# IV. DISEASES OF FRUIT CROPS

## APPLE

SCAB - Venturia inaequalis (Cke.) Wint.

B.C.- Scab was severe in the Lavington district in 1934, and the disease was controlled with difficulty in many McIntosh orchards. It was slightly less prevalent in the Salmon Arm area. At Sunshine Bay, Kootenay Lake district, 1.9% of the fruit were free of scab on an unsprayed McIntosh tree bearing 774 apples compared to 32.3% in 1933.

Man.- Scab was heavy on two or three trees at Morden.

Ont.- Scab was of little importance in the Niagara peninsula this year. Ascospore discharge was initiated on May 9, but the trees were well advanced before discharge occurred, seasonal discharge was of limited intensity and early season infection was very light. Spread of scab later in the year resulted in the development of pin-point scab and a light infection of the terminal growth. The percentage of foliage infection in the Laboratory orchard, St. Catharines, on October 1st was-on unsprayed trees: McIntosh 59%, Melba 16%, Hume 85%, Joyce 12%, Courtland 90%, Fameuse 50%, Spy 60%, Delicious 25%, Duchess 10%, Baldwin 65%, Greening 30%; and on sprayed trees: 0-11%, Greening being the most heavily infected. (G.G. Chamberlain)

Que.- For the first time since 1929 when the Spray Service was started, conditions were unfavourable for scab development in southwestern Quebec. The perithecia matured later and in much smaller numbers than in previous years. Usually the ascospores are mature when the trees reach the "green tip" stage, but this year the first mature ascospores were found only when the fruit buds were in the "pre-pink" stage. The slight initial development of scab was attributed to (1) Conditions unfavourable for perithecial formation last fall on account of the early winter - heavy snowfall and considerable freezing occurred by October 25, while most of the leaves were still on the trees - (2) a very dry spring; no rain fell between May 22 and June 9. The one and only discharge of ascospores occurred on May 22. A careful examination of trees in many orchards revealed that primary infection consisted of only a very few spots on sepals and the leaves of the fruit spurs. Due to the lack of initial inoculum only a few additional spots were formed during 3 or 4 secondary infection periods. They were localized near the calyx end of the apples. Late or pinhead infection was also very slight although the weather was quite favourable. (F. Godbout)

Scab was present in every ochard in the lower St. Lawrence valley, depending on the number of sprays and the timeliness of their application. The disease was difficult to control late in the season, especially on late varieties. Of the commercial varieties McIntosh and Fameuse were most affected. (C. Perrault)

N.B.- Scab was severe on unsprayed trees, but it was satisfactorily controlled where a regular spray schedule was carried out. Ascospore discharge began on May 15 in the St. John valley. (S.F. Clarkson)

N.S.- Good control of scab was obtained in well-sprayed orchards in the Kentville area. An application of Bordeaux in July controlled late infection. Scab was first observed on a few leaves on May 25.

P.E.I.- Scab was satisfactorily controlled where a spraying schedule was followed. It was found on all varieties of apple except Russet and in all 3 counties. It was sometimes severe. (R. R. Hurst)

FIRE BLIGHT - Bacillus amylovorus (Burr.) Trev.

B.C.- A single affected shoot of Jonathan was found by Mr. R.P. Murray in the Keremeas district. This is the first record of its occurrence in the above district.

Sask.- Fire blight was again epidemic at Saskatoon. Its presence in city gardens was reported more frequently than in 1933, probably due to the fact that last year's cankers were not removed.

Holdover cankers, from which fresh bacterial exudate was oozing on May 15, were observed on large limbs of Transcendant crabs. In some instances the flow of exudate was so copious that it ran down the limb about 2 inches. There was also a great deal of limb blight, which probably arose from an extension of the pathogen from fruit and leaf spur cankers. Bud infections of last year resulted in a large percentage of blighted leaf and fruit spurs on some trees. Many of the buds just opened, while others expanded from one to three inches before drying up. All the foregoing observations were made before blossom time and bee visitation. There seems to be no doubt that holdover cankers are a source of inoculum, even in the cold climate of Saskatoon, before the bees begin to visit the trees. The prevalence of the disease and the presence of fresh exudate were remarkable under the dry conditions, which prevailed in May. (T.C. Vanterpool)

Man.- Scattered infections of fire blight caused slight damage at the Morden Experimental Station.

Ont.- Diseased specimens were received from Pembroke.

Que.- Fire blight was about as prevalent this season as last in the apple-growing districts of western Quebec. At least a slight amount of blight in the form of both blossom and twig infections was present in almost every orchard. Spread of blight probably occurred during the rain that fell on May 21-22, and the rainy spell from June 10 to 16. Further spread was prevented by the dry weather, which followed. Winter injury was particularly severe on branches bearing fire-blight cankers. These branches bore light green to yellowish foliage, which was easily distinguished from that on normal, healthy branches. Old fire blight cankers, which had escaped notice in previous years, were found in 2 blocks of Fameuse at Hemmingford and in one of McIntosh at Chateauguay. If the districts are considered individually, observations may be summarized as follows: at Abbotsford, marked increase of fire blight, blossom infection being severe in Alexander and Duchess trees adjacent to each other in one orchard; in the Rougemont and

St Hilaire districts, about the same amount as last year varying from a trace to slight; in the Hemmingford-Covey Hill-Franklin Centre, the Chateauguay, the Oka-St. Joseph du Lac, and the Cowansville-Frelighsburg districts, fire blight decreased. Only a slight amount was also present at Lennoxville. (H.N. Racicot)

Fire blight infection was slight on several varieties at Macdonald College. It was slightly more prevalent on Alexander, on which holdover cankers were present in addition to the usual blossom blight and twig blight. (R.F. Suit)

Fire blight was observed in small amounts in Bellechase, L'Islet, and Kamouraska counties. (C. Perrault)

P.E.I.- Fire blight was observed in one abandoned orchard; the infection was slight.

BLACK ROT - Physalospora obtusa (Schw.) Cke.
(Sphaeropsis Malorum Pk.)

Que.- The fungus was prevalent in cankers due to winter injury at Macdonald College and it appeared to be spreading into healthy tissue. Leaves were slightly to moderately infected. (R.F. Suit)

N.B.- Black rot caused severe damage in an orchard at Lakeville Corner; the infection was mostly on the leaves.

RUST - Gymnosporangium spp.

Ont.- Rust (G. Juniperi-virginianae Schw.) was reported on Wealthy in Lincoln county.

Que.- A trace of rust (G. clavipes Cke. & Pk.) was found on St. Lawrence, McIntosh, Fameuse and Alexander in Kamouraska county. The rust developed much later than last year and on most fruit it did not mature before harvest.

N.S.- Rust (G. clavipes Cke. & Pk.) affected 10-15% of the fruit on a few small unsprayed crab apple trees at the Kentville Experimental Station. Less than 1% were also affected on sprayed Gravenstein trees.

CROWN GALL - Pseudomonas tumefaciens (Sm. & Towns.) Dugg.

N.S.- At Kentville 20% of type IX root stock was affected by crown gall.

POWDERY MILDEW - Podosphaera leucotricha (Ell. & Ev.) Salm.

B.C.- Powdery mildew was fairly general, but the infection was slight on Vancouver island and in the Fraser valley.

In the southern districts of the Okanagan valley, powdery mildew was more severe and widespread this season than any year since the Summerland Laboratory was established. It was found on Jonathan and McIntosh; 10 to 50% of the fruit were marked. (J.C. Roger and T.B. Lott).

ANTHRACNOSE - Pezicula malicorticis (Jacks.) Nannf.
(Cryptosporiopsis malicorticis (Cordley) Nannf.

B.C.- Anthracnose is general in neglected orchards on Vancouver

island and in the Fraser valley. Early varieties are the most susceptible, while Northern Spy is apparently highly resistant.

PERENNIAL CANKER - Gloeosporium perennans Zeller & Childs

B.C.- Perennial canker slightly infected Newton, Spitzbergen and other varieties in the Okanagan valley. This disease is gradually increasing in orchards, where woolly aphids are not kept under control. It is most severe after heavy winters; this year the amount of new infection has been very slight.

WOOD ROT - Schizophyllum commune Fr.

Que.- This fungus was found in cankers due to winter injury on at least 50 trees at Macdonald College. (R.F. Suit).

CROWN ROT - Non-parasitic

B.C.- Crown rot was reported affecting heavy bearing trees of Spitzbergen, Winesap, McIntosh and other varieties in Yale county. It appears to be increasing in some orchards.

DIE BACK - Non-parasitic

B.C.- Die back was very prevalent on April 30, in one orchard in the Trepanier district. The trees had just passed full bloom and the little leaf phase of the disease was evident. (H.R. McLarty).

BREAKDOWN - Non-parasitic

B.C.- Breakdown rendered 75% of the Jonathan crop unfit for use in an orchard in Yale county. It was very severe in many districts this year.

STIPPEN - Non-parasitic

B.C.- Stippen was exceptionally severe in Winter Banana and other varieties in Yale county this season; 2-20% of the fruit were affected.

CRINKLE CORK - Non-parasitic

N.S.- Crinkle cork affected 3% of the fruit of the Wellington variety in the spray plots at Somerset.

BURR-KNOT - Non parasitic

Ont.- One tree of Delicious was affected with burr knot at Port Credit. It is unusual to encounter this trouble in Delicious. (G.C. Chamberlain)

TWIG BLIGHT - Nectria cinnabarina (Tode) Fr.

Que.- One infected twig was found at Ste. Anne de la Pocatière. It was also found on October 1 on twigs and branches of 3 trees following winter injury at Macdonald College. The fungus has spread slightly into healthy bark.

N.B.- Twig blight was found in September following winter injury.

EUROPEAN CANKER - Nectria galligena Bres.

N.S.- European canker affected McIntosh trees at the Kentville Experimental Station; its prevalence varied with the injury caused by the buffalo tree hopper. (K.A. Harrison)

SILVER LEAF - Stereum purpureum (Pers.) Fr.

Man.- One tree was badly top-killed by silver leaf near Emerson.

N.S.- A few trees were affected with silver leaf, among several thousand being produced at Kentville.

BITTER PIT - Non-parasitic

N.B.- Bitter pit was severe on Baxter in an orchard in Queens county.

FRUIT ROT - Botrytis cinerea Pers.

B.C.- Fruit rot affected from .25 to .50% of the McIntosh fruit at picking time in the Salmon Arm and Lavington districts.

DIE BACK - Valsa leucostoma (Pers.) Nits.

Man.- Die back moderately infected apple trees at the Morden Experimental Station.

TWIG BLIGHT - Cytospora sp.

Que.- Cytospora was very common on trees that suffered winter injury; it was found practically in every orchard in the district about Ste. Anne de la Pocatière.

It was also found throughout the summer on bark, which had been injured by the winter, at Macdonald College.

TWIG BLIGHT - Phomopsis Mali Roberts

Que.- This organism was isolated from dead limbs from three orchards in L'Islet and Kamouraska counties. A Phomopsis sp. (possibly Mali) was found associated with many cankers due to winter injury at Macdonald College.

HAIL

B.C.- Hail ruined 2 to 50% of the crop in limited areas in the Okanagan valley.

SCORCH - Mineral deficiency

Ont.- Scorch was very prevalent and marked in a large planting of seedlings at the Vineland Horticultural Station.

WINTER INJURY

I am indebted to Mr. M.B. Davis, Dominion Horticulturist, for the following summary on winter injury not only suffered by apple, but also by small fruits and other tree fruits. Some additional observations may be found under cherry, peach, and plum.

B.C.- The winter of 1933-34 was very mild in this province with the result that orchards suffered practically no winter injury. Small fruits also came through in a very satisfactory condition. Considerable loss was experienced in strawberries and raspberries, but this was more the effect of excess water than frost.

Man.- Apple varieties suffered in various ways from winter injury. Hibernal, which had been considered one of the hardiest apple varieties, was severely cracked down the trunk and main branches. Many Morden-named and numbered varieties, Ottawa varieties and others that were normally considered hardy were severely dried out by the cold winds. This resulted in delayed and uneven foliation in the spring and the extent of this injury will not be fully known until the summer of 1935.

Of the named plums, Assiniboine was, perhaps, the hardiest variety. A number of the Morden seedlings of Assiniboine, Pembina, and Cree wintered 100 per cent and produced a large crop of fruit. Most of the named varieties failed to set more than a few fruits. Oka was killed back 50 per cent.

Bartlett and Gifford pears killed 100 per cent; Anjou 10 to 90 per cent, mostly about 50 per cent; Winter Nelis, 10 to 90 per cent, mostly about 40 per cent; Tyson, 80 to 100 per cent; Clapps 20 to 80 per cent, mostly 40 per cent. The following varieties came through the winter comparatively free of injury: Tait 1, 2, and 4; Hansen 23, 32, and 34; Patten 1200, 1211, 1213, and 2999; Gogal, Tolstoy, Patten, Minnesota 1 and 3; Liaoyang 10, 25, 50, and 100; Mendel, Saponisky, Ovoidea, and Ussurian.

Ont.- The situation in Ontario is rather difficult to sum up. However, there appears to be little doubt but that it suffered more, in so far as apples are concerned, than any other province in Canada. The estimated apple crop reduction in Ontario, due mainly to winter injury, was approximately 65% of the average of the previous five years' production, and 70% of the 1933 crop.

The injury to leaf and fruit buds was very severe and nearly all varieties suffered. At Ottawa, every fruit bud was killed on all varieties except the hardy Russian sorts, Saunder's hybrids and a few of the early standard ones such as Crimson Beauty, Yellow Transparent, Duchess of Oldenburg, Joyce, and Melba. The leaf bud injury was not nearly as severe as that of the fruit buds, but in many varieties these too were all killed. While the loss of fruit buds was a serious economic factor in this province, the injury that occurred to the woody tissues above the ground was of a far more destructive nature and in many cases the trees were killed completely. Trunk or body injury, crotch injury, and killing back were all very prevalent and were responsible for the major destruction. In Oxford county, all the Baldwin trees and 80% of the Wagener's were killed outright, while the King variety was badly injured. In Norfolk county 50% of the Baldwin, Wagener, Golden Russet, and Scarlet Pippin trees died, while Greening was injured to a marked degree. In Lambton county varying degrees of injury were present

in Baldwin, Greening, Golden Russet, and Spy varieties. In Elgin and Middlesex counties, the percentage injury was not greatly in excess of 10%. In Durham and Halton counties, Greening, Ontario, Gravenstein, Wagener, and Spy showed considerable injury, while Baldwin and King were severely injured. In Northumberland and Peel, varying amounts of injury were reported in Baldwin, Spy, Cranberry Pippin, Ben Davis, and King, but the number of trees lost was very small. In Dundas county, the injury was confined to the older heavy cropping trees of the late winter and the Fameuse varieties; the McIntosh variety was not seriously affected. In Halton county, Bartlett and Keiffer pears as well as Japanese plums were very severely injured. Peaches and sweet cherries were completely killed and grapes severely injured.

Small fruits did not suffer to any greater extent than in normal years.

Que.- The apple crop of 1934 was 60% less than the previous year and 40% below the 1929-33 average; it was caused principally by winter injury in 1933-34. Eight per cent of the trees were killed outright in the Montreal region according to a statistical report of the Quebec Department of Agriculture. Taking the province as a whole, about 40% of the commercial orchards were damaged by frost, 20% had their fruit buds frozen and 20% of the trees were killed. The orchards on the Island of Orleans, Côte de Beaupré and Isle aux Coudres suffered very little injury.

Most of the late winter and less hardy varieties such as Baldwin, Spy, Ben Davis, Golden Russet, St. Lawrence, Milwaukee, Scarlet Pippin, and Alexander were completely killed. A very large proportion of the Fameuse and Wealthy trees suffered the same fate, especially where the latter bore heavy crops the previous year. The Yellow Transparent, Duchess, Melba, Joyce, Lobo, and McIntosh varieties came through with comparatively little injury.

Pear trees were practically eliminated. The European plums suffered heavily in the L'Islet and Quebec districts, while on the Island of Orleans, the injury was very slight. Most of the cherry trees were killed out and very few now remain in the province. Small fruits did not suffer to any marked degree. The strawberry crop was about normal, with a slight reduction in the raspberry crop due to moderate cane killing in some sections.

N.B.- The estimated number of trees lost in commercial orchards was less than 1%. There were of course, some few orchards which had a larger percentage of late winter varieties and in these the loss of trees ran as high as 5%.

The injury was most noticeable on young grafts of Northern Spy, and on the older and heavy cropping trees of late winter and other varieties which are on the border line so far as hardiness is concerned, such as Gravenstein, Northern Spy, Bishop Pippin, Ben Davis, Stark, and Golden Russet; the first four varieties sustaining the more severe injury. Fameuse and Wealthy were less injured, except on those trees which bore heavy crops in 1933, and McIntosh had a still smaller degree of injury. Apart from some

bud injury, early varieties were not affected.

Small fruits wintered well due to the very heavy snow coverage and no injury was experienced. Considerable mechanical injury in the form of cane breakage was experienced in raspberries.

N.S.- The estimated crop reduction of apples in Nova Scotia due to winter killing of 1933-34 was approximately 5%. (However, production was 10% above the previous 5 year average).

In the Annapolis Valley, many trees were injured during the past winter to some extent, but this did not prevent them from throwing out leaves and in many cases producing fruit in 1934. There is, nevertheless, evidence to show that many of these trees are not entirely normal and any further adverse conditions, would tend to increase the amount of injury showing up in subsequent years. In the eastern and northern counties, King, Gravenstein, Ontario, Baldwin, and Spy were badly killed out. Ben Davis also suffered somewhat and Golden Russet to a lesser extent in exposed locations. McIntosh, Wealthy, Duchess, Bishop Pippin, and Stark wintered well as a rule, although the latter suffered slightly in exposed locations.

Other tree fruits were not injured enough to cause any reduction in the 1934 crop. Pears showed practically no winter injury in the commercial varieties. Plums showed some bud injury, which effected the production of blossoms in 1934, but in spite of this, a good crop was produced. Sweet cherries showed a great deal of bud injury and in many orchards only a few blossoms were produced. Blackhearting was also prevalent; however, in any year in Nova Scotia sweet cherries suffer more or less from such injury and it was no greater in 1933-34 than in previous years. Sour cherries appeared to be little affected. Peaches, grapes, and small fruits were not injured.

General Note - The commercial production of apples in Canada in 1934 dropped 30% from that of 1933 and 11% from that of the previous five year average, due mainly to the extremely heavy winter injury in the central provinces.

## APRICOT

DROUGHT SPOT - Non-parasitic

B.C.- Two to 100% of the crop was unfit for sale on account of drought spot in a few orchards in Yale county.

BLIGHT - Coryneum Beijerinckii Oud.

B.C.- The fruit of 2 trees only was wholly unmarketable due to blight at Longbeach, near Nelson. The disease occurs at the coast and was reported from Lillooet in the Dry Belt in 1932, but up to the present it has not been found in the areas where apricots are grown commercially. (J.H. Eastham)

## BLACKBERRY

ORANGE RUST - Gymnoconia Peckiana (Howe) Trotter

Ont.- In one planting of Eldorado in Lincoln county, 12% of the plants were rusted. Wild blackberries in the vicinity were also heavily infected.

Que.- Orange rust was found on a few uncultivated plants at Abbotsford in June.

POWDERY MILDEW - Sphaerotheca Humuli (DC.) Burr. var. fuliginea (Schlecht.) Salm.

Alta.- A specimen was received from Calgary on July 18; immature perithecia were present.

## BLUEBERRY

RED LEAF - Exobasidium Vaccinii (Fuck.) Wor.

P.E.I.- Wild blueberries were found affected at Mermaid Lake.

## CHERRY

SHOT HOLE - Higginsia hiemalis (Higg.) Nannf. (Cylindrosporium hiemalis Higg.)

B.C.- Leaf spot caused more damage in 1934 than previous years on Vancouver island. In a few orchards it was prevalent on the leaves, pedicels, and fruit, thereby causing defoliation and some loss of fruit. Ordinarily shot hole is confined to the leaves. (W. Jones)

Ont.- A light infection of shot hole was reported on Mayduke and Richmond varieties on July 9 in an orchard in Lincoln county. Montmorency was not yet affected.

P.E.I.- Shot hole caused slight to very severe damage on both cultivated and wild cherries in all 3 counties.

BLOSSOM BLIGHT - Sclerotinia cinerea Schroet.

B.C.- Blossom blight infected 50% of the blossoms in early April at the Sidney Experimental Station; the damage was 20%. Lime sulphur spray was not very effective in controlling the disease. The causal organism was referred to Monilia oregonensis Barss & Posey, a form of S. cinerea. (W. Jones)

BROWN ROT - Sclerotinia americana (Worm.) Nort. & Ezekiel

Que.- Brown rot is present on most trees in eastern Quebec.

BLACK KNOT - Dibotryon morbosum (Schw.) Theiss. & Syd.

Que.- Black knot is very common on old trees in Kamouraska and L'Islet counties.

P.E.I.- Black knot caused slight to severe damage on wild and cultivated cherries in all 3 counties.

WITCHES' BROOM - Taphrina Cerasi (Fuck.) Sadeb.

B.C.- Witches' broom caused 5% damage to Royal Anne cherries in an orchard in Lillooet county. Adjacent trees of the Byng variety were only slightly affected.

WINTER INJURY

Que.- Most cherry trees in Kamouraska county are old trees, which have received practically no attention. On account of previous injury by brown rot and black knot they were severely affected by the low temperatures of last winter. Most of these trees were severely injured or completely killed. (C. Perrault)

SCORCH - Mineral deficiency

Ont.- Scorch affected Montmorency trees in an orchard in Lincoln county. Soil analysis showed lack of potash. A similar condition was noted on sweet cherries and young peach trees in the same orchard. (G.C. Chamberlain)

DIE BACK - Non-parasitic

B.C.- A few trees are affected with die back in several orchards throughout the Okanagan valley. Large branches or often the entire tree may be killed in one year. (J.C. Roger)

GUMMOSIS - Cause unknown

P.E.I.- Only traces of gummosis were found this year on cultivated cherries in Queens county, while it affected 50% of the trees in 1933. (R.R. Hurst)

## CURRANT

WHITE PINE BLISTER RUST - Cronartium ribicola Fischer

Ont.- Black currant leaves affected with this rust were received from the Ottawa district.

Que.- White pine blister rust was common again on wild and cultivated currants in south-western Quebec.

N.B.- Blister rust was general and severe on wild and cultivated currants in York and Sunbury counties.

N.S.- Rusted specimens of black currant were received from Great Village.

P.E.I.- White pine blister rust heavily infected red and black currants in Queens county, while traces were present on gooseberry.

CLUSTER-CUP RUST - Puccinia Pringsheimiana Kleb.

Man.- Black currants were heavily infected by this rust at Winnipeg.

SEPTORIA LEAF SPOT - Mycosphaerella Grossulariae (Fr.) Lindau
(Septoria Ribis Desm.)

Man.- A severe infection of Septoria leaf spot was reported on black currant from Winnipeg.

POWDERY MILDEW - Sphaerotheca mors-uvae (Schw.) Berk. & Curt.

B.C.- Powdery mildew caused slight damage to black and white currants at the Experimental Station, Summerland.

Alta.- Powdery mildew was reported on black currant from Hilliard, zone 11.

Sask.- Powdery mildew moderately infected most of the red currant bushes in the University orchard, Saskatoon (3631); affected specimens of black currant were received from Hafford.

Ont.- Powdery mildew moderately infected Champion and Giant currants in a planting in Lincoln county. It was also noticed in several other plantings.

## GOOSEBERRY

POWDERY MILDEW - Sphaerotheca mors-uvae (Schw.) Berk. & Curt.

B.C.- A single bush was slightly affected at Summerland.

SEPTORIA LEAF SPOT - Mycosphaerella Grossulariae (Fr.) Lindau
(Septoria Ribis Desm.)

Que.- A moderate infection of this leaf spot was recorded at Macdonald College.

## GRAPE

YELLOWING - Cause unknown

Ont.- Yellowing was quite prevalent this year, affecting 1-2% of the vines of Concord, Niagara, and Warden varieties throughout Lincoln county. It causes a yellowing of the foliage, stunting of the growth, and shelling of the fruit. The trouble may possibly be due to either winter injury or drought conditions in shallow soils; it appears to be of a physiological nature.

DOWNY MILDEW - Plasmopara viticola (B. & C.) Berl. & de Toni

Que.- A trace of downy mildew was found at Macdonald College.

## LOGANBERRY

SPUR BLIGHT - Didymella applanata (Niessl.) Sacc.

B.C.- Spur blight was general and caused 2% damage in a planting at Saanichton.

SEPTORIA LEAF SPOT - Mycosphaerella Rubi Roark
(Septoria Rubi West)

B.C.- Septoria leaf spot was general on loganberry on Vancouver

island and in the Fraser valley; the damage was 3%.

ANTHER and STIGMA BLIGHT - Haplosphaeria deformans Syd.
B.C.- Anther and stigma blight infected 30% of the flowers and caused 10% of damage to loganberry on Vancouver island and in the Fraser valley.

## MELON

WILT - Fusarium sp.
B.C.- Wilt infected 4% of the vines of melons grown out of doors at Keating; the damage was slight.

## NECTARINE

POWDERY MILDEW - Sphaerotheca pannosa (Wallr.) Lév.
B.C.- Powdery mildew caused moderate damage to nectarines grown at the Experimental Station, Summerland. The disease is widespread wherever nectarines are grown.

## PEACH

LEAF CURL - Taphrina deformans (Berk.) Fuck.
B.C.- Leaf curl was found on a few leaves on 2 Elberta trees in the Laboratory orchard, Summerland; the disease is not common.
Ont.- Leaf curl slightly infected peaches in many orchards in Lincoln county; the damage was negligible.

BROWN ROT - Sclerotinia americana (Worm.) Nort. & Ezekiel
Ont.- Brown rot in any of its phases was not serious this year on Rochester in the Laboratory orchard, St. Catharines. In shipments to Western Canada in August and September, however, the damage amounted to as much as 25% in the experimental shipments from check trees. Where the trees had been sprayed or dusted the fruit was almost clean.
The percentage of brown rot in experimental shipments of Elberta in September was not serious even in the checks this year, less than 3% of the fruit being affected on arrival in Western Canada and 10% in shipments to England. The weather was cool although precipitation was fairly abundant during harvest. (R.S. Willison)

Botrytis cinerea Pers. and Rhizopus nigricans Ehr. caused slight and moderate damage respectively, to the fruit of J.H. Hale in an orchard at Penticton, B.C.

POWDERY MILDEW - Sphaerotheca pannosa (Wallr.) Lév. var. Persicae Woron.
B.C.- Powdery mildew caused slight to moderate damage at the

Experimental Station, Summerland.

CROWN GALL - Pseudomonas tumefaciens (Sm. & Towns.) Dugg.

Ont.- Trees of Elberta were found seriously affected with many large galls when they were dug up in an orchard in Lincoln county. The poor vigour of the trees, however, was not ascribed to the presence of crown gall, but to their being located on poor soil.

CHLORSIS - ?Mineral deficiency

Ont.- This trouble was observed in the Laboratory orchard, St. Catharines, and has not yet caused serious damage. Most of the affected trees exhibit a peculiar faint interveinal chlorosis, while the leaves of some are affected by marginal scorch and the fruit of 2 or 3 trees are also dwarfed. This condition was observed to a lesser extent last year; the variety J.H. Hale seems to be the most seriously affected. The cause has not yet been definitely determined. (R.S. Willison)

WINTER INJURY

Ont.- Low temperatures in February caused very serious damage in the western part of the Niagara peninsula. The fruit buds were almost a total loss and many trees were either killed outright or seriously damaged. Besides, the canker outbreak of 1933 was an added complication. In the eastern part the injury was less serious, but was similarly complicated by canker. At the Laboratory orchard, St. Catharines, approximately 50% of the buds were killed on Elberta, and on other varieties the percentage ranged from 6-7% in Greensboro to 90% in Vedette. Frost cracks occurred in the bark and in the large limbs, many of which became cankered subsequently. Twig killing, however, was not serious. (R.S. Willison)

## PEAR

FIRE BLIGHT - Bacillus amylovorus (Burr.) Trev.

B.C.- Fire blight was very severe on Prasse Crassane and severe on Anjou, Le Nectier, and Winter Nelis at the Experimental Station, Sidney, and the trees of these varieties were dug up and destroyed. Clairgean was slightly infected, while 45 other varieties did not show symptoms of the disease. (W. Jones)

Ont.- Fire blight was present to a limited extent in the Niagara peninsula, following the serious outbreak in 1933. Where the disease was observed, infection was slight and was mostly confined to very young wood or the leaves.

SCAB - Venturia pyrina Aderh.

B.C.- Scab caused moderate damage to pears on Vancouver island and in the Fraser valley. It was also reported in an orchard at Salmon Arm.

N.S.- Scab was present to a limited extent in the experimental orchard, Kentville.

P.E.I.- The disease caused slight damage in an orchard in Queens county.

DROUGHT SPOT - Non-parasitic

B.C.- A few trees are affected with drought spot in each district of the Okanagan valley.

BLACK-END ROT - Non-parasitic

B.C.- Black-end rot was present in a few orchards in the Okanagan valley. Usually the whole crop on an affected tree is lost. (J.C. Roger)

POWDERY MILDEW - Podosphaera leucotricha (Ell. & Ev.) Salm.

B.C.- Powdery mildew was widespread on pears wherever they are grown in the Okanagan valley; the damage was slight.

GREY MOULD ROT - Botrytis cinerea Pers.

B.C.- A single rotted fruit was noted in an experimental lot of pears in cold storage.

## PLUM

BLACK KNOT - Dibotryon morbosum (Schw.) Theiss. & Syd.

Que.- Black knot is well under control is eastern Quebec wherever the trees are sprayed, but it has killed nearly all the trees in old negected orchards. A specimen was also received from St. Philippe.

N.B.- Black knot caused the death of several trees at Rose Bank according to a correspondent.

N.S.- A few knots were noted at the Experimental Station, Kentville.

P.E.I.- Black knot caused slight to severe damage in all 3 counties except at the Experimental Station, Charlottetown, where the disease is under control.

PLUM POCKETS - Taphrina Pruni (Fuck.) Tul.

Man.- Cultivated Prunus nigra was moderately infected at Winnipeg.

Que.- Diseased specimens were received from Chicoutimi West.

N.B.- Plum pockets was severe on two trees at the Fredericton Experimental Station.

P.E.I.- Two per cent of the Green Gage fruit were affected in the experimental orchard, Charlottetown.

BROWN ROT - Sclerotinia americana (Worm.) Nort. & Ezekiel

B.C.- Brown rot was rather serious in some orchards in the Fraser valley; the damage was 5%.

Alta.- A disease specimen was received from Manyberries.
Que.- Brown rot is general in old unsprayed orchards, and badly affected trees bear a considerably reduced crop.
P.E.I.- Traces of brown rot were noted on Magnum Bonum in the experimental orchard, Charlottetown.

SHOT HOLE - Higginsia prunophorae (Higg.) Nannf.
(Cylindrosporium prunophorae Higg.)
Man.- A trace of shot hole was found at the Morden Experimental Station.
Que.- About 75% of the leaves were severely infected on the 12 trees in the Macdonald College orchard; there was some defoliation.
N.B.- Shot hole was general on cultivated and wild plums in York county.
P.E.I.- Shot hole was very destructive in several orchards in Kings county.

SCAB - Cladosporium carpophilum Thüm.
Ont.- Diseased specimens of Prunus nigra were received from Pembroke.

WINTER INJURY
Ont.- Over 50% of the cultivated varieties in the Georgian Bay district were killed outright by the severe winter.

## RASPBERRY

SPUR BLIGHT - Didymella applanata (Niessl) Sacc.
Ont.- In one plantation at Dunrobin spur blight was found as follows: moderate on Herbert; trace on Count, Chief, Starbright, and Latham; and none on Viking. Infected specimens were received from Jasper.
Que.- Spur blight was less prevalent this year than in 1933. A slight amount occurred in a few Herbert plantations, a very slight amount in those of Latham and Newburg and traces in plantations of Viking, Newman, Cuthbert, Chief, Count, and Adams 87. (H.N. Racicot)
P.E.I.- Spur blight caused slight to severe damage to Herbert, Cuthbert, and Viking in all 3 counties.

SEPTORIA LEAF SPOT - Mycosphaerella Rubi Roark
(Septoria Rubi West.)
Ont.- Leaf spot was reported as follows in a plantation at Dunrobin: moderate on Herbert, trace on Viking, and none on Count, Chief, Starbright, and Latham. Infected leaves were received from Markham.
Que.- Leaf spot infection was moderate on Newburg, slight to moderate on Viking, and a trace on Newman in Laval county. It was also moderate to severe on the lower leaves of both Newman and Latham in Sherbrooke county; it caused some defoliation. (H.N. Racicot)

N.B.- Septoria leaf spot slightly infected a few plants at Rothesay.

MOSAIC - Virus

B.C.- On Vancouver island and in the Fraser valley, Cuthbert, the most popular variety, was only slightly infected. In some plantings of Lloyd George, 50% of the plants were affected with mosaic. The Latham variety was also seriously diseased. The above is based on the observations of Mr. R.V. Harris. (W. Jones)

Man.- Mosaic infection was moderate and patchy in raspberries at Morden.

Ont.- Mosaic is widespread in southwestern Ontario, being particularly prevalent on Viking and Cuthbert varieties. In some plantations as high as 75% of the plants were affected. The disease was the cause of the decline of raspberry plantations in the Georgian Bay district, where the main variety has been King. This variety was generally 100% infected with consequent dwarfing and failure of crop. (G.C. Chamberlain)

A heavy infection was reported on Cuthbert from Carleton Place.

Que.- There was a marked increase of mosaic in raspberry plantations inspected over that of last year. In 28 plantations of Newman, mosaic varied from a trace to 15%, the average being 4.8 per cent, while in 26 plantations in 1933, infection varied from a trace to 10%, and an average of 0.8%. The highest infections in the other varieties were Herbert 3%, Viking 7%, Latham 100%, Chief 3%, Brighton 4%, Cuthbert 3%, Count 2%, King and Adams 87 trace, Newburg none. (H.N. Racicot)

P.E.I.- Mosaic affected a trace to 100% of the plants in all 3 counties; all varieties grown in Prince Edward Island were infected.

LEAF CURL - Virus

Que.- Leaf curl affected a few plants in a Viking plantation and 1% in one of Count. (H.N. Racicot)

ANTHRACNOSE - Elsinoe veneta (Burkh.) Jenkins
(Gloeosporium venetum Speg.)

Ont.- Anthracnose-infected specimens were received from Markham.

Que.- Anthracnose was less prevalent this year than in 1933, only a trace to a slight amount being present on Newman and none or slight traces on other varieties. (H.N. Racicot)

N.B.- Anthracnose was found on a few plants at Rothesay.

CANE BLIGHT - Leptosphaeria Coniothyrium (Fuck.) Sacc.
(Coniothyrium Fuckelii Sacc.)

B.C.- Cane blight caused slight damage in old plantations in the Fraser valley.

BLUE STRIPE WILT - Verticillium sp.

Ont.- Blue stripe wilt is becoming more prevalent in plantations, chiefly in those of Viking and Cuthbert. Many plantations in the raspberry district are now affected with the disease. It causes considerable loss of fruiting wood and is most destructive in the younger plantings. Outbreaks can usually be traced to the culture of tomatoes on the same land a year or two previously and where the young plantation is intercropped with tomatoes. (G.C. Chamberlain)

YELLOW RUST - Phragmidium Rubi-idaei (DC.) Karst.

B.C.- Yellow rust was fairly prevalent on Vancouver island and in the Fraser valley. Cuthbert, Viking, and Herbert varieties were heavily and Antwerp slightly rusted. Latham, Newman, Newburg, Count, Franconia, Chief, Lloyd George, Preusen, and Ohta were free of rust at the Experimental Farm, Agassiz. (W. Jones)

It was also found on young Viking plants at Westbank.

LATE YELLOW RUST - Pucciniastrum americanum (Farl.) Arth.

Ont.- Rust was found in a plantation at Dunrobin as follows: plentiful on Viking; trace on Count, Chief, Starbright, and Latham; and none on Herbert.

Que.- Late yellow rust was very plentiful this year on both wild and cultivated raspberries. It was abundant on Newburg and Viking and somewhat less prevalent on Newman in Laval county on September 26. It was already present on 75% of the leaves in Latham and Newman plantations in Sherbrooke county on August 28. (H.N. Racicot)

N.S.- A rusted specimen was received from Kentville on August 20 (3714).

POWDERY MILDEW - Sphaerotheca Humuli (DC.) Burr.

Sask.- Traces of powdery mildew were observed in August in zone 9.

Ont.- Powdery mildew was widespread in south-western Ontario on Latham, on which it caused distinct dwarfing on the tip growth of the new canes. Much of the early infection appears to become parasitized by Cicinnobolus Cesatii de Bary, as described by Peterson and Johnston in Phytopathology 18:787-796, 1928. It was also found affecting to a lesser extent, Chief, Count, and Brighton varieties, especially under nursery conditions. (G.C. Chamberlain)

A trace was found on Latham in a plantation at Dunrobin, while 5 other varieties were free.

Que.- About 50% of the Latham plants were moderately infected with powdery mildew in a plantation in Rouville county; a trace was also seen in an adjacent plantation of Viking. (H.N. Racicot)

In a plantation of Latham in Temiscouata county the disease infected 100% of the plants reducing the yield considerably. Count in the same plantation was clean. (C. Perrault)

CROWN GALL - Pseudomonas tumefaciens (Sm. & Towns.) Dugg.

Ont.- Galls were observed at the crown on numerous plants in one end of a 5-acre Latham plantation at Kingsville. This portion of the plantation was not at all vigorous, but it was thought that the condition of the soil was chiefly responsible for the lack of vigour rather than the presence of gall. The disease could also be found in the more vigorous area. It was also found no uncommonly in nursery plantings, when they were being rogued for mosaic. (G.C. Chamberlain)

P.E.I.- A single affected Cuthbert plant was found in a planting in Queens county.

## SAND CHERRY

BLIGHT - Coryneum Beijerinckii Oud.

Sask.- A trace of blight was noted in the University gardens, Saskatoon.

## STRAWBERRY

LEAF SPOT - Mycosphaerella Fragariae (Schw.) Lindau
(Ramularia Tulasnei Sacc.)

B.C.- Leaf spot is general, but it causes slight damage on Vancouver island and the lower Mainland.

Ont.- The disease was widespread in Lincoln county and was noted in many plantations; the damage was slight.

Que.- Leaf spot slightly to severely infected strawberries at Abbotsford, Ste. Dorothée and Abord à Plouffe; the damage was slight or nil. It was also observed at Macdonald College.

N.B.- Leaf spot was general in York and Queens counties.

N.S.- The disease was noted on 20% of the lower leaves at the Experimental Station, Kentville. It was also reported from Masstown.

P.E.I.- Leaf spot caused slight damage to a planting of Senator Dunlop in Queens county.

LEAF SCORCH - Diplocarpon Earliana (Ell. & Ev.) Wolf
(Marssonina Fragariae (Sacc.) Kleb.)

B.C.- Leaf scorch infected 90-100% of the leaves of Royal Sovereign and caused 5-10% damage in a planting on Vancouver. island, while it only slightly affected the adjoining patch of Magoon. As Royal Soverieign is becoming a popular variety, some growers intend to spray with Bordeaux. This is the first report of leaf scorch from British Columbia.

POWDERY MILDEW - Sphaerotheca Humuli (DC.) Burr.

P.E.I.- Powdery mildew heavily infected Senator Dunlop in a planting in Queens county and practically destroyed the crop.

ROOT ROT - Cause undetermined.

Man.- Root rot infection was heavy in patches at the Morden Experimental Station. (Identified by R.V. Harris and M.B. Davis)

Ont.- Root rot was quite general in the early part of the season in Lincoln county. The plantations under observation were moderately infected in June and July, but they appeared to make an excellent recovery late in the season. Their recovery was outstanding in comparison with their behaviour in previous seasons.

?Xanthosis - Virus

Man.- Strawberries were moderately affected with xanthosis in patches at Morden. (Identified by R.V. Harris and M.B. Davis)

Ont.- A suspected case of virus infection in strawberry was noted in a nursery row of Fairfax (a hybrid between Royal Sovereign and Premier) in Wentworth county. The young plants were much stunted and failed to make growth or to produce runners. There was no distinct yellowing of the foliage. Suspected plants were brought back for study. (G.C. Chamberlain)

JUNE YELLOWS - Undetermined

Ont.- All the Eaton plants in a small planting at the Laboratory, St. Catharines, were affected by June yellows. It causes a yellowing and dwarfing of the plants. Affected material on Blackstone variety was received from Maidstone. (G.C. Chamberlain)