Kentville, N.S. (K.A.H.).

DOWNY MILDEW (Peronospora pisi) was sl. on garden peas at Kensington, P.E.I. (C.B.W.).

BACTERIAL BLIGHT (Pseudomonas pisi). An infected sample was received from Atikokan, Ont. and the pathogen isolated (W.A.F.H.).

LEAF SPOT (Septoria pisi). A severely infected specimen was received from Kerrobert, Sask. (T.C. Vanterpool). Infection was tr. on the variety Arthur at Ottawa, Ont. (V.R.W.).

RUST (Uromyces fabae). Trace infections occurred on the varieties Arthur and Valley at Ottawa, Ont. (V.R.W.) and on Fenland Wonder at Kentville, N.S. (K.A.H.). Peas were 100% infected in a garden planting nr. Charlottetown, P.E.I. (C.B.W.).

ROOT ROT (various organisms) was rated 2-tr. 1-sl. 1-mod./4 fields examined nr. Taber, Alta. (F.R.H.).

MOSAIC (virus). Trace amounts appeared in a crop of Valley that was nearing maturity at Ottawa, Ont. (V.R.W.). Outbreaks occurred in garden plantings in Kings Co., N.S. but it was rare in commercial plantings where good aphid control was obtained (K.A.H.).

STREAK (virus) was tr. in the variety Arthur in plots at the Central Exp. Farm, Ottawa, Ont. (V.R.W.).

MARSH SPOT (manganese deficiency) affected one-third of the crop of a 6-acre field of canning peas nr. Vancouver, B.C. Affected peas were first noted as "floaters" in canning vats. Peas had been grown in the same field many times in the past 20 years (H.N.W. Toms).

PEPPER

GRAY MOLD (Botrytis cinerea) affected a few seedlings where slugs had been active at Kentville, N.S. (K.A. Harrison).

WILT (Verticillium dahliae) occurred in most pepper fields in the Okanagan Valley, B.C. but did not become sev. in any (G.E. Woolliams). Infection was as high as 90% in some fields in Essex Co., Ont. Amount of infection was variable in others but on the whole it was more serious than normal (J. Rainforth).

BACTERIAL SPOT (Xanthomonas vesicatoria). Trace infections were found in 1 seedbed in Essex Co., Ont. (C.D. McKeen).

BLOSSOM-END ROT (physiological) was sev. in some fields in Essex Co., Ont. early in the harvest season especially on the yellow, sweet varieties. It became less of a problem as the season progressed (J.R.).

POTATO

EARLY BLIGHT (Alternaria solani) was not serious in B.C. although it occurred in all areas, mainly on early varieties (N. Mayers). It was rated 12-sl. 4-mod. in n. Alta. (R.P. Brandrith) and 88-tr.-sev./124 fields in s. Alta. where it was more prevalent than for many years. It caused mod. defoliation at Taber, Vauxhall and Brooks and was widespread on Netted Gem throughout the area (R.P.Stogryn, F.R. Harper). Early varieties were almost completely defoliated by the end of Aug. at Nipawin, Katepwa

and Lumsden, Sask. (A. Charlebois). Slight-mod. infections were general on early varieties in Man. and n.-w. Ont. (D.J. Petty) and it was prevalent in the Algoma and Sudbury districts of Ont. (H.W. Whiteside). Ratings in e. Ont. were 9-sl. 3-mod./45 fields (G.E.B. Fuller) and in Que. were 82-sl. 24-mod./830 fields, being most prevalent in the Chicoutimi and Lake St. John districts (G. Ethier). Fundy, Irish Cobbler and even Green Mountain were severely affected in Sept. at La Pocatiere, Que. (H. Genereux). Trace - sl. infections only were seen in N.B., N.S. and P.E.I. (C.E. Robinson, R.C. Layton, G.C. Ramsay). Slight - sev. infections developed on named varieties and seedlings under test at Bay Roberts, Nfld. (O.A. Olsen).

GRAY MOLD (Botrytis cinerea). Extreme wet weather in Aug. led to some infection of lower leaves in N.B. (S.R. Colpitts).

BLACK DOT (Colletotrichum coccodes). Green Mountain tubers in a field in Kamouraska Co., Que. showed 61% infection at harvest (J. Santerre).

BACTERIAL RING ROT (Corynebacterium sepedonicum) was found in 1 field of Red Pontiac in the B.C. Interior (N.M.) and in table stock potatoes on 4 farms in s. Alta. (R.P.S.). It was widespread in table stock in Sask. (R.J. Ledingham). Two fields in Man. and 2 in n.-w. Ont. were rejected (D.J. Petty) as well as 2 in the Barrie, Ont. district (H.W. Whiteside). In s.-w. Ont. ring rot was found in 1 seed field on the Thedford Marsh and in 1 table stock field nr. Strathroy (G.T.A. Fenney) while in e. Ont., one 8-acre field was rejected (G.E.B.F.). It caused the rejection of 89/830 fields in Que. and 9 other lots were found infected at bin inspection (G. Ethier). Ring rot incidence increased sharply in N.B. where 22 fields involving 315 acres were rejected as compared to 3 fields and 68 acres in 1962 (C.E.R.). No infected seed fields were found in N.S. but all table stock fields planted by 2 custom planters were infected (R.C.L.).

BLACKLEG (Erwinia atroseptica). Incidence increased in the lower Fraser Valley and on Vancouver Island, B.C. It was also widespread in the Pemberton district and the B.C. Interior (N.M.). It was rated 11-sl. 7-mod. 3-sev./62 fields in n. Alta. (R.P.B.) and was general but not serious in s. Alta. (R.P.S.). Two fields were rejected in Sask. where infection was found in 23/91 fields (A.C.) and trace infections were seen in 20% of the fields inspected in Man. (D.J.P.). Considerably less was found in the Barrie, Ont. district than in 1962 (H.W.W.) and it was found in most fields, occasionally as sev. infections, in s.-w. Ont. (G.T.A.F.); eighteen/45 fields in e. Ont. showed infection including 4 which were rejected. It caused tuber rot in 4/12 bin lots inspected (G.E.B.F.). Blackleg incidence decreased considerably in Que. where 295/830 fields were infected (G.E.), in N.B., where 140 fields were rejected compared to 491 in 1962 (C.E.R.), in N.S. (R.C.L.) and in P.E.I. (G.C.R.). It was sl.-sev. in e. Nfld. where Sebago appeared to be the most susceptible variety (O.A.O.).

SOFT ROT (Erwinia carotovora) caused sl. losses in the Gagetown, N.B. district (S.R. Colpitts) and was sev. on Sebago at Lethbridge, Nfld. (G.A. Nelson).

DRY ROT (Fusarium spp.) was tr. in 2/21 bins examined in e. Ont. (G.E.B.F.) and was sl. in a few bin lots of Kennebec and Keswick in Que. (G.E.). F. caeruleum caused 68 and 20% rot respectively on Hunter potatoes from Digby and Kings counties, N.S. It apparently develops very rapidly on this variety when storage temperatures rise in the spring (K.A. Harrison). F. sambucinum f. 6 caused slight losses to Sebago in Queens Co., P.E.I. (G.W. Ayers).

SILVER SCURE (Helminthosporium atrovirens). Some infection was noted at harvest in the Barrie, Ont. area (H.W.W.). It was sl. in a few bin lots of Green Mountain in Que. (G.E.). Tuber infection at La Pocatiere, Que. in Oct. was rated as follows: Irish Cobbler, 95%; Green Mountain and Hunter, 75%; Keswick, 65%; Kennebec, 55%; Sebago and Cherokee, 50%; Katahdin, 40% and Saranac, 30% (J. Santerre). Heavily infected tubers were received from Hetherton, Nfld. (O.A.O.).

GOLDEN NEMATODE (Heterodera rostochiensis). Damage in known infected fields in Nfld. varied from no visible injury in a field at Bay Roberts to total destruction in one at Foxtrap (O.A.O.).

RHIZOCTONIA (Pellicularia filamentosa) occurred in most B.C. fields and in some cases caused serious losses (N.M.). It was rated 26-sl. 9-mod./62 fields in n. Alta. where it caused some economic losses (R.P.B.), was tr. in most fields in s. Alta. (R.P.S.), and was rated 14-mod. 2-sev. in Sask. (A.C.). Rhizoctonia was a problem in n. Ont. (H.W.W.) and was sl. in bins inspected in s.-w. Ont. (G.T.A.F.). Forty-two/830 Que. fields were infected and it was rated 159-sl. 20-mod. 1-sev./180 bin lots (G.E.). Fredericton seedling F-5758 was badly infected at all testing stations in Que. (H. Gènèreux). It caused slight losses through poor germination in N.S. (R.C.L.). No rhizoctonia was reported from N.B. or P.E.I. (D.W. Creelman). Infection was sev. on Hunter at Winterbrook and Bonavista Bay, Nfld. (O.A.O.).

POCKET ROT (Phoma sp.). Severe rot developed on Kennebec potatoes in storage at Montreal after shipment from Florenceville, N.B. (K.M. Graham, J. Neilson).

LATE BLIGHT (Phytophthora infestans) developed in late crops in the Fraser Valley and Pemberton areas, B.C. (N.M.). It was sl. at Geraldton (D.J.P.), appeared late in the Barrie district (H.W.W.) and caused sl. tuber rot in 1/21 bin lots in e. Ont. (G.E.B.F.). Late blight was first observed in Labelle Co., Que. on 24 July, 1 week later than in 1962. By 8 Aug., slight - mod. infections were reported from Beauce, Champlain, Napierville, Nicolet, Levis, Labelle and Lake St. John counties. It was general by 15 Aug. in the lower St. Lawrence area. Its spread in other parts of the province was checked by dry weather. Losses in unsprayed fields was 10-20%. Tuber rot in bins was rated 164-sl. 17-mod. 8-sev./376 inspected (G.E.). Late blight was prevalent in unsprayed fields in N.B. Defoliation in late Aug. resulted in 20% reduction in yield. Tuber rot averaged about 2% (S.R.C.). Infection was first noted in N.S. on 19 July. Many scattered infections were found

by 1 Aug. and by mid-Aug. the disease was mod. in Kings and Digby counties and sev. in Cumberland Co. Effective spraying and low temperatures prevented much further spread. Losses from tuber rot were low in seed stocks but in a few cases were as high as 25% in table stock (R.C.L.). Little late blight developed in Nfld. (O.A.O.).

LEAK (Pythium ultimum). There was an unusually high incidence of leak in the B.C. Interior at harvest (N.M.). It caused sev. losses in s. Alta. in crops harvested and stored during abnormally hot weather in Sept. (F.R. Harper). Infection was sl.-mod. in 3 bin lots of Kennebec in Que. (G.E.). Seedlings and varieties in the regional trials in Lake St. John Co., Que. showed from 1.6-40.3% infection. Typical ratings were: F-5766, 40%; F-5650, 31%; F-5760, 24%; Kennebec, 22%; Green Mountain, 12.6% (H.G.). A trace infection was seen at Kentville, N.S. (K.A.H.).

POWDERY SCAB (Spongospora subterranea) was observed in a 10-acre field of Green Mountain at La Pocatiere (H.G.) and was 2-sl./376 bin lots examined in Que. (G.E.). Slight infections were seen on several varieties at St. John's West and Bay Roberts, Nfld. (O.A.O.).

COMMON SCAB (Streptomyces scabies) was found in a few crops in the Cariboo and c. B.C. (N.M.). It was less prevalent than in 1962 in n. Alta. (R.P.B.) and was sev. on Pontiac and Early Ohio on 1 farm nr. Saskatoon, Sask. (A.C.). In Ont. its incidence was slightly higher than in 1962 in the Barrie district (H.W.W.); it was sl. in some bins in s.-w. Ont. (G.T.A.F.), and 3-tr./21 bins inspected in e. Ont. (G.E.B.F.). Infections in Que. were rated 188-sl. 12-mod. 4-sev./830 fields (G.E.). It averaged 2% in 5/22 bin lots in N.S. (R.C.L.) and was a problem in very few crops in P.E.I. (G.C.R.). Occasional fields in the St. John's and Conception Bay areas of Nfld. had considerable scab (O.A.O.).

WART (Synchytrium endobioticum). A generally wet summer with record rainfall in Aug. made conditions highly favorable for wart development in e. Nfld., especially in the Bonavista Bay, Avalon Peninsula and Burin Peninsula areas. Some fields became a total loss. (O.A.O.).

PINK-EYE ROT (Verticillium albo-atrum). Many fields of Kennebec in the Lakeville, N.S. district were infected. Infections of up to 35% caused up to 15% losses. The most serious outbreaks occurred in fields where potatoes had been grown continuously for several years. Where severe, the tubers showed necrotic streaks in the vascular bundles and areas of water core (K.A.H.).

WILTS (Verticillium albo-atrum, Fusarium spp.) occurred in a number of fields in B.C. (N.M.); was 4-tr./62 fields in n. Alta. and 26-tr./124 s. Alta. fields (R.P.B., R.P.S.). Nine % of the fields in Sask. were affected and 1 seed field rejected (A.C.). In Ont., wilts were a problem in the Barrie district, especially in Kennebec, Sebago and Snowflake (H.W.W.);

they were found in Irish Cobbler in s.w. Ont. (G.T.A.F.) and caused rejection of 3 fields in e. Ont. (G.E.B.F.). Twenty-five/830 Que. fields showed infection (G.E.) and ratings in N.B. were 402-sl. 130-mod. in fields passed (C.E.R.). In N.S. wilts were sl. in 31/212 fields (R.C.L.).

LEAF ROLL (virus) in B.C. was serious only in the Interior where 20 fields were rejected (N.M.). Ratings were 41-tr. 5-sl./62 n. Alta. fields and 22-tr./124 fields in s. Alta. (R.P.B., R.P.S.). Infections in Sask. were 52-tr./91 fields (A.C.) and in Man. 7% of the fields passed showed trace infections (D.J.P.). More infections was seen in the Barrie, Ont. district than in 1962 and 100 acres were rejected (H.W.W.) while in e. Ont. 13/45 fields showed infection (G.E.B.F.). Leaf roll was found in 179/830 Que. fields (G.E.) and at Ste. Clothilde, Que. 25% of the plants were infected (R. Crête). Infections in N.B. were rated 465-sl. 186-mod. 75-sev. with 18 fields rejected (C.E.R.). It was found in 146/212 fields in N.S. and caused rejection of 16. There was a marked increase over 1962 levels (R.C.L.). Three % infection was seen in Hunter at Winterbrook and Lethbridge, Nfld. Both affected fields were grown from the same lot of Foundation seed (O.A.O.).

MOSAIC (virus) was important in B.C. only on Vancouver Island where 4 crops were rejected (N.M.). It was 3-tr. 1-sev./62 fields in n. Alta. and 32 tr./91 Sask. fields (R.P.B., A.C.). Two fields were rejected in the Barrie district and 5 in e. Ont. (H.W.W., G.E.B.F.). In Que. mosaic was found in 394/830 fields and caused the rejection of 78 (G.E.). Ratings in N.B. were 258-sl. 121-mod. 79-sev. and 35 fields were rejected compared to 86 in 1962 (C.E.R.). Seventy-six/212 fields in N.S. were infected (R.C.L.). In Nfld. mosaic was mostly found in fields of farmers who grow their own seed every year and do not practice selection (O.A.O.).

PURPLE TOP (aster yellows virus) was tr. in 1 field of Red Pontiac in n. Alta. (R.P.S.). More purple top was seen in Man. than in 1962 (D.J.P.) and it was less prevalent in n. Ont. than in 1962 (H.W.W.). Its incidence in N.B. was lower than in 1962. It was mostly found in Sebago, some crops of which had up to 8% (C.E.R.). It was reported as trace infections in many fields in N.S. (R.C.L.) and was tr.-8% in Sebago in P.E.I. Little was seen in other varieties (G.C.R.).

SPINDLE TUBER (virus) was tr. at 4 locations in s. Alta. (R.P.S.) and was found in 8% of fields inspected in Sask. (A.C.). It caused the rejection of 4 fields of Irish Cobbler in Man. (D.J.P.) and was observed in Huron, Sebago and Kennebec in the Barrie district of Ont. (H.W.W.). In Que. it was tr. in 8/830 fields (G.E.). Ratings in N.B. were 156-sl./59 mod. 70-sev. (C.E.R.) and in N.S. it was rated 6-sl./212 fields (R.C.L.).

WITCHES' BROOM (virus) occurred in trace amounts in a number of B.C. fields (N.M.). In n. Alta. it was 20-tr./62 fields and in s. Alta. was trace in 1 field (R.P.B., R.P.S.). It was noted in a few fields in n. Sask. (A.C.).

GIANT HILL was recorded as trace in 21/124 fields in s. Alta. (R.P.S.) and was reported from N.S. in many fields and in a wide range of varieties (R.C.L.).

FROST INJURY caused minor damage in 1/21 bins inspected in e. Ont. (G.E.B.F.) and averaged 5-10% in 174/376 bins inspected in Que. (G.E.).

HOLLOW HEART (physiological) occurred on Lulu Island, B.C. where 1000 tons of Netted Gem table stock was reduced in grade from No. 1 to No. 2 (N.M.). Twenty-six Fredericton seedlings grown at Deschambault, Que. had from 1-25% hollow heart. A few of the same seedlings showed this trouble at Ste. Foy (H.G.).

INTERNAL RUST SPOT (cause unknown). Eighty % of a lot of Early Rose were affected in early May in L'Islet Co., Que. (J. Santerre).

JELLY END ROT (physiological) was seen in variety plots at Kentville, N.S. (K.A.H.).

MAGNESIUM DEFICIENCY affected 5% of the crop of Irish Cobbler at Deschambault, Que, Many Fredericton seedlings were also affected, some of them exhibiting striking symptoms. There seemed to be differences in the tolerance of seedlings to this deficiency (H.G.). Kennebec potatoes growing under dry conditions on light, sandy soil at Waterville, N.S. suffered 50% damage (K.A.H.).

SUNBURN was responsible for slight damage in 2/21 bins inspected in e. Ont. (G.E.B.F.).

PUMPKIN

POWDERY MILDEW (Erysiphe communis) was general, late in the season, in the Okanagan Valley, B.C. (G.E. Woolliams).

RHUBARB

LEAF SPOT (Ascochyta rhei). Foliage was 100% infected and dead in mid-Sept. at Kentville, N.S. (C.O. Gourley).

POWDERY MILDEW (Erysiphe polygoni). A trace infection was found on the University campus at Saskatoon, Sask. (T.C. Vanterpool). The only other report, to the Survey, of this disease in Canada, is from B.C. (D.W. Creelman).

RED LEAF (cause unknown). Many plantings in nurseries in s. Alta. were affected (R.P. Stogryn).

SQUASH

GRAY MOLD (Botrytis cinerea) caused about 2% loss in stored squash at Berwick, N.S. in Nov. Humidity in the storage was high (K.A. Harrison).

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

STORAGE ROT (Mycosphaerella melonis). A light, general infection apparently occurred in the field at Berwick, N.S. Fruits in storage in Nov. showed lesions 2-4 inches in diam. In another outbreak at Kentville, 25% of stored squash were badly affected (K.A.H.).

LEAF SPOT (Septoria cucurbitacearum). Cotyledons in a field at Berwick, N.S. were 20% infected in July. Some defoliation from leaf spot was reported from other districts of the Annapolis Valley by fall (K.A.H.).

SWEDE TURNIP

DOWNY MILDEW (Peronospora parasitica). Infection was 25% at Port Morien, N.S. (C.O. Gourley).

CLUB ROOT (Plasmodiophora brassicae). A field of Laurentian was 100% infected and a complete loss at Montmagny, Que. and a sample was received from Kamouraska Co. showing 50% infection (J. Santerre). A 1-acre field at Moncton, N.B. was a total loss (S.R. Colpitts). A light, general infection occurred on 2 farms at Grand Pre, N.S. (K.A. Harrison). A survey of northern N.S. was conducted in Oct. and mod.-sev. clubroot infections were found in the Port Howe and Pugwash areas. Infection was generally mod. in P.E.I. though a sev. infection was seen at Summerside (G.W. Ayers). It was generally sl.-mod. in the St. John's area, Nfld. An experimental plot on peat soil at Colinet was 100% infected (O.A. Olsen).

SKIN SPOT (Rhizoctonia solani). Some infection was noted at harvest at Grand Pre, N.S. Infection is usually not seen until later in storage (K.A.H.).

SCORCH (? turnip mosaic virus complex) occurred in several localities in Ont. in the fall but was sev. only on late-planted crops. Affected plants are severely stunted and do not produce marketable roots. Leaves may show a mottling or a ringspot pattern, puckering, and eventual death of localized areas. There may be an abnormal stimulation of crown buds and roots may not develop. The name "scorch" is used by growers and is descriptive of the overall appearance of affected fields. There appear to be several, as yet not separated, viruses involved (B.H. MacNeill, C.B. Kelly).

DORON DEFICIENCY. Affected roots were received from L'Islet Co., Que. (J.S.) and from Birchy Bay and Dunville, Nfld. (O.A.O.).

SWEET CORN

NORTHERN LEAF BLIGHT (Bipolaris turcicum). Late plantings of sweet corn in Essex Co., Ont., were severely infected (J. Rainforth).

SMUT (Ustilago maydis) affected 5% of the plants in a garden at Fort William, Ont. (A.E. Straby). As many as 50% of the plants of the variety Spancross were infected in a few fields in Essex Co., Ont. It did not occur extensively in the county (J.R.). More specimens than usual were received from Annapolis, Kings and Hants counties, N.S. (K.A. Harrison, C.L. Lockhart).

BACTERIAL BLIGHT (pathogen unidentified) was general in the Vernon, B.C. district with few plantings free of the disease. Rates of infection varied from tr.-20%. Ears and sheaths were affected but not culms (G.E. Woolliams).

MINERAL DEFICIENCIES. Corn on light, sandy soil at Waterville, N.S. showed symptoms of deficiencies of magnesium, phosphorous, nitrogen and potassium in different areas of the field (K.A.H.).

TOMATO

EARLY BLIGHT (Alternaria solani) was prevalent and caused considerable damage in the Vernon and Kamloops districts of B.C. Fruit losses were reduced significantly where adequate spraying was carried out (G.E. Woolliams). It was mod. on a few plants in a garden at Ottawa, Ont. (D.W. Creelman). Early blight was mod.-sev. in most tomato fields in the Montreal, Que. region. There was considerable cracking of fruits and a high degree of Alternaria rot developed (E. Lavallée). The disease was quite general in the St. Jean Baptiste area, Que. but losses were light (R. Crête). It was general in N.B. with infections ranging from tr.-100% and losses in fields as high as 50% (S.R. Colpitts). Infections in Annapolis and Kings counties were noted early on the variety Scotia and caused some losses in early crops. It was not generally sev. until late Aug. and early Sept. when heavy losses occurred in unsprayed crops (K.A. Harrison).

GRAY MOLD AND STEM ROT (Botrytis cinerea). Stem rot was not a serious problem in the spring crop but was prevalent in the fall in glass and plastic houses in Essex Co., Ont. (J. Rainforth). Gray mold was commonly seen on young fruit in Aug. in the Oromocto area, N.B. (S.R.C.). One - 5% damage occurred in spring greenhouse crops in N.S. The fruit rot stage was sev. in field crops in many areas. Unsprayed plots at Kentville had 8% infected fruit and sprayed plots were 4-5% infected. About 20% loss was incurred in one fall greenhouse crop (K.A.H.). Severe gray mold rot developed in Sept. in market gardens nr. Charlottetown, P.E.I. and in plots at the Exp. Farm (G.W. Ayers). Slight infections appeared in the fall greenhouse crop at St. John's West, Nfld. (O.A.O.).

LEAF MOLD (Cladosporium fulvum). Several greenhouse crops in Hants and Kings counties, N.S. were affected. The heaviest infection occurred at Coldbrook (K.A.H.).

ANTHRACNOSE (Colletotrichum coccodes). Disease incidence in s.-w. Ont. in 1963 was much lower than usual in the early basket and canning crops (C.D. McKeen). Some anthracnose was observed on most lots of tomatoes that had been held several days at a canning factory at Rouville, Que. (E.L.). Infection on late-harvested fruit in Kings Co., N.S. reached 75% (K.A.H.).

BACTERIAL CANKER (Corynebacterium michiganense) was seen in most commercial fields in the Kamloops and Vernon districts, B.C. (G.E.W.). It was tr. in a plot at Lethbridge, Alta. (F.R. Harper). The variety Ohio-WR-7 was severely infected in the spring crop in a 2-acre greenhouse in Essex Co., Ont. Infection was noticed in mid-Feb. and it continued to spread until the plants were removed in early July by which time 75% of the plants were infected and 50% were dead. Six other greenhouse crops in the county were infected but not so early in the season and damage was much less sev. Numerous houses had some infected plants in the fall crop (J.R.).

DAMPING-OFF (Fusarium spp.) killed 5% of 20,000 plants at Oromocto, N.B. (S.R.C.).

PHOMA ROT (P. destructiva) was found on a few plants of Stokesdale in the late harvest at Kentville, N.S. (K.A.H.).

LATE BLIGHT (Phytophthora infestans) was first observed at L'Assomption, Que. on 3 Sept. where 2% of the fruit was infected. Infection was 26% by 11 Sept. and reached 50-60% by 18 Sept. This was typical of late blight development in the region north of Montreal. Five sprays of captan 3 lb., maneb, 2 lb. and Polyram 2 lb. per acre were applied beginning at the end of July. Fruit rot at the picking on 18 Sept. was 4.5, 2.5 and 5.0% respectively as compared with 59% in the untreated plots. There was no significant difference between fungicides (E.L.). Infections as high as 25% were observed in many gardens at La Pocatiere, Que. (H. Gènèreux). Trace infections only were seen in N.B. (S.R.C.) and damage was very light in Kings Co., N.S. Fruit infection in unsprayed plots at Kentville ranged from 2-50% but occurred after commercial harvesting was completed (K.A.H.).

BUCKEYE ROT (Phytophthora parasitica) affected a few fruits on lower trusses in a greenhouse at Victoria, B.C. (R.G. Atkinson).

BACTERIAL SPECK (Pseudomonas tomato) caused only minor damage in 5 fields surveyed at Harrow, Kingsville and Leamington, Ont. in mid-July (P.K. Basu). More than 50% of the fruits in 2 fields of 2-3 acres each at Oka, Que. were covered with specks even before the first picking. Isolated cases are seen throughout the Montreal region each year (E.L.).

DAMPING-OFF (Rhizoctonia solani) was responsible for a 15% loss in stand in a fall planting in a large greenhouse at Leamington, Ont. (C.D. McK.).

WILT AND STEM ROT (Sclerotinia sclerotiorum) caused mod. damage in a greenhouse at Edmonton, Alta. (W.P. Skoropad) and affected about 25% of a 2-acre field at Hampstead, N.B. (S.R.C.). Trace infections were seen in a previously infected field at Kentville and in a greenhouse at Falmouth, N.S. (K.A.H.).

LEAF SPOT (Septoria lycopersici) was moderately sev. in the Montreal, Que. region (E.L.). Specimens were received from Montmagney, Que. (J.S.).

WILT (Verticillium spp.). V. dahliae commonly infected both greenhouse and field crops in the Kamloops, B.C. area except where resistant varieties were planted (G.E.W.). V. albo-atrum caused slight damage in 2 gardens at Coaldale, Alta. (F.R. Harper). Moderate damage was caused by V. dahliae in Essex Co., Ont. The level of damage was lower than normal although virtually all fields showed some evidence of infection. Fields planted to wilt-susceptible crops 2 years in a row were noticeably more affected than those under a more suitable rotation (J.R.).

BACTERIAL SPOT (Xanthomonas vesicatoria) occurred in a number of fields of staked tomatoes and also in a few fields of canning tomatoes in Essex Co., Ont. The variety Glamour was very susceptible and when it was infected losses were heavy. Most of the infections seen were in the Leamington area (J.R.). Severe infections were seen at Dunville and the disease was general in the Vineland, Ont. district (P.K.B.).

DOUBLE STREAK (TMV + potato X virus) affected a few spring and many fall greenhouse crops in Essex Co., Ont. The Spartan varieties 8 and 10 were especially susceptible although Vinequeen and Michigan-Ohio Hybrid were also affected. Disease incidence was much higher on farms where staked tomatoes were grown (J.R.).

MOSAIC (tobacco mosaic virus) was commonly found in crops throughout the Okanagan Valley, B.C. Infection varied from sl.-90%. Varietal differences in susceptibility were evident (G.E.W.). At Valleyfield, Que. at 5-acre field was more than 50% infected. Another at Ste. Dorotheé was similarly infected. Mosaic-infected fields are becoming more common in the Montreal region (E.L.). There was an extremely sev. outbreak in the fall greenhouse crop at Falmouth, N.S. (K.A.H.).

SHOESTRING (cucumber mosaic virus) affected 2/400 Stokesdale plants at Kentville, N.S. (K.A.H.).

SPOTTED WILT (virus). Ten plants in a home garden at Ottawa, Ont. were severely affected. Typical lesions formed on both leaves and fruit and the foliage was curled and brittle. Growth ceased and even symptomless fruits failed to size (D.W. Creelman).

BLOSSOM-END ROT (physiological) affected as many as 50% of the fruits in some gardens at La Pocatiere, Que. (H.G.). It was present in all areas of N.B. (S.R.C.). Slight losses in greenhouse tomatoes and 15% loss in field crops were observed at Kentville, N.S. (K.A.H.). Incidence was high in greenhouse crops at St. John's, Nfld. (O.A.O.).

CHEMICAL INJURY. Early tomatoes in a field adjacent to a fertilizer company's dump in Essex Co., Ont. produced leaves showing brownish, blister-like areas. A drift of chemical vapors in smog and smoke was suspected of causing the injury. At Leamington the crop in 1 greenhouse suffered sev. injury as the result of soil fumigation with Vorlex. Liberal applications of peat moss had been made just after fumingation. The peat moss adsorbed the fumigant and released it after the plants had begun to grow (C.D. McK.). About 5% damage resulted when captan was applied to young greenhouse plants (S.R.C.).

GROWTH CRACKS occurred on 50-75% of the tomato fruit grown in the region north of Montreal, Que. The 1963 season was one of the worst on record for tomato production. The season was generally late, yields were reduced and the crop was of poor quality because of cracking and irregular ripening (E.L.). Growth cracks were more prominent in N.B. in 1963 than in previous years (S.R.C.).

WATERMELON

ANTHRACNOSE (Colletotrichum lagenarium). A small plot of the variety New Hampshire Midget at Kentville, N.S. was seriously defoliated and soon died completely (K.A. Harrison).

IV. DISEASES OF FRUIT CROPS

A. POME FRUITS

APPLE

CROWN GALL (Agrobacterium tumefaciens). Infections in nursery stocks at Kelowna, B.C. were extremely variable, ranging from 1-70%. The average infection in one of the largest nurseries was 5% and in other nurseries, 10-15% (L.E. Lopatecki). It was sev. in a seedling nursery in the University orchard, Fort Garry, Man. (W.C. McDonald). Crown gall affected 25% of 800 Red and Golden Delicious Trees on E.M. 7 rootstock in a nursery at Ruthven, Ont. (A.E. Straby).

FIRE BLIGHT (Erwinia amylovora) incidence was high at Edmonton and exceptionally high in the Calgary and Lethbridge areas, Alta. (W.P. Skoropad, R.P. Stogryn). It was epidemic at Saskatoon, Sask., particularly on street plantings of ornamental crabs (R.J. Ledingham). Fire blight caused some damage in the Provincial Nursery at Regina and was present in a nursery at Estevan, Sask. (T. Milisan). Infection was sev. in an abandoned orchard at Fort Garry and it was prevalent on trees in home gardens at Winnipeg, Man. (W.A.F. Hagborg, W.C. McD.). A survey conducted in Aug. showed that at least 15 orchards in Essex Co., Ont. were infected. Some orchards and some varieties, especially Lodi, were seriously affected (J.R. Chard). At Strathroy, Ont., 1000 trees of Cortland were affected in a nursery (A.E.S.).

EUROPEAN CANKER (Nectria galligena). Late pruning in an orchard at Newcastle, N.B. left bleeding cuts which served as infection courts for the pathogen. Four/95 trees died; half the others suffered killing of limbs (S.R. Colpitts).

ANTHRACNOSE (Neofabraea malicorticis) was seen on young McIntosh trees interplanted in a mature orchard at Seyton Portage, B.C. (L.E.L.). Two cases of anthracnose on crab apple were observed in the Edmonton, Alta. area (W.P.S.). Pockets of rot developed in a 7000-bu. controlled atmosphere storage at Berwick, N.S. (C.L. Lockhart).

PERENNIAL CANKER (Neofabraea perennans) continued to be widespread in the variety Newtown at Summerland, B.C. (L.E.L.).

BULL'S EYE ROT (Neofabraea perennans) was generally at a low level in stored apples in the Okanagan Valley, B.C. (L.E.L.).

CANKER AND DIEBACK (Phyllosticta solitaria) caused killing of twigs at Upper Gagetown where the fungus was fruiting freely at the bases of dead twigs, girdled a tree at Cocagne and killed 2 young trees in an orchard at Shediac, N.B. The pathogen was isolated in each case (K.M. Graham, S.R.C.). This is the first report, to the Survey, of this organism on apple in Canada (D.W. Creelman).

COLLAR ROT (Phytophthora cactorum) caused the death of trees on E.M. II, E.M. VII, M.M. 104 and M.M. 106 rootstocks in several districts of the Okanagan Valley, B.C. (D.L. McIntosh).

POWDERY MILDEW (Podosphaera leucotricha) was prevalent on several varieties in the West Okanagan districts of B.C. Few fruit infections were seen but foliage on new terminal growth of susceptible varieties was severely damaged (D.L. McI.). It was found in nurseries at Richmond, Victoria and Ocean Park, B.C. (Woods, Gibson, Watt).

CALYX-END ROT (Sclerotinia sclerotiorum). Trace infections were seen on McIntosh at Wolfville, N.S. (R.G. Ross).

LEAF SPOT (Sphaeropsis malorum) was found in trace amounts at Gagetown, N.B. No fruit infection was found (S.R. Colpitts)

SCAB (Venturia inaequalis). Abundant and frequent rainfall in April and early May in the Okanagan and Kootenay Valleys, B.C. provided very favorable conditions for apple scab infections. Subsequent application of recommended sprays prevented serious losses (D.L. McI.). Scab was reported from several home gardens in the Vancouver, B.C. area (H.N.W. Toms). It was observed in nurseries at Victoria, Ocean Park and Richmond, B.C. (Woods, Gibson, Watt). It was tr. in a garden at Saskatoon. Sask. (R.J.L.). Scab infection was generally light in commercial orchards in Essex Co., Ont. A heavy infection was seen in an inadequately-sprayed orchard nr. Windsor (J. Rainforth, J.R.C.). Scab was well controlled in s.-w. Que. early in the season but foliage scab was seen in 19/21 orchards examined at Hemmingford and Franklin Center. By 3 Sept. 2 orchards had 15 and 25% scab, respectively, and 5 others had tr.-5%. Heavy rains in Aug. (7.32 in. at Farnham) favored late scab. Eight lots of McIntosh in storage in mid-Nov. had about 10% pin point scab and 1 lot had 20% (R. Desmarteau). Scab was generally well controlled in N.B. (S.R.C.). Some pin point scab developed in storage at Fredricton and Keswick. N.B. (K.M. Graham). Conditions were favorable for the spread and development of scab throughout the growing season in N.S. but well sprayed orchards were clean. Some pin point scab developed before harvest (R.G.R.). Infection was heavy at Bay Roberts, Nfld. (O.A. Olsen).

CHAT FRUIT (virus). Symptoms recurred at Summerland, B.C. in 5 Lord Lambourne test trees affected in 1962. There was no evidence of natural spread. It is still uncertain whether the virus was derived from orchard trees being indexed or from clonal rootstocks on which the test trees were propagated (M.F. Welsh).

DAPPLE APPLE (virus). Severe symtoms were produced on 5 Delicious trees at Kaleden, B.C. as they have been for the past 5 years. Apparently, although symtoms of other virus diseases are strongly affected by seasonal weather conditions, dapple apple is not thus affected (M.F.W.).

LEAF PUCKER (virus). Leaf symptoms on McIntosh were sev. early in the season in all affected orchards in the Okanagan Valley, B.C. Fruit symptoms were mild in some orchards and absent in others (M.F.W.).

RING RUSSETING (virus). Symptoms on Newtown in the Okanagan Valley, B.C. were milder than in any year since the disease was first found (M.F.W.).

RUBBERY WOOD AND FRUIT DISTORTION (virus). A single tree at Summerland, B.C., planted as Golden Delicious but atypical of the variety, was severely affected. The tree had a weeping growth and very rubbery branches, as sev. as the most sev. symptoms observed on Lord Lambourne, the standard indicator variety for the virus. Some fruits had an enlarged, deeply-sunken calyx cup and others had deep dimples on the cheeks. Many fruits were half-size or smaller. If healthy material of this clone can be obtained by heat therapy it may prove to be a new, more sensitive indicator for rubbery wood virus (M.F.W.).

RUSSET RING (virus). Symptoms on some affected Delicious and Golden Delicious trees in the Okanagan Valley, B.C. were unusually mild or absent (M.F.W.).

FRUIT DEFORMITY AND LEAF PATTERN (? virus). About half the fruit of 1 Golden Delicious tree at Penticton, B.C. were rendered culls through the presence of small, russeted hollows, more or less in rings. Leaves formed early in the season displayed bright yellow line patterns. The symptoms do not correspond with those of any disease previously observed or reported (M.F.W.).

FRUIT DISTORTION (? virus) severely affected 3 Delicious trees at Winfield, B.C. Symptoms consisted of numerous dimples and depressions. It is suspected to be of a virus nature (M.F.W.).

ARSENICAL INJURY was sev. on foliage, particularly on the variety Courtland on lighter soils throughout the Annapolis Valley, N.S. Injury occurred where lead arsenate was used in combination with dodine or glyodin (R.G.R.).

BURR KNOT (cause unknown) was sev. on a few seedling trees at Kentville, N.S. (R.G.R.).

CHEMICAL INJURY (di-nitro) occurred at Woodville, N.S. where di-nitro was applied on Gravenstein as a thinner. White areas occurred on the leaves. These somewhat resembled apple mosaic but had diffuse margins and the areas often coalesced (R.G.R.).

FROST INJURY. A temperature of 19°F on 10 Oct. in many areas on the floor of the Annapolis Valley, N.S. rendered the apple crop still on the trees a complete loss for the fresh fruit market. Loss was estimated at 5% of the entire N.S. crop (R.G.R.).

IRON DEFICIENCY CHLOROSIS was common in apples and other related plants in many areas of Sask. Soil treatment with chelated iron often results in remarkable improvement in plant vigor (R.J.L.). It was apparent on trees at the Provincial Nursery, Regina, Sask. (T. Milasin).

MAGNESIUM DEFICIENCY caused premature fruit drop and sev. defoliation in 15 trees at Oromocto, N.B. It is widespread in trace amounts throughout the province (S.R.C.).

WATER CORE (physiological). The fruit on three trees in a large orchard at Gagetown, N.B. was 100% affected. Trace amounts occurred on other trees (S.R.C.).

PEAR

FIRE BLIGHT (Erwinia amylovora). Infection in the Okanagan Valley, B.C. was the worst for many years. It first appeared as random infections of secondary bloom and continued to spread throughout the summer (L.E. Lopatecki). It caused some injury in a nursery at Regina (T. Milasin). A survey in Essex Co., Ont. in Aug. showed at least 17 orchards to have sl.-mod. infections. The organism was isolated and positively identified (J.R. Chard, Z.A. Patrick).

SOOTY BLOTCH (Gloeodes pomigena) caused a trace of damage on the variety Bartlett at Woodville, N.S. (R.G. Ross).

BROWN ROT (Monilinia fructicola) developed to a limited extent in ripening rooms at a cannery at Penticton, B.C. (L.E.L.).

POWDERY MILDEW (Podosphaera leuctoricha) affected a small percentage of fruits on trees not sprayed for mildew control during bloom in the Okanagan Valley, B.C. Russet patches developed on the skin. Very little foliage or shoot infection was observed (D.L. McIntosh).

CANKER (Physalospora obtusa) was observed on the trunks of several Bartlett trees at Centerville, N.S. (C.L. Lockhart).

FRUIT ROT (Phytophthora cactorum). One crop of Keiffer pears from the 1962 crop in the Niagara Peninsula, Ont. developed about 20% rot in storage (G.C. Chamberlain).

RHIZOPUS ROT (R. nigricans) caused 10-15% damage to a shipment of Barlett pears held in ripening rooms at Penticton, B.C. (L.E.L.).

SCAB (Venturia pirina) was rated 10% in 3 orchards at Burtts Corner, N.B. and was tr. on most trees elsewhere in the province (S.R. Colpitts). It was sev. in unsprayed orchards and tr. in most sprayed orchards in the Annapolis Valley, N.S. (R.G.R.).

FRECKLE PIT (virus). The virus nature of this disease has been established by transmission tests. Symptoms in the Okanagan Valley, B.C. were unusually sev. in 1963 and seem to vary in intensity with weather conditions. No natural spread has been noted (J.M. Wilks).

ANJOU PIT (cause unknown). Symptoms were mild in the Okanagan Valley, B.C. in 1963 and were most commonly seen on young trees and trees with a light crop (J.M.W.).

COTTONY SPOT (insect injury). This disorder, reported to be of unknown etiology, has been shown to be caused by the feeding of the spined stink bug, Euschistus variolarius (J.M.W.).

GREEN STAIN (cause unknown) affected a large percentage of Anjou fruits in the Okanagan Valley, B.C. but symptoms were mild in 1963 (J.M.W.).

IRON DEFICIENCY CHLOROSIS was apparent on pears trees in the Provincial Nursery, Regina, Sask. (T. Milasin).

QUINCE

FIRE BLIGHT (Erwinia amylovora) affected 4/12 trees at Branchton, Ont. (A.E. Straby).

B. STONE FRUITS

APRICOT

BROWN ROT (Monilinia ? demissa) produced an early-season infection of leaves, petioles and twigs of apricot at Osoyoos and Summerland, B.C. There was no evidence of spread to adjacent peaches or cherries. The causal organism, when cultured, appeared identical to M. demissa isolated from adjacent bushes of Prunus virginiana var demissa on which host it has previously been reported (L.E. Lopatecki).

TWIG BLIGHT (Monilinia fructicola) was sev. in 1 orchard at Summerland, B.C. (L.E.L.).

CORYNEUM BLIGHT (Stigmina carpophila). Fruit infections were common in many orchards in the Okanagan Valley, B.C. Unusually wet weather in April and early May favored the disease (D.L. McIntosh).

WILT (Verticillium dahliae) affected a small percentage of the trees at several locations in the Okanagan Valley, B.C. (G.E. Woolliams).

RING POX (virus) is still spreading slowly in the Okanagan and Similkameen Valleys of B.C. Its presence has also been detected in wild Prunus spp. in the Thompson and Fraser Valleys (T.B. Lott).

CHERRY

SHOT HOLE (Higginsia hiemalis). Infection was sev. in a planting at Moncton, N.B. where preventative sprays were begun too late (S.R. Colpitts) and was 10% on Bing cherries at Middleton, N.S. (G.O. Gourley) monderate infections were seen on black cherry trees at Acaciaville, N.S. (L.P. Magasi).

BROWN ROT (Monilinia fructicola) of sweet cherries was first seen in the Okanagan Valley, B.C. on July 5 at Naramata in an orchard equipped with an overhead sprinkler system. It soon became general throughout the Valley with very heavy infections recorded east of Osoyoos Lake, at Okanagan Falls and Naramata. Lighter infections occurred at Oliver, Penticton, Summerland, Peachland, Kelowna and Salmon Arm. Such a general infection of sweet cherries has not occurred before in the Okanagan (L.E. Lopatecki). Some infection occurred in May in the Niagara Peninsula, Ont. but continued dry weather prevented its spread and fruit infection was negligible at harvest (J.H. de Ronde). Brown rot caused about 5% loss at Middleton, N.S. (C.O.G.).

POWDERY MILDEW (Podosphaera clandestina) was mod. on 15,000 nursery trees at Yarrow and sev. on 2000 at Chilliwack, B.C. (Gibson, Watt).

WILT (Verticillium dahliae) caused extensive damage in a young orchard of sour cherries at Kelowna and occurs in most sweet cherry orchards in the Okanagan Valley, B.C. (G.E. Woolliams).

BACTERIAL SPOT (Xanthomonas pruni) caused some damage at the Provincial Nursery, Regina, Sask. (T. Milasin) and was observed on the variety Windsor in the Niagara Peninsula, Ont. (R.S. Willison).

LAMBERT MOTTLE (virus) has almost disappeared in the Okanagan Valley, B.C. (T.B. Lott).

LITTLE CHERRY (virus) was sev. in the Kootenay area, B.C. (J. M. Wilks).

TWISTED LEAF (virus) caused sev. damage to individual trees in some orchards in the Okanagan and Similkameen Valleys, B.C. It continues to spread slowly in these areas (T.B.L.).

NECROTIC SPOTTING AND FRUIT MALFORMATION (? virus) occurred on the variety Windsor nr. Stoney Creek, Ont. Leaf symptoms consisted of necrotic spotting and shot hole with a slight twisting of laminae and petioles. There was little or no shoot elongation in severely affected trees. Fruit was deformed, showing flat surfaces and depressions. Little, if any, internal browning occurred. The condition was confined to the Windsor variety and there was evidence of spread from tree to tree within the variety. It is suspected to be of virus origin (R.S.W.).

FROST INJURY. Frost in the Niagara Peninsula, Ont. on 24 and 25 May resulted in poor quality sweet cherries at harvest. The white fleshed varieties Napoleon and White Spanish were particularly affected (J.H. de R.).

PEACH

CROWN GALL (Agrobacterium tumefaciens). Losses in the Okanagan Valley, B.C. were well below normal in 1963 (L.E. Lopatecki).

BROWN ROT (Monilinia fructicola). Trace infection was seen in an orchard at Oliver, B.C. in mid-July and a shipment of 2000 boxes at a cannery at Penticton was a complete loss. Subsequent shipments of cannery peaches were dipped or drenched with a Botran (dichloronitro analine)-captan mixture at the packing houses and no further major losses occurred (L.E.L.). Brown rot infection in orchards and in storage was negligible in the Niagara Peninsula, Ont. (J.H. de R.). It was sl. at Kentville, N.S. (C.O.G.).

RHIZOPUS ROT (R. nigricans) was sev. at Summerland, B.C. in peaches not treated with Botran as a dip or drench. Losses were as high as 22% (L.E.L.).

LEAF CURL (Taphrina deformans) was recorded in 2 nurseries at Victoria and in 2 at Richmond, B.C. (M. Waseem, Gibson, Watt). It was unusually sev. in the Okanagan Valley B.C. (M.F. Welsh). Specimens were received from Dartmouth and tr.-sl. infections were seen at Kentville, N.S. (K.A. Harrison, C.O.G.).

CANKER (Valsa spp.) is present in most peach orchards in Essex Co., Ont. Although the highest incidence of canker is on 10-15 year old trees, it is also seen on young (2-3 year old) trees (C.D. McKeen).

WILT (Verticillium dahliae) was observed at several locations in the Okanagan Valley, B.C. It is usually most sev. on young trees and may affect from a few to 25% of the trees in an orchard (G.E. Woolliams).

BACTERIAL SPOT (Xanthomonas pruni) affected the varieties Kelhaven and Redhaven in Essex Co., Ont. It was most sev. on young, non-bearing trees. Most Kelhaven trees were defoliated by Sept. (J.R. Chard). Heavy rain fall in the Niagara Peninsula, Ont. in July and Aug. favored infection and spread. Damage was heavy in several localities (J.H. de R.).

PLUM

BLACK KNOT (Dibotryon morbosum) was sev. on 10 trees at St. Jean, Que. (R. Crête) and on 3 trees at Moncton, N.B. (S.R. Colpitts). It was sl. on the variety Magnum Bonum at MacDonald's Corner, N.S. (C.O. Gourley) and sev. on unsprayed trees nr. Charlottetown, P.E.I. where the disease has virtually eliminated the growing of plums and cherries in home gardens (G.W. Ayers). It was sev. on plum trees in the Cornerbrook and Codroy Valley areas of w. Nfld. (W.J. Carrol).

BROWN ROT (Monilinia fructicola) caused 50% loss of fruit on 3 trees at Newcastle, N.B. (S.R.C.).

PLUM POCKETS (Taphrina communis). Two garden trees at Port Arthur, Ont. were heavily infected (A.E. Straby). It was tr. on Burbank plums at Macdonald's Corner, N.S. (C.O.G.).

BACTERIAL SPOT (Xanthomonas pruni) caused some damage at the Provincial Nursery, Regina, Sask. (T. Milasin) and affected about 30% of the fruit of the variety Santa Rosa in a small planting in Grantham Twp., Ont. (R.S. Willison).

IRON DEFICIENCY CHLOROSIS was apparent on plum trees in the Provincial Nursery, Regina, Sask. (T.M.).

WINTER INJURY resulted in a considerable amount of poor leaf development and bud drop in cold-sensitive fruit trees, particularly plums, in c. Alta. Temperatures dropped suddenly to -30°F following warm weather in Feb. (W.P. Skoropad).

PRUNE

BLACK KNOT (Dibotryon morbosum) caused mod. damage to an unknown variety of prune at La Pocatiere, Que. (H. Gènèreux).

BACTERIAL SPOT (Xanthomonas pruni) caused slight fruit spotting on Stanley prune in an orchard in Gosfield South Twp., Ont. (J.R. Chard).

C. RIBES FRUITS

CURRANT

BLISTER RUST (Cronartium ribicola). Leaves of black currant bearing abundant telia were collected 10 miles north of Indian Head and at 2 locations in Saskatoon, Sask. (C.G. Riley, V. Hildahl). Infection in a garden at Moncton, N.B. was 40% (S.R. Colpitts).

GOOSEBERRY

POWDERY MILDEW (Sphaerotheca mors-uvae) was mod. on 500 nursery plants at Ste. Dorothée, (A.E. Straby) and sl. in a garden planting at Abbotsford, Que. (R. Crête).

D. RUBUS FRUITS

RASPBERRY

CANE GALL (Agrobacterium rubi) affected 5% of the canes of N.Y. 17861 at Kentville, N.S. (K.A. Harrison).

CROWN GALL (Agrobacterium tumefaciens) was tr. on Viking at Kentville, N.S. (K.A.H.).

SPUR BLIGHT (Didymella applanata). An infected speciemen was received from Kamouraska Co., Que. (J. Santerre). A sev. infection was seen at Red Head, N.B. (K.M. Graham, W.B. Collins) and it caused 20% damage at Mavailette, N.S. (C.L. Lockhart).

ANTHRACNOSE (Elsinoë veneta). A moderately infected specimen was received from L'Islet Co., Que. (J.S.). It was widespread in home gardens in N.B. and caused a sev. reduction in yield in a small commercial planting at Gagetown, N.B. (S.R. Colpitts). The very heavy infection of canes in the Annapolis Valley, N.S. in 1962 was followed by winter killing. Dry weather prevented a severe outbreak in 1963 (K.A.H.).

LATE LEAF RUST (Pucciniastrum americanum). Infection was 30% in 3 plantings at Gagetown, N.B. with a trace of infection on the fruit (S.R.C.). Fruit infection was sl. in Viking at Kentville and a sev. infection occurred on the same variety in a home garden at Granville Ferry, N.S. (K.A.H., R.G. Ross).

BLUE STEM (Verticillium albo-atrum) was tr. on Viking in a garden planting at Kentville, N.S. (K.A.H.).

LEAF CURL AND MOSAIC (virus diseases) are by far the most serious diseases of raspberries encountered in N.B. Garden plantings especially show infection ranging from tr.-100% (S.R.C.).

E. OTHER FRUITS

BLUEBERRY

CROWN GALL (Agrobacterium tumefaciens) was observed on a single cutting of lowbush blueberry, Vaccinium angustifolium, from Tower Hill, N.B. (K.M. Graham, W.G. Barker). Crown gall, has been frequently reported to the Survey on highbush blueberry, Vaccinium corymbosum. This is the first report of its occurrence on one of the lowbush species (D.W. Creelman). It affected 10% of the plants of the highbush variety Bluecrop at Sheffield Mills, N.S. (C.L. Lockhart, C.O. Gourley).

BLOSSOM AND TWIG BLIGHT (Botrytis cinerea) was common in Charlotte Co., N.B. and damage ranged from tr.-10% (S.R. Colpitts).

RED LEAF (Exobasidium vaccinii). Slight infections were seen at Avondale, Nfld. (O.A. Olson).

CANKER (Fusicoccum putrefaciens) caused 10% damage to the variety Jersey and a trace of damage to Coville and Burlington in a 20-acre plantation at Sheffield Mills, N.S. Burlington suffered 1% damage at Morristown (C.L.L.).

POWDERY MILDEW (Microsphaera penicillata var vaccinii) caused defoliation in scattered areas in a commercial field of lowbush blueberries at Upper Musquodoboit, N.S. (C.L.L.).

WITCHES' BROOM (Pucciniastrum goeppertianum) was rated tr-2% in most fields checked in Charlotte Co., N.B. but caused little damage (S.R.C.).

CHEMICAL INJURY. Arsenical injury, evident as a scorching of tips and margins of leaves accompanied by some necrotic spotting was seen in a field in Cumberland Co., N.S. Slight defoliation was evident in Sept. (C.L.L.).

WINTER INJURY affected most of the late growth on the highbush variety High Blue at Sheffield Mills, N.S. (C.L.L.).

CRANBERRY

STORAGE ROTS (various organisms). Isolations from rotted berries from Pictou Co., N.S. yielded the following organisms: Fusicoccum putrefaciens. 16%; Penicillium spp., 21%; Sporonema oxycocci, 3%; Acanthorynchus vaccinii, 2%; Guignardia vaccinii, 1% Sterile breakdown accounted for 36% of the deterioration and 21% of the berries yielded yeasts, bacteria and unidentified mixtures of fungi (K.A. Harrison).

GRAPE

DEAD ARM (Cryptosporella viticola) continues to be serious, particularly on Seibel 10878 in the Niagra Peninsula, Ont. The Sphaeropsis state of Physalospora obtusa and a species of Myxosporium were found associated with the disease (J.H. de Ronde, R.S. Willison).

BLACK ROT (Guignardia bidwellii) was sev. on 5 plants in a nursery at St. Bruno, Que. (Cardinal, Benazet).

FAN LEAF (virus). Mild symptoms of this disease were recognized or suspected on 11 varieties in 4 vineyards in the Okanagan Valley, B.C. (M.F. Welsh). This constitutes the first recorded record of this disease in Canada (D.W. Creelman).

LEAF ROLL (virus). Slight-mod. symptoms were recognized, or suspected, on 9 varieties in 2 of the vineyards included in a survey of the Okanagan and Similkameen Valleys, B.C. Damage was estimated to be slight (M.F.W.). This disease, like fan leaf, has not previously been reported to the Survey (D.W.C.).

DIEBACK AND SHOT-BERRY (boron deficiency) was sev. on the varieties Patricia and Diamond in a large vineyard at Okanagan Mission, B.C. A similar condition was reported by extension personnel in several other vineyards in the Okanagan Valley. Symptoms consisted of superficial blackening of the stems, necrotic pitting in the pith, small deformed leaves at the tips, chlorosis, and tip necrosis. Fruits presented a "shot-berry" or "pumpkins and peas" effect (M.F.W.).

LITTLE LEAF AND CHLOROSIS (zinc deficiency) was sl.-mod. on several varieties in a number of vineyards in the Okanagan Valley, B.C. Typical symptoms were the presence of small leaves at the tips, arrested growth and a creamy yellowing of interveinal tissue (M.F.W.).

STRAWBERRY

GRAY MOLD (Botrytis cinerea) caused slight damage in a garden at Lethbridge, Alta. (F.R. Harper). Blossoms were 60% infected at Young's Cove, N.B. in June and fruit rot became serious in plantings with heavy foliage at Gagetown and other provincial centers in July (S.R. Colpitts). All varieties, with the possible exception of Sparkle, developed 25-75% fruit rot at Macdonald's Corner, N.B. following a week of rainy weather in early Aug. (K.M. Graham, W.B. Collins). Losses ran as high as 64% in some fields in Kings and Annapolis counties, N.S. and the average rate of infection was 20%. The high losses were in inadequately protected plantings (C.O. Gourley). Gray mold rot was general in P.E.I. with losses of up to 10% (C.B. Willis). A light infection was observed at Cormack, Nfld. (O.A. Olsen).

LEAF BLIGHT (Dendrophoma obscurans). Trace infections were seen in 3 fields at Gagetown, N.B. (S.R.C.), on the variety Sparkle at Kentville, N.S. (C.O.G.) and in numerous plantings throughout P.E.I. (C.B.W.).

LEAF SCORCH (Diplocarpon earliana). The new variety Vesper, on trial at Truro and Kentville, N.S., proved to be highly susceptible to leaf scorch and showed 75% infection at both trial stations (C.O.G.). Infections of tr.-5% were common in P.E.I. (C.B.W.).

LEAF SPOT (Gloesporium sp.). Trace infections were observed at Morristown, N.S. (C.O.G.).

LEAF BLOTCH (Gnomonia fructicola) was tr. on the variety Vesper at Truro, N.S. (C.O.G.).

LEAF SPOT (Mycosphaerella fragariae) was general and occasionally sev. in N.B. particularly on the varieties Cavalier, Louise and Senator Dunlop (S.R.C.). M. fragariae was isolated from blackened achenes of fruits from St. Stephen, N.B. (K.M.G., C.E. Smith). Late summer and fall infection of new plantings in Kings and Annapolis counties, N.S. reached as high as 25% (C.O.G.). Infections ranged from tr.-20% in P.E.I. where the variety Cavalier seemed more susceptible than others observed (C.B.W.). Moderate - sev. infection occurred on Sparkle at St. John's West, Nfld. (O.A.O.).

CROWN ROT (Rhizoctonia solani) caused sl. damage to strawberries grown between rows of apple trees at Ange Gardien, Que. (R. Crête).

RHIZOPUS ROT (R. nigricans) rendered unfit for sale a shipment of strawberries left over a weekend at Fredericton, N.B. (S.R.C.).

LEAF SPOT (Septoria aciculosa). Trace infections were seen on Redcoat at Kentville, N.S. (C.O.G.).

POWDERY MILDEW (Sphaerotheca macularis) was tr. on Cavalier at Berwick, N.S. (C.O.G.) and infections ranged from tr.-100%, causing sl.-mod. injury, in P.E.I. (C.B.W.).

WILT (Verticillium albo-atrum) caused sl. damage at Gagetown, N.B. (S.R.C.) and losses of 1-20% of the plants in some fields in Kings and Hants counties, N.S. (C.O.G.).

ROOT ROT (various organisms) continued to cause serious losses in plantings in N.B. (S.R.C.) and caused mod.-sev. damage to plantings in Queens Co., P.E.I. (C.B.W.).

GREEN PETAL (virus). Infection in the lower St. Lawrence area of Que. was considerably less than in 1962. The varieties Senator Dunlop and Redcoat showed 2% infection at La Pocatiere (H. Gènèreux). Trace infections only were recorded on Sparkle and Catskill in Kings Co., N.S. (K.A. Harrison, C.O.G.). One plantain plant, Plantago sp., at Kentville had symptoms closely resembling those of green petal. The symptoms were not those of aster yellows virus on this host (K.A.H.). In P.E.I. infections, particularly on Sparkle, were rated from tr.-20% (C.B.W.).

FROST INJURY. Spring frost killed 60% of the blossom buds in a field at Hartland, N.B. (S.R.C.).

MAGNESIUM DEFICIENCY. Severe symptoms were seen in 2 fields at Gagetown, N.B. Yields were drastically reduced (S.R.C.).

V. DISEASES OF TREES AND SHRUBS*

ACER - Maple

Anthracnose (Gloeosporium apocryptum). Infection was mod. on 25 saplings of A. rubrum var "Drummondii" at Ottawa, Ont. and sl. on 1500 saplings of A. saccharinum in a nursery at Rougemont, Que. (A.E. Straby). Moderate-sev. browning of maple foliage was observed at a number of locations in the Maritime Provinces (L. Magasi).

Coral canker (Nectria cinnabarina). Bark from a cankered area on A. negundo was received from Windsor, N.S. (K.A. Harrison). It was observed fruiting on dead ends of living branches and on a large branch near an old wound on A. platanoides at St. John's, Nfld. (O.A. Olsen).

Tar spot (Rhytisma acerinum). Infection was 40% on 200 trees of A. saccharinum at Hymers, Ont. (W.G. Powell).

Wilt (Verticillium albo-atrum). Typical symptoms developed on a few trees of A. platanoides in a nursery at Oldcastle, Ont. (A.E.S.), and affected several trees of A. saccharum at Cowansville, Que. (G.B. Ouellette).

Deterioration (cause unknown) continued to cause concern throughout s. Ont. Significant mortality of A saccharum occurred along highways, secondary roads and streets in urban areas. Further evidence was obtained that adverse environmental conditions are responsible (B.W. Dance, D.F. Lynn). Mortality of many trees of A. saccharinum and a few of A. platanoides in parks in Montreal West, Que. was attributed to water-logged, shallow soils over a heavy clay layer. Seeping water from defective drainage also caused dieback on maple trees at Quebec City (G.B.O.).

Leaf scorch was again common on A. saccharum and other deciduous trees in s. Ont. (B.W.D., D.F.L.).

Winter killing. Three 8-10' trees of A. platanoides var "Crimson King" died from cankers one foot above the soil line at Spencerville, Ont. (A.E.S.).

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* Diseases referred to in this section are mainly those of shade trees and ornamental shrubs, although occasional reference is made to diseases of native forest trees. For a more comprehensive report of tree diseases in Canada the reader is referred to the Annual Reports of the Forest Insect and Disease Survey, published by the Forest Entomology and Pathology Branch, Canada Department of Forestry, Ottawa, Ont.

AESCULUS - Horsechestnut

Leaf blotch (Guignardia aesculi) affected A. hippocastanum throughout N.S. but damage was most evident at locations in Pictou and Yarmouth counties (L. Magasi). Infection was 100% at Kentville, N.S. (C.O. Gourley). It was unusually sev. in P.E.I. in 1963. Some trees at Montague suffered 90% defoliation (G.W. Ayers).

Coral canker (Nectria cinnabarina) was sev. on 25 nursery trees, killing most of them, at Ottawa, Ont. and sl. on 10 nursery trees at Ste. Rose, Que. (A.E. Straby).

BERBERIS - Barberry

Anthracnose (Gloeosporium berberidis) was sl. on 1000 nursery plants at Cookesville, Ont. (A.E. Straby).

Wilt (Verticillium albo-atrum) affected 6/50 plants in a nursery at Victoria, B.C. (M. Waseem).

BETULA - Birch

Rust (Melampsoridium betulinum). Infection was sl. on 12,000 birch trees in a nursery at Yarrow, B.C. (Gibson, Watt).

Leaf spot (Septoria betulae) was mod.-sev. on B. alba at Charlottetown, P.E.I. Infection was accompanied by progressive chlorosis and defoliation (G.W. Ayers, D.W. Creelman).

CATALPA

Wilt (Verticillium albo-atrum). A badly wilted specimen of C. speciosa was received from Montreal, Que. The accompanying description of tree symptoms strongly suggested Verticillium infection (D.W. Creelman).

CORNUS - Dogwood

Dieback (Apioporthe corni) caused mod. damage to 12 plants of C. alba var elegantissima at Wellesley, Ont. (A.E. Straby, R.H. Arnold). This is the first report to the Survey, of A. corni (D.W.C.).

Leaf blight (Monilinia corni). The fungus was isolated from blackish-brown lesions on leaves of C. nuttallii nr. Sidney, B.C. (R.G. Atkinson).

Low temperature injury caused sev. curling of the foliage on new growth of C. florida at Vancouver, B.C. Some leaves became necrotic by the end of July (H.N.W. Toms).

CRATAEGUS - Hawthorn

Anthracnose (Gloeosporium sp.) was sl. on 10 nursery trees at Glen Williams, Ont. (A.E. Straby). This disease has not previously been reported to the Survey. The U.S.D.A. Index of Plant Diseases lists a G. crataegi Dearn. & Barth. on this host (D.W.C.).

Rust (Gymnosporangium sp.). Speciemens bearing pycnia only were received from Galt and Carlisle, Ont. and from Chomedy, Que. where it was sl. on 200 plants (A.E.S.).

Powdery mildew (Podosphaera clandestina) was sev. on 10,000 plants in a nursery at Yarrow, B.C. (Gibson, Watt).

Stem pitting (? virus). Several trees on the University of Manitoba campus, Fort Garry, exhibited symptoms similar to those caused by a virus on apple (W.C. McDonald).

FORSYTHIA - Golden Bells

Bacterial blight (Pseudomonas syringae) caused mod. damage on 25 trees in a nursery at Aylmer, Que. (A.E. Straby).

FRAXINUS - Ash

Rust (Puccinia sparaganioides). Damage to F. americana was sev. in the Round Hill - Lequille area and on 1 tree at Digby, N.S. (L. Magasi). Defoliation caused by rust was less severe than for several years at Kentville, N.S. (K.A. Harrison).

JUNIPERUS - Juniper

Rust (Gymnosporangium spp.). The following occurrences were recorded in Ont. G. clavipes was heavy on J. virginiana in a planting surrounded by rosacesus shrubs at Simcoe. G. juniperi-virginianae was sl. on J. virginiana var. canaerti in a nursery in the Toronto area. G. clavipes was sl. on J. communis var. "Krakovia" in a 1/4 acre planting at Clarkson and sl. on 750 plants of J. communis var. suecica and J. sabina at Oakville. G. globosum was tr. on Juniperus sp. (indet.) at Oakville (A.E. Straby, J.A. Parmelee).

Needle cast (Lophodermium juniperinum) was tr. on 100 nursery shrubs at Richmond, Ont. (A.E.S.).

LABURNUM - Beantree

Coral canker (Nectria cinnabarina) was sev. on a speciemen tree of L. anagyroides at Gander, Nfld. (O.A. Olsen).

LIQUIDAMBER - Sweetgum

Coral canker (Nectria cinnabarina). Infection was mod. on 5 trees in a nursery at Clarkson, Ont., possibly following winter injury (A.E. Straby).

LONICERA - Honeysuckle

Leaf blight (Herpobasidium deformans). Affected specimens of L. tatarica) were received from Riviere du Loup, Que. (J. Santerre, D.W. Creelman). The same host was severely infected nr. Moncton, N.B. (K.M. Graham, R.G. White).

Powdery mildew (Microsphaera penicillata var lonicerae). Infection was mod. on a hedge at Ottawa, Ont. (D.W. Creelman). In nurseries in Que. it was mod. on 2,000 plants at Boucherville, mod. on 1500 bushes at Charlesbourg and sev. on 300 bushes at Joliette (A.E. Straby, Cardinal, Benazet).

MAHONIA - Oregon Grape

Rust (Cumminsiella mirabilissima) was sev. on a small planting at Sherkston and on 25 plants at Waterdown Ont. (C.H. Hovey, A.E. Straby).

MALUS - Flowering Crab

Twig and stem canker (Cytospora sp.). Infection was mod. on 100 trees in a nursery at Richmond, Ont. (A.E. Straby) and was observed on a few ornamental Malus trees at Ste. Foy and Shawinigan Falls, Que. (G.B. Ouellette).

Fire blight (Erwinia amylovora). Moderate-sev. infections were common on ornamental plantings in s. Alta. (F.R. Harper).

Rust (Gymmosporangium juniperi-virginianae). A heavily infected specimen of Bectchel's crab, Malus ioensis, was received from the Prescott, Ont. district (D.W. Creelman, J.A. Parmelee).

Powdery mildew (Podosphaera leucotricha) was mod. on half the trees in a nursery at Yarrow and sl. on 20% of the trees in a nursery at Fort Langley, B.C. (Gibson, Watt).

Scab (Venturia inaequalis). Infection ranged from mod.-sev. in nurseries at Aldergrove, Fort Langley, Pitt Meadows, North Surrey, Yarrow and Saanich, B.C. (Gibson, Watt). It was sl. in nurseries at Acton, Ont. and Ancienne Lorette, Que. (A.E.S.).

MORUS - Mulberry

Coral canker (Nectria cinnabarina) severely damaged 2 trees of M. alba var pendula in a nursery at Montreal, Que. (Cardinal, Benazet)

Twig blight (Septomyxa tulasnei v. Hoehn.) caused mod. damage to 10 saplings of Morus sp. at Chomedy, Que. This is probably the conidial state of Diaporthe longirostris Sacc. (A.E. Straby, R.H. Arnold). This disease has not previously been reported to the Survey (D.W. Creelman).

PICEA - Spruce

Eastern dwarf mistletoe (Arceuthobium pusillum) caused numerous witches' brooms on Picea glauca on the Green Gables Golf Course, Cavendish, P.E.I. (L.P. Magasi).

PINUS - Pine

Blister rust (Cronartium ribicola). Severe infections were seen in a planted row of 15-year old P. strobus at Bathurst, N.B. (L.P. Magasi).

POPULUS - Poplar

Canker (Dothichiza populea). Affected specimens of P. nigra var. italica were received from Aylmer, Que. (A.E. Straby).

Yellow leaf blister (Taphrina populina). Infections on Populus spp., principally P. nigra var italica, ranged from sl.-sev. on most trees in nurseries at Victoria, Ocean Park, Richmond, White Rock, North Surrey, Pitt Meadows, Langley, Chilliwack and Royal Oak, B.C. (Gibson, Watt). It was sl. on 500 trees in a nursery at Coteau du Lac, Que. (J.A. Cardinal, J. Benazet).

PRUNUS - Native and Flowering Cherries

Crown gall (Agrobacterium tumefaciens). Fifty trees of P. padus, imported from the U.S.A., were sev. infected in a nursery at Lethbridge, Alta. and ordered destroyed (R.P. Stogryn).

Black knot (Dibotryon morbosum). Nearly 100% infection was seen on imported trees of P. padus in a nursery in s. Alta. A check of trees imported and subsequently distributed by this nursery in the past 2 years showed 25-50% of the material infected (R.P.S., F.R. Harper). It was common on P. pensylvanica and P. virginiana in s. N.B. and N.S. (L.P. Magasi). Wild cherries were heavily infected in the St. John's Nfld. area (O.A. Olsen).

Leaf blight (Monilinia demissa). Infection was heavy on leaves and petioles of P. demissa at Keremos, Irish Creek and Swan Lake, B.C. (L.E. Lopatecki).

Blossom blight (Monilinia fructicola) was seen on a number of bushes of P. triloba in the Summerland, B.C. district (D.L. McIntosh).

Powdery mildew (Podosphaera clandestina). Moderate infections occurred on 1000 plants of Prunus in a nursery at Ste. Dorothée, Que. (J.A. Cardinal, J. Benazet).

Bacterial canker (Pseudomonas mors-prunorum). Leaves and blossoms of a 12-ft. flowering cherry at Victoria, B.C. were wilting as a result of a barely noticeable stem canker extending about 8" from the crown region. The infection appeared to occur at the union of scion and rootstock. The casual organism was isolated (R.G. Atkinson).

Bacterial blight (Pseudomonas syringae) continues to cause sev. damage to Japanese ornamental cherry in North and West Vancouver, B.C. (H.N.W. Toms).

Leaf spot (Septoria pruni). P. virginiana at Port Morien, N.S. was 100% infected (C.O. Gourley).

Witches' broom (Taphrina cerasi). Lightly infected trees of P. pensylvanica were reported from scattered locations in N.B. and e. N.S. (L.P.M.).

PYRUS - Mountain Ash

Canker (Cytospora spp.). C. rubescens was found on 1 tree at Lethbridge, Alta. (F.R. Harper) and Cytospora sp. caused sev. twig and stem cankers, following winter injury to understock, to 20 young trees at Aylmer, Que. It was also sev. at Richmond, Ont. (A.E. Straby).

Fire blight (Erwinia amylovora). There was a sharp increase in incidence in c. Alta. (W.P. Skoropad). Fire blight was very sev. in the Calgary and Lethbridge areas of Alta. and necessitated the destruction of many specimen trees (R.P. Stogryn, F.R.H.). The disease was epidemic in Saskatoon, Sask. in 1963 (R.J. Ledingham) and was mod. on 200 plants in a nursery at Ste. Dorothée, Que. (J.A. Cardinal, J. Benazet).

Coral canker (Nectria galligena) followed winter injury and damage from fire blight in the previous season at Aylmer, Que. Six/12 nursery trees were killed. It also occurred at Richmond, Ont. (A.E.S.).

QUERCUS - Oak

Anthracnose (Gnomonia quercina). Infection was sev. on 5 saplings of Q borealis at Fabreville and sl. on 500 at Ste. Dorothée, Que. (A.E. Straby).

Twig canker (Myxosporium lanceolata Sacc. & Roum.) caused sev. damage on 25 trees of Q. robur var. fimbriata in a nursery at Ottawa, Ont. The trees were imported from Europe in 1962. This fungus is the conidial state of Diaporthe leiphaemia (Fr.) Sacc. (A.E.S., R.H. Arnold). The disease has not been previously reported to the Survey (D.W. Creelman).

Leaf blister (Taphrina caerulescens) was sl. on 5 trees at Senneville, Que. (A.E.S.).

RHODODENDRON - Azalea

Shoot gall (Exobasidium vaccinii). Ten plants of the azalea variety Debutante were affected in a nursery at Victoria, B.C. (M. Waseem).

RIBES - Flowering Currant

Anthracnose (Drepanopeziza variable). Moderate infections developed on hedges of R. alpinum in the Ottawa, Ont. area. Some defoliation resulted but the disease was not as sev. as in the past 2 seasons (H.S. Thompson, D.W. Creelman). It was mod. on 1000 plants in a nursery at Boucherville, Que. (J.A. Cardinal, J. Benazet).

Powdery mildew (Sphaerotheca mors-uvae) was sl. on a hedge of R. alpinum at Ottawa, Ont. (D.W.C.), mod. on 100 nursery plants at Boucherville and sev. on 1500 plants at Ste. Dorothée, Que. (J.A.C., J.B.).

ROSA - Rose

Black spot (Diplocarpon rosae). A moderately infected specimen was received from an Ottawa, Ont. garden (D.W. Creelman). A heavy infection was seen at Port Morien, N.S. (C.O. Gourley).

Stem canker (Leptosphaeria coniothyrium). The organism was isolated from cankers on several moribumd plants from a greenhouse at Pictou, N.S. (K.A. Harrison).

Dieback ? (Phoma sp.). About 20% of the plants being forced in a commercial greenhouse at Lethbridge, Alta. suffered mod.-sev. damage. A species of Phoma was associated with the cankers (F.R. Harper).

Powdery mildew (Sphaerotheca pannosa). Infection varied from sl.-sev. on assorted varieties in 2 nurseries at Victoria and in 1 at Chilliwack, B.C. (M. Waseem, Gibson, Watt). It was sl.-mod. in garden plantings at Lethbridge, Alta. (F.R.H.) and very sev., causing 90% defoliation on a climbing variety at Kentville, N.S. (C.O.G.).

Chemical injury. A summer application of 2, 4-D caused mod. damage to hybrid teas and sev. damage to climbers in an Ottawa, Ont. garden (D.W. Creelman). Hybrid teas in a home garden at Weston, Ont. were affected (A.E. Straby).

Inon deficiency chlorosis was common in many areas of Sask. (R.J. Ledingham).

SALIX - Willow

Canker (Cytospora chrysosperma). Severe infections occurred on 25 trees in a nursery at Richmond, Ont. (A.E. Straby).

Twig canker (Marssonina kriegeriana). Moderately cankered specimens of S. babylonica were received from a garden in Victoria, B.C. (R.G. Atkinson).

Scab and blight (Venturia saliciperda, Physalospora miyabeana) was observed, in varying degrees of intensity, in nurseries at Langley, Richmond, Chilliwack and Yarrow, B.C. (Gibson, Watt). Heavy infections occurred at St. Tite and other localities in Champlain Co. and at Ville Marie, Témiscamingue Co., Que. (G.B. Ouelette). The disease was generally light in the Maritime Provinces but was occasionally mod-sev. in Inverness, Antigonish, Colchester and Annapolis counties, N.S. (L.P. Magasi). Trace infections only were seen on S. vitellina in Kings Co., N.S. (K.A. Harrison)

Dieback (cause unknown) affected 1 ornamental planting at Lethbridge, Alta. (F.R. Harper).

SAMBUCUS - Elder

Coral canker (Nectria cinnabarina) caused the abrupt wilting of one or more branches of several plants at Saskatoon, Sask. (C.G. Riley, R.J. Ledingham).

SYMPHORICARPOS - Snowberry

Spot anthracnose (Sphaceloma symphoricarpi). A small bush at Kentville, N.S. was badly defoliated as a result of heavy infection (K.A. Harrison).

SYRINGA - Lilac

Powdery mildew (Microsphaera penicillata). Heavy infection occurred on several young plants at Kentville, N.S. (K.A. Harrison).

Bacterial blight (Pseudomonas syringae) caused sev. damage in a small planting at Lethbridge, Alta. (F.R. Harper). Infection was sl. on 100 French hybrids in a nursery at Ottawa, Ont. and on 75 nursery shrubs at Aylmer, Que. (A.E. Straby).

Winter killing caused slight injury to the main stems of French hybrids in a nursery at Aylmer, Que. (A.E.S.).

Twig blight (Pestalotia funera). Trace amounts of damage occurred in a nursery at Richmond, Ont. (A.E.S.).

TILIA - Linden

Leaf spot (Gloeosporium tiliae). Infection was mod. on 100 trees in a nursery at Spencerville, Ont. (A.E. Straby).

Chemical injury (herbicide) occurred in nurseries at Ottawa and Spencerville, Ont. (A.E. Straby).

ULMUS - Elm

Dutch elm disease (Ceratocystis ulmi). The known distribution of this disease was extended to the town of Callendar, on Lake Nipissing, Ont. (B.W. Dance, D.F. Lynn) and in Témascamingue Co., Que. (G.B. Ouellette). It was found for the first time in Northumberland and Charlotte counties, N.B. at Blissfield and Milltown, respectively (L.P. Magasi).

Black spot (Gnomonia ulmea) was sl. on Ulmus sp. in a nursery at Edmonton, Alta. (R.P. Brandrith), on a single specimen tree of U. pumila in an Ottawa, Ont. garden (D.W. Creelman) and on 8000 saplings of U. parvifolia at St. Paul d' Abbotsford, Que. (A.E. Straby). It was common on U. americana shade trees at Fredericton, N.B. (L.P.M.).

Coral canker (Nectria cinnabarina) continued to cause mortality of U. pumila planted as ornamentals at Cornerbrook, Nfld. (W.J. Carroll).

VI. DISEASES OF HERBACEOUS ORNAMENTALS

ALTERNANTHERA

Root-knot nematode (Meloidogyne incognita). An infected specimen was received from Ottawa, Ont. (B.F. Hopper).

ALTHAEA - Hollyhock

Rust (Puccinia malvacearum) was generally light in the Okanagan Valley, B.C. (G.E. Woolliams) and in the lower St. Lawrence region, Que. (H. Genereux) but was sev. at Moncton, N.B. (S.R. Colpitts).

Wilt and stem rot (Sclerotinia sclerotiorum). An infected specimen was received from Saskatoon, Sask. (R.J. Ledingham).

ANTIRRHINUM - Snapdragon

Gray mold (Botrytis cinerea). Stem infections killed about 1% of the plants in a greenhouse at Falmouth, N.S. (K.A. Harrison).

Stem rot (Phytophthora cactorum). Plants in pots were moderately affected but those in flats showed no disease in a commercial greenhouse at Dundas, Ont. (A.E. Straby).

CALENDULA

Smut (Entyloma polysporum (Pk.) Farl.). Two beds of calendulas at Kentville, N.S. were completely destroyed by Oct. In mid-July the leaves were heavily spotted with pale green dots. The spots dried out and became brown after several weeks and the leaves were killed. There were clusters of chlamydospores in each spot (K.A. Harrison, D.B.O. Saville). This represents a first report to the Survey (D.W. Creelman).

Aster yellows (aster yellows virus). Trace infections only were seen in Kings Co., N.S. (K.A.H.).

CALLISTEPHUS - China aster

Wilt and stem rot (Fusarium oxysporum f. callistephi) caused about 15% loss in a planting at Aldershort, N.S. (C.L. Lockhart).

Aster yellows (aster yellows virus). Early-flowering china asters from bedding plants were relatively free of the disease at Saskatoon, Sask. whereas later flowering ones were severely affected (R.J. Ledingham). Early infection was sl. at Kentville, N.S. but it built up rapidly in Sept. (K.A. Harrison).

CHRYSANTHEMUM

Soft rot (Erwinia carotovora). All cuttings in 1 flat at Amherst, N.S. had hollow stems as a result of infection (K.M. Graham).

COLEUS

Root-knot nematode (Meloidogyne incognita). An infected specimen was received from Saskatoon, Sask. (B.E. Hopper).

CYCLAMEN

Root rot (Cylindrocarpon radiciola) caused sev. injury to plants at Brampton, Ont. following invasion by Meloidogyne incognita. Specimens were received from a large commercial grower but no estimate of the overall loss is available (A.E. Straby).

Root-knot nematode (Meloidogyne incognita). Infected specimens were received from Burlington and Toronto, Ont. (B.E. Hopper).

DAHLIA

Crown gall (Agrobacterium tumefaciens). Three plants in a garden at Winnipeg, Man. were sev. affected. One gall near the base of a stem was 4 inches in diam. (W.C. McDonald). A severely affected specimen was received from Montreal, Que. The plant was dwarfed and had failed to produce blooms (H.S. Thompson).

Bacterial rot (Erwinia cytolptica). A single specimen with a trace of infection was seen in Saskatoon, Sask. (R.J. Ledingham). This disease has not previously been reported to the Survey (D.W. Creelman).

Powdery mildew (Erysiphe communis) was mod. on both dwarf and standard varieties in a garden at Ottawa, Ont. (D.W.C.).

Mosaic (virus). Several clones averaged 15% infection at Kentville, N.S. (K.A. Harrison).

DICENTRA - Bleedingheart

Gray mold blight (Botrytis cinerea). Infection was slight in a nursery planting at Lacombe, Alta. (R.P. Brandrith).

GLADIOLUS

Gray mold (Botrytis cinerea). A light infection of several varieties followed several days of rainy weather at Kentville, N.S. (K.A. Harrison).

Corm rot (Fusarium oxysporum F. gladioli) caused sl. damage to 1000 plants in a nursery at St. Bruno, Que. (A.E. Straby). The organism was isolated from a sev. basal rot in 60% of a lot of the variety Life Flame at Kentville, N.S. (K.A.H.).

Scab (Pseudomonas marginata) was sl. in a 25-acre planting in a Quebec nursery (J.A. Cardinal, J. Benazet) and tr. on the variety Snow Princess at Kentville, N.S. (K.A.H.).

Dry Rot (Stromatinia gladioli) was sl.-mod. throughout a 3.5-acre planting of the varieties Spic and Span and Friendship at Leamington, Ont. and sl. in 47 acres at St. Eustache, Que. (A.E.S.). Many diseased plants were seen in Kings Co., N.S. following the heavy build-up of inoculum in 1962 (K.A.H.).

White break (virus) occurred in 56% of the plants of a stock of Spotlight propagated from cormels in 1961. The stock showed 77% virus infection in 1962 (K.A.H.).

IMPATIENS - Balsam

Root-knot nematode (Meloidogyne incognita). An infected specimen was received from Edmonton, Alta. (B.E. Hopper).

IRIS

Leaf spot (Didymellina macrospora) caused some damage in 1/5 plantings entered for certification on Vancouver Island, B.C. Dry weather kept damage to a minimum (R.P. Messum). Severely infected specimens were received from Salt Spring Island, B.C. (R.G. Atkinson). Mod. infections occurred late in the season in a breeding nursery at the U. of Manitoba, Fort Garry, Man. (W.C. McDonald). Infection was mod. in 3 acres at Clarkson, Ont. and sev. on 1000 plants at Chomedy, Que. (A.E. Straby).

Soft rot (Erwinia carotovora) was sl. in a 3-acre planting at Clarkson, Ont. Sap beetle larvae, identified by E. Becker as Glischrochilus fasciatus (Oliv.), were feeding in large numbers in the rotting rhizomes (A.E.S.). About 15% infection in a planting infested with borers was seen at Kentville, N.S. (K.A. Harrison).

LATHYRUS - Sweet Pea

Wilt (Verticillium dahliae) occurred on a farm in the Okanagan Valley, B.C. on which Verticillium wilt had been a problem for a number of years (G.E. Woolliams).

LILIUM - Lily

Botrytis blight (B. elliptica, B. cinerea) was sev. in the Provincial Nursery at Regina and caused extensive damage in a nursery at Parkside, Sask. (T. Milasin, A. Charlebois). It was tr. on Regal lilies at Kentville, N.S. (K.A. Harrison).

NARCISSUS - Narcissus, Daffodil

Smoulder (Botryotinia narcissicola). Infection was sl. in 1/4 plantings on Vancouver Island and in most plantings on the lower mainland of B.C. (R.P. Messum).

Bulb and stem nematode (Ditylenchus dipsaci) was observed in 3 fields on the lower mainland of B.C. (B.M. Lawson).

Basal rot (Fusarium sp.) occurred in 1/4 plantings inspected on Vancouver Island, B.C. (R.P.M.).

Root-lesion nematode (Prathylenchus penetrans) was found in 1 field in the lower mainland, B.C. (B.M.L.).

Scorch (Stagonospora curtisii) was prevalent in late March and early April in plantings on the lower mainland, B.C., especially in fields that had been frost damaged. It was sl. in 1/4 plantings on Vancouver Island (R.P.M., B.M.L.).

Mosaic (virus) was seen in 80% of the stocks of susceptible varieties on the lower mainland of B.C. Some stocks had up to 3% infection (B.M.L.).

White streak (virus) was prevalent in most susceptible stocks in B.C. with symptoms appearing late in the season (B.M.L.).

PAEONIA - Peony

Botrytis blight (B. paeoniae) was prevalent in a nursery at Ocean Park, B.C. (Gibson, Watt). It was sl. in nurseries at Edmonton and Bowden (R.P. Brandrith), caused sl. damage in gardens at Cardston and Twin Butte (P.E. Blakely) and was prevalent in both new and old plantings in nurseries in s. Alta. (R.P. Stogryn). Several light infections were reported in Kings Co., N.S. (K.A. Harrison).

Stem rot (Sclerotinia sclerotiorum) affected 4 plants in a small nursery at Acton, Ont. (A.E. Straby).

PELARGONIUM - Geranium

Wilt (Verticillium dahliae) was found affecting P. hortorum on 2 farms at Trout Creek Point, nr. Summerland, B.C. (G.E. Wolliams).

Bacterial leaf spot (Xanthomonas pelargoni) caused sev. damage to young plants at the Exp. Farm, Saanichton and to cuttings in a greenhouse at Victoria, B.C. All cuttings of 2 varieties and 50% of 2 others were discarded (R.G. Atkinson).

Chemical injury (2, 4-D) caused damage in a home garden at Weston, Ont. (A.E. Straby).

PEPEROMIA

Root-knot nematode (Meloidogyne incognita). An infected specimen of P. sandersii was received from Dundas, Ont. (B.E. Hopper).

PHLOX

Powdery mildew (Erysiphe communis) was common on perennial phlox at Lethbridge, Alta. (F.R. Harper), sev. on the same host in a border at Ottawa, Ont. (D.W. Creelman) and sev. on 3000 plants in a nursery at Chomedy, Que. (A.E. Straby).

PSILOTUM

Stem rot (Gliocladium roseum) was found on 1 dead and 1 declining stem of P. nudum in a greenhouse at Carleton University, Ottawa, Ont. (W.I. Illman).

SCILLA - English Bluebell

Rust (Uromyces muscari (Duby) Lév. = U. scillarum (Grev.) Lév.). Moderate infection was seen on S. nonscripta at Saanichton, B.C. (W.R. Orchard).

TULIPA - Tulip

Fire (Botrytis tulipae). Primary fire was present in all 18 fields inspected on the lower mainland of B.C. but little secondary infection occurred and losses were negligible. Secondary fire developed following May irrigation and June rains on Vancouver Island and considerable losses were sustained (B.M. Lawson, R.P. Messum). Several home plantings in the Barrie, Ont. district were affected (A.E. Straby). A light, general infection occurred early in Kings Co., N.S. but dry, cool weather prevented further spread and development (K.A. Harrison).

ZINNIA

Alternaria blight (A. zinniae). A light outbreak developed late in the season at Kentville, N.S. (K.A. Harrison).