III. DISEASES OF VEGETABLE AND FIELD CROPS

ASPARAGUS

STALK BLIGHT (Fusarium sp.). A number of stalks were attacked in a ½-acre planting in Lincoln Co., Ont., but none of the plants appeared severely affected (J.K. Richardson).

RUST (Puccinia Asparagi) moderately affected a bed of asparagus at Beaumont, Que. (R.O. Lachance).

ROOT ROT (Rhizoctonia Solani) was reported as causing severe injury from 2 places in Ont. (J.E. Howitt).

BEAN

GREY MOULD (Botrytis cinerea) slightly affected Scarlet Runner beans in the U.B.C. plots, Vancouver, B.C. (I.C. MacSwan).

ANTHRACNOSE (Colletotrichum Lindemuthianum). Diseased specimens were received from Prince Albert, Sask.; the disease is not common in Sask. (T.C. Vanterpool).

Due to the unusual severity of certain diseases of the dry or field bean in southwestern Ont. in 1946, a series of surveys of the important bean-growing areas in Huron, Middlesex, Kent, and Essex Counties were made to record the prevalence of disease in this crop. Anthracnose began to spread late in August and continued to increase until about the third week of September. In consequence, there developed an epidemic probably as widespread, if not as severe, as any previously encountered in southwestern Ont. This year, the relatively cool, humid weather of late August and early September was apparently extremely favourable for the rapid development and spread of the pathogen and for infection of the host.

Although the epidemic was general throughout the whole bean growing area, it was more severe in Middlesex than in Kent or Huron Counties. In some stands in Middlesex Co., the infection was estimated to be 90%; so many plants were killed and pod infection was so severe that yield must have been seriously reduced. In the Chatham-Ridgetown area of Kent Co., and in the southern part of Huron Co. about Exeter, relatively few plants were killed. About 20% of the pods were infected but many of them showed only 1-2 lesions per pod. Thus, in these areas the disease affected yield only slightly and the seed would be much safer for planting than that from the severely affected fields in Middlesex Co.

The dry-bean varieties grown most extensively in southwestern Ont. are Michelite and Michigan Robust, both apparently equally susceptible to anthracnose. In general early planted stands of both varieties are least severely infected. In one instance the variety Corvette growing alongside a heavily infected stand of Michelite remained virtually free of anthracnose (A.A. Hildebrand and L.W. Koch).

Some anthracnose was observed in a few fields in the Montreal district, Que., but in general the disease was much less severe than usual (E. Lavallée). Traces only of anthracnose were observed in P.E.I. (R.R. Hurst).

POWDERY MILDEW (Erysiphe Polygoni) made its appearance on leaves, pods, and stems of plants in late-sown fields of dry beans in southwestern Ont. Because of the large number of fields affected, the disease was definitely of economic importance. The only previous report to the Survey was from Que. (P.D.S. 5: 41) (A.A. Hildebrand, L.W. Koch).

HALO BLIGHT (Pseudomonas medicaginis var. phaseolicola) was severe in a canning crop of Black Valentine at Vernon, B.C.; the seed had been purchased from a Montreal firm. Infection was severe on several varieties in the plots at the Station, Prince George. Diseased specimens were received from Revelstoke (G.E. Woolliams). Halo blight was prevalent and often severe in gardens at Edmonton and throughout central Alta. In southern Alta. the disease, although prevalent, was not severe, in part because the weather was unfavourable for its spread. The disease was particularly hard to find in fields of beans grown under contract for canning. A possible explanation of this scarcity may be that disease-free seed was supplied by the company to the growers. Infection ranged from a trace to severe, depending on the variety, in the plots at Edmonton, Lacombe, and Olds. A slight infection was present on only one variety, Round Pod Kidney Wax, at Lethbridge (M.W.C.). Halo blight was rather common and widespread in plantings throughout Sask. In some gardens, the crop was a total loss. Sometimes bacterial blight was also present (R.J. Ledingham). A slight infection was observed at Nappan, N.S. (D. Creelman).

STEM ROT (Sclerotinia sclerotiorum) affected less than 1% of the plants in a field grown for seed at Armstrong, B.C. (G.E. Woolliams).

RUST (Uromyces appendiculatus). Although rust was observed on both Michelite and Michigan Robust in southwestern Ont., only in a few fields of the latter variety was there possibly a reduction in yield (A.A. Hildebrand, L.W. Koch). A trace was recorded in Queens Co., P.E.I. (R.R. Hurst).

COMMON BLIGHT (Xanthomonas phaseoli) caused extensive damage to a seed crop at Armstrong, B.C.; it was found in several stringless varieties being grown in a trial plot at Grand Forks (G.E. Woolliams). The disease was seen in numerous gardens in Sask., frequently causing total loss of the crop. It sometimes occurred along with halo blight (R.J. Ledingham). A slight infection was present in Kidney Red at the Botanical Garden, Montreal, Que. (J.E. Jacques). A light infection was observed in Yellow Eye at Kentville, N.S. (J.F. Hockey). A trace was recorded in Queens Co., P.E.I. (R.R. Hurst).

BACTERIAL BLIGHT (Common Blight and Halo Blight). Diseased specimens mostly affected by common blight were received from Moose Jaw and Regina, Sask. (T.C. Vanterpool).

Near mid-August, 2 weeks prior to the outbreak of anthracnose, bacterial blight (both blights are believed to be present, but no attempt was made to isolate and identify the pathogens) was reaching epidemic proportions in southwestern Ont. The disease was most destructive in an area a few miles east of Chatham in Kent Co. Here, high mortality of the plants was due to stem girdle or joint-rot, a phase of the disease described by L.L. Harter and W.J. Zaumeyer (U.S.D.A. Techn. Bull. 868. 1944, p.62) and not previously recognized in Canada. Stem girdle seriously curtailed production in many commercial stands. In the same area, pod infection was also more severe. Michelite and Michigan Robust appeared to be equally susceptible (A.A. Hildebrand, L.W. Koch).

Bacterial blight was more prevalent than anthracnose in the Montreal district, Que., but in general it was less prevalent than in 1945 (E. Lavallée). Bacterial blight was severe in L'Islet and Kamouraska Counties on Brittlewax and Pencil Pod Black Wax. The Brittlewax seed was from a crop in which only traces of blight were present in 1945, the Pencil Pod from seed of a disease-free crop (R.O. Lachance).

CURLY TOP (Beta virus 1) affected 20 to 90% of the bean plants depending on the variety in small plots grown for seed at the Station, Summerland, B.C. (G.E. Woolliams).

MOSAIC (virus). Low percentages of affected plants were found in fields through the Okanagan Valley, B.C. (G.E. Woolliams). A few plants were affected at the Botanical Garden, Montreal, Que. (J.E. Jacques). Mosaic affected 1% of Bountiful Green Pod and 9% of Refugee in a planting at Ste. Anne de la Pocatière (B. Baribeau). Mosaic was observed occasionally in Queens Co., P.E.I. (R.R. Hurst).

BALDHEAD. In mid-June several stands of beans near Exeter, Huron Co., Ont., showed an abnormally high percentage of baldhead seedlings. The seed used in the affected fields was found to have come from a common source and upon examination proved to be dry and lifeless and obviously of poor quality. In the past, baldhead has been attributed to mechanical injury (L.L. Harter, Jour. Agr. Res. 40: 381-384, 1930). More recently, however, it has been shown that it may also be caused by a pathogen. R.H. Porter (Phytopath. 36: 168-170. 1946) has demonstrated that "soybean seed of high germinability when planted in Pythium-infested soil with a moisture content of 15% and retained at 10°C. for 7 or 10 days may be expected to produce a high percentage of "baldhead" seedlings". It may be noted that one grower who had a percentage of baldhead bean seedlings in one field lost a 20-acre adjoining field of sugar beet seedlings by black rot, caused by Pythium spp. (A.A. Hildebrand, L.W. Koch).

MAGNESIUM DEFICIENCY occurred in very small amounts in Queens Co., P.E.I. The deficiency was recognized by the characteristic chlorosis of the plants and was confirmed by tissue tests (R.R. Hurst).

SUN SCALD (non-parasitic) affected the leaves and more particularly the pods of plants in many stands in southwestern Ont. As the pods approach maturity it is often very difficult to distinguish incipient anthracnose lesions or dried-up bacterial lesions from the brown or reddish spots caused by sun scald. Such a distinction becomes important in the appraisal of the disease situation in beans being grown for registration. Examination of beans in several test plots indicated that varieties and selections are not equally subject to sun scald (L.W. Koch, A.A. Hildebrand).

BEET

SCAB (Actinomyces scabies) was observed in one field at St. Janvier, Terrebonne Co., and in another at St. Martin, Laval Co., Que. (E. Lavallée, R. Desmarteau). Traces were noted in a garden at Charlottetown, P.E.I. (R.R. Hurst).

CERCOSPORA LEAF SPOT (C. beticola) was observed at Charlottetown, P.E.I. (R. Bagnall).

DOWNY MILDEW (Peronospora Schachtii) again appeared on beet stecklings and seed crops at Grand Forks, B.C., but it was less prevalent than in 1945 probably because affected roots were largely used for food (G.E. Woolliams).

INTERNAL BLACK SPOT (boron deficiency). Affected specimens from the Montreal district, Que., were received from E. Lavallée (R.O. Lachance).

CABBAGE

CLUB ROOT (Plasmodiophora Brassicae). Diseased specimens were received from Fort William, Ont., where it was claimed that the disease was causing serious damage to the crop (J.E. Howitt). A special survey was made in 1946 about St. Martin, Ste. Dorothée, St. Elzéar and St. Vincent de Paul, Que. Club root was found in every one of the fields visited. This disease is second to none in importance to cabbage growers on Isle Jesus (E. Lavallée, R. Desmarteau). A scattered infection was observed in 2 gardens in Queens Co., P.E.I. (R.R. Hurst).

SCLEROTINIA ROT (S. sclerotiorum) severely affected one lot of 50 cabbages in storage at Charlottetown, P.E.I., in October (R.R. Hurst).

BLACK ROT (Xanthomonas campestris). In patches in a 2-acre field at Birds Hill, Man., 75% of the cabbages were destroyed by black rot, or an average loss of 15% of the crop (W.A.F. Hagborg). A diseased specimen was received from Foresters Falls, Ont. (L.T. Richardson).

CARROT

BLACK ROT (Alternaria radicina) caused some damage to carrot crops, both in storage and in the field in sections of the B.C. Interior (G.E. Woolliams). Black rot was not uncommon on carrots from the 1946 crop at the University, Saskatoon, Sask.; the roots had been stored at a low temperature (R.J. Ledingham).

GREY MOULD (Botrytis cinerea) caused a rot of 42% of the roots in a market lot at Charlottetown, P.E.I.; the roots were not of local origin (R.R. Hurst).

LEAF SPOT (Cercospora Carotae) caused severe defoliation in 2 gardens in the Guelph district, Ont. (J.D. MacLachlan). It was found in late summer in about 10 fields about St. Martin, Que. It appeared to be quite widespread (E. Lavallée).

SOFT ROT (Erwinia carotovora) caused severe damage to winter carrots in a few gardens in Que., up to 50% of the roots being destroyed (B. Baribeau).

ROOT KNOT (Heterodera marioni) was found in 15 fields of carrots at St. Janvier, Terrebonne Co., Que. Two of the fields were severely infested, 90-95% of the plants being affected. Certain growers declared that some of their fields are so badly infested that carrots can no longer be grown in them. This disease has not previously been observed (E. Lavallée, R. Desmarteau). Bottled specimens of carrots affected by root knot are preserved in the Mycological Herbarium. These specimens were collected by H.N. Racicot as follows: (1) St. Flore, St. Maurice Co., July 8, 1930; (2) do. Aug. 15, 1932; (3) Charlemagne, L'Assomption Co., Sept. 19, 1935. According to Mr. Racicot about 25% of the carrots were affected by root knot at St. Flore and 60% at Charlemagne. Inadvertently the nematode was not reported in the Survey (I.L. Conners).

SCLEROTINIA ROT (S. sclerotiorum) was found causing a rot in carrots in storage at Calgary, Alta., in November (A.W. Henry). Affected carrots were received from Moosimin, Sask., where it was stated to have been common in 1945 and 1946. Mention is made of its spread from carrots to potatoes in storage (T.C. Vanterpool). Specimen was received from St. Raymond, Que. (L.T. Richardson).

BACTERIAL BLIGHT (Xanthomonas carotae) was found affecting leaves and umbels of seed crops at Armstrong, Cawston, and Grand Forks, B.C. In one field at Armstrong a 10% infection was present on Guerande and Danvers (G.E. Woolliams). Trace to slight infections were found in many plantings in Man. (W.L. Gordon).

YELLOWS (Callistephus virus 1) occurred sporadically in some carrot seed crops at Grand Forks, B.C. (G.E. Woolliams). As in 1944 and 1945, symptoms of yellows developed in plants grown at Edmonton, Alta., from a seed lot from South America and were more pronounced than in plants in the check rows from seed produced in Canada (G.B. Sanford). Yellows was common in the Saskatoon area, Sask., in 1946, but the disease was late in showing up and no cases of severe injury were seen. It was also slight in a garden at Codette (R.J. Ledingham). Yellows was widespread in Man. (W.L. Gordon). Yellows affected 5 to 10% of Red-Cored Chantenay in a field in Norfolk Co., Ont.; many carrots were dwarfed and roots very hairy. A lighter infection was seen in carrots planted in a young peach orchard in Lincoln Co. (J.K. Richardson). Traces of yellows were found in about 20 fields about St. Martin, St. Janvier and Ste. Thérèse, Que.; infected plants were mostly at the ends of the rows. In general it was less prevalent than in recent years (E. Lavallée, R. Desmarteau). Infection varied from a trace

to 10% of the plants in the fields observed in Kings and Annapolis Counties, N.S.; it was commoner in earlier plantings (J.F. Hockey). Yellows affected 71% of the plants of Chantenay and 38% of Danvers Half Long in a planting in Queens Co., P.E.I.; this particular record is typical of the yellows situation in 1946 (R.R. Hurst).

CAULIFLOWER

YELLOWS (Fusarium conglutinans). About 50% of the plants were severely affected for several rows in the centre of a ¼-acre patch of Snowball in Lincoln Co., Ont., whereas the rest of the field was apparently healthy. Where the disease was present, a crop of Danish Ballhead cabbage showing similar symptoms was grown in 1945 (J.K. Richardson).

CLUB ROOT (Plasmodiophora Brassicae) was found very severely affecting 3 large fields at St. Martin, Laval Co., Que.; probably many other growers suffered losses from this disease (E. Lavallée).

WIRE STEM (Rhizoctonia Solani). Cauliflower seedlings were a complete loss in one hotbed at St. Martin and another at Côte de Liesse, Que., on account of wire stem (E. Lavallée).

CELERY

BLACK CROWN ROT (Centrospora acerina (Hartig) Newhall). In a recent note (Phytopath. 36 (10): 893-896) A.G. Newhall has reviewed the synonymy of and proposed the above combination for this species, originally reported by him as Ansatospora macrospora (Ost.) Newhall (I.L.C.). Black crown rot was found affecting 75% of the plants in a shipment of 150 cases from Thedford, Ont.; isolations from specimens submitted to the laboratory yielded several pure cultures of the organism (H.N. Racicot).

LATE BLIGHT (Septoria Apii-graveolentis). A slight infection was seen at Armstrong, B.C. (G.E. Woolliams). Late blight caused severe damage at Saskatoon, Sask., in a small garden where moisture was abundant. It also caused severe damage in a small planting at the Station, Scott (R.J. Ledingham, B.J. Sallans). Late blight was found in most fields inspected in the Montreal district, Que., but it was less prevalent than usual (E. Lavallée). A few infections were observed in the Quebec district, early in the season, but they were quickly controlled by the appropriate treatment (D. Leblond).

BLACK HEART (non-parasitic) caused severe injury in one small planting in Sask. (R.J. Ledingham).

STEM CRACKING (boron deficiency). One field on muck soil at St. Michel, Laval Co., Que. was severely affected. In 3 others damage was a trace to slight. Most growers now apply boron with the fertilizer with good results (E. Lavallée). A few plants of Golden Self Blanching bordering a field of Salt Lake at Deschambault were severely affected. The whole field of Salt Lake was generally stunted and a few plants were definitely diseased (R.O. Lachance).

CUCUMBER

SCAB (Cladosporium cucumerinum) was present in nearly every greenhouse crop of cucumbers in the Leamington district, Ont., in June, but the damage was slight (C.D. McKeen). A slight general infection was seen in a planting of nearly an acre in Norfolk Co. (J.K. Richardson). Traces of scab were observed in Queens Co., P.E.I. (R.R. Hurst).

BACTERIAL WILT (Erwinia tracheiphila). A trace to 2% of the plants were affected in fields in the Windsor-Leamington area, Ont.; disease incidence was very low in plots dusted to control the beetles (C.D. McKeen). Light, scattered infections were present in 3 large fields at St. Martin, Laval Co., Que. (E. Lavallée). Traces were present in a varietal test at the Station, Ste. Anne de la Pocatière (R.O. Lachance).

POWDERY MILDEW (Erysiphe Cichoracearum). Infection was generally heavy on leaves and petioles in a greenhouse planting in Lincoln Co., Ont.; the damage was negligible (G.G. Chamberlain). Powdery mildew was present in a few greenhouses with inadequate ventilation in Essex Co.; damage was moderate in one large greenhouse (C.D. McKeen).

WILT (Fusarium sp.). In several greenhouses in the Leamington area, Ont., a small number of plants were found infected (C.D. McKeen).

WILT (Mycosphaerella citrullina (O.C. Sm.) Gross.) caused moderate damage in many greenhouses in the Leamington area, Ont. (C.D. McKeen). This disease has been reported only once previously - in Alta. (P.D.S. 21: 35).

STEM ROT (Sclerotinia sclerotiorum). A few plants were killed in several greenhouses in Essex Co., Ont. (C.D. McKeen).

ANGULAR LEAF SPOT (Pseudomonas lachrymans). Infection was severe in gardens near Tofield, Drumheller, and Lethbridge, Alta. (M.W.C.).

MOSAIC (virus) caused severe damage with heavy losses in late spring and early summer in greenhouse cucumbers in the Leamington district, Ont.; in a few houses 30-50% of the crop was lost (C.D. McKeen).

EGG PLANT

VERTICILLIUM WILT (V. Dahliae) affected about 10% of the Black Beauty plants being grown for seed at the Station, Summerland, B.C. (G.E. Woolliams). Wilt severely affected 25% of the plants in one plot in Essex Co., Ont.; there was some evidence of varietal resistance (C.D. McKeen). Wilt affected about 15% of the Black Beauty plants, killing some and seriously affecting the yield of others in a planting in Norfolk Co. (J.K. Richardson).

KOHLRABI

CLUB ROOT (Plasmodiophora Brassicae). An affected specimen received from Montreal, Que. (L.T. Richardson).

LETTUCE

GREY MOULD (Botrytis cinerea) moderately affected lettuce, causing a rot of the leaves in contact with the ground in the vegetable plots, U.B.C., Vancouver, B.C. (I.C. MacSwan). Grey mould was observed about Grand Forks in some fields of seed lettuce in areas where air drainage was poor. In a field at Lytton, 5% of the plants in a seed crop of New York 12 were dying from grey mould and drop (q.v.) (G.E. Woolliams).

DOWNY MILDEW (Bremia Lactucae) was quite prevalent on most varieties in the vegetable plots, U.B.C., Vancouver, B.C., especially during sunny weather immediately after a rain (I.C. MacSwan). Downy mildew was quite general in the Armstrong district; as it attacked only the basal leaves, the damage was negligible (G.E. Woolliams).

BOTTOM ROT (Rhizoctonia Solani) was reported to have caused the loss of 5,000 heads in a market garden at Winnipeg and a serious loss of crop at Brandon, Man. The causal organism was isolated from diseased specimens (W.L. Gordon).

DROP (Sclerotinia sclerotiorum) was reported as follows: affecting 1% of the plants in a seed crop of Imperial 456, where it attacked the base of the stems and killed the plants, at Armstrong, B.C. (G.E. Woolliams); damage slight to severe in several gardens at Edmonton, Alta. (M.W.C.); specimen from greenhouse at Moose Jaw, Sask. (T.C. Vanterpool); 15% of the plants were destroyed in a 4-acre field of early lettuce in the Kingsville district, Ont. (C.D. McKeen).

MELON

BACTERIAL WILT (Erwinia tracheiphila) caused the death of up to 2% of the muskmelon plants in plots in which the beetles had not been controlled in Essex Co., Ont. (C.D. McKeen).

FUSARIUM WILT (F. sp.) was quite general in a commercial field of cantaloupes at Lillooet, B.C.; the pathogen was isolated. Infection was also a trace in a plot of Hales Best grown for seed at the Station, Summerland, B.C. (G.E. Woolliams). Wilt (F. bulbigenum var. niveum) could be found in every melon field in the Harrow, area, Ont. Damage was variable. In one field, in which the plants became infected early in the season, 35% of the crop was destroyed before harvesting. In most heavily infected fields some melons were picked before the plants died. In some plantations, the fungus caused a lesion at the stem end of the fruit (C.D. McKeen). A slight infection was observed in a patch in Norfolk Co., Ont. (J.K. Richardson).

LEAF SPOT (Alternaria cucumerina) appeared shortly before harvest in the Leamington area, Ont., and caused moderate damage in nearly all plantations. Defoliation was negligible where effective sprays were applied (C.D. McKeen).

ONION

NECK ROT (Botrytis Allii) caused slight to moderate damage to onions in storage at Edmonton, Alta. (M.W.C.). Few specimens of neck rot were received during the winter of 1945-46 and none in the fall of 1946. Weather conditions at harvest were undoubtedly better the past 2 seasons than in the fall of 1944 (R.J. Ledingham). Several samples were received in the fall of 1946 from Lincoln Co., Ont., but losses do not appear to be abnormally high (J.K. Richardson). Neck rot caused the loss of 20-25% of onions stored in private homes during winter 1945-46 in Kamouraska Co., Que. There was very little disease apparent in the field or at harvest, but it became prevalent after the onions were in storage for 2 months (C. Perrault).

SOFT ROT (Erwinia carotovora). Specimens were received from St. Raymond, Que. (L.T. Richardson).

DOWNY MILDEW (Peronospora destructor) appeared in only some fields of onion seed crops in the Grand Forks district, B.C.; infection was usually slight. The disease suddenly developed on both seed and bulb crops in some sections about Kelowna following cool, showery weather in June and early July (G.E. Woolliams). Diseased specimens were received from Chatham, Ont. (C.D. McKeen). Downy mildew was reported from several onion marshes in Ont. this year, but the damage was not as severe as in 1945 (J.E. Howitt). Downy mildew appeared at the Botanical Garden, Montreal, Que., and caused severe injury (J.E. Jacques). A moderate infection followed by Stemphylium, etc., was found at Ste. Pamphile (A. Payette).

SMUT (Urocystis Cepulae). Diseased onions were noted at Leamington, Ont. (C.D. McKeen). Smut affected 20% of the plants and caused about 10% loss in a field at St. Laurent, Que. (E. Lavallée).

YELLOW DWARF (virus) developed for the first time in the Grand Forks area, B.C., in 1946. The district is zoned for seed production and the disease was found only in the zone where Ebenezer is grown for seed. In one field 25% of the plants were affected, but in most infection ranged from a trace to 1%. Yellow dwarf was quite severe in 1945 at Vernon in seed crops of Yellow Globe Danvers, the bulbs of which had all come from one source. The disease was practically eliminated this year by using for seed production bulbs of the same strain grown in an isolated area. Bulbs that had been raised near affected seed crops were used only for food (G.E. Woolliams).

PARSNIP

STEM BLIGHT (Phomopsis canadensis Bubak & Dearn.). A specimen collected at the Station, Charlottetown, P.E.I., was received from R.R. Hurst. This is the first report to the Survey (I.L. Conners).

LEAF SPOT (Ramularia Pastinacae) moderately infected a planting in Brant Co., Ont. (J.K. Richardson).

PEA

LEAF and POD SPOT (Ascochyta Pisi) was found usually moderately infecting Early Windermere, Laxtonian, Giant Stride, Stratagem, and Director at Prince George, B.C. (G.E. Woolliams). The disease was present in many gardens at Edmonton, Alta., late in the season; infection was slight in the Olds plots (M.W.C.). Leaf and pod spot was apparently present in many fields and gardens in Man. Infection was only a trace in the Portage plains on July 15, but the disease was more common later. The organism was isolated from specimens from Portage la Prairie and Winnipeg (W.L. Gordon). A slight infection was found on late-sown Alderman in a garden at Beaumont, Que. (R.O. Lachance), and on Fenland Wonder at the Station, Kentville, N.S. (R.J. Baylis).

POWDERY MILDEW (Erysiphe Polygoni) was observed at Lytton, B.C. (G.E. Woolliams). Infection was severe in many gardens at Edmonton, Alta. in September; infection was a trace to moderate in plots at Olds and trace to slight at Lacombe (M.W.C.). Powdery mildew was common on both garden and field peas towards the end of the season in Man. (W.L. Gordon). Infection was moderate on all late varieties at Ste. Anne de la Pocatière (R.O. Lachance).

ROOT ROT (Fusarium spp.) affected small patches to entire fields of peas in the Creston area, B.C. In many cases, peas have been grown on the same ground for several years. The water level is high during early summer. Isolations yielded species of Fusarium contaminated by bacteria (M.F. Welsh). Root rot was found scattered through a field being grown for seed at Houston; affected roots showed a red discoloration characteristic of Fusarium, but isolations were not attempted (G.E. Woolliams).

Root rot destroyed virtually all the peas in nearly 2 acres of experimental plots at St. Sébastien, St. Jean Co., Que.; peas had been grown on the plots for 2 or 3 years (R. Desmarteau).

A field survey made of 8 pea-growing districts in northeast Sask. in 1946 revealed that the prevalence of Ascochyta diseases varied greatly in different areas. The crop was clean or infection was very slight in a few isolated areas where peas were being grown for the first or second year. In the Nipawin-Codette-Aylsham area, where a large acreage of peas had been grown for several years, MYCOSPHAERELLA BLIGHT (M. pinodes) was as prevalent as in 1945, in spite of the fact that care was taken to use only disease-free seed in the area. When pea stubble of the 1945 crop was examined in June the asci of Mycosphaerella were nearly mature. In general, pea trash is destroyed or buried by the farmers in the spring or summer, but it is not difficult to find infected straw in fields where the trash had been raked up and burned and barley sown. An experimental plot was established in a field in peas in 1944 and adjacent to one in peas in 1945. In part of the plot were sown seed from lots which were (a) free of disease, (b) slightly infected, and (c) moderately infected with M. pinodes. The plots were examined when the crop was ripening and were found to be uniformy infected. Disease-free seed of eight varieties, McKay, Guinivere, Austrian Winter, Early Blue, Dashaway, Chancellor, Alaska, and Laxton's Progress, was sown in another part; vines and pods of all varieties were uniformly infected when examined.

Four fields in the Kelvington area, which were found by field survey and seed examination in 1945 to be almost free of Ascochyta diseases, were inspected this year and found to be infected. Subsequent enquiries indicate that these diseases are now well established in the area.

All the fields surveyed in 2 well-isolated areas around Bjorkdale and Pelly were found free of Ascochyta. These areas were growing peas for the first time using seed free of disease from the Kelvington area. Severe frosts caused extensive damage to the crop and little seed is expected to be available for 1947. Smaller areas around Tisdale and Borden were also free of disease.

The largest pea-growing area in Sask., near Domremy, was diseased. This area is well suited to peas from the standpoint of climate and soil. Seed produced locally is planted year after year and no attempt has been made to have crops and seed inspected (H.W. Mead).

DOWNY MILDEW (Peronospora Pisi). A trace was found at Bridgetown, N.S. (J.F. Hockey).

BACTERIAL BLIGHT (Pseudomonas Pisi). Infection was slight to moderate in the plots at Olds, Alta.; the 8 standard varieties being grown were about equally affected. A trace was found on the varieties at Lacombe (G.B. Sanford). Bacterial blight was common in gardens at Saskatoon, Sask., and was moderate to severe on Dashaway at the University. It was present in the northeast pea area (H.W.M.). Surveys indicate that nearly 50% of the fields of field peas in the Portage plains, Man., were infected, some of them severely (W.A.F. Hagborg).

ROOT ROT (Rhizoctonia Solani) caused slight damage to Early Sweet at Lacombe, Alta. (M.W.C.).

LEAF SPOT (Septoria Pisi). Infection ranged from a trace to slight in the plots at Olds and from a trace to moderate at Lethbridge, Alta. (M.W.C.).

RUST (Uromyces Pisi). A trace occurred in a planting of Wis. Early Sweet at Lawrencetown, N.S. (J.F. Hockey).

PEPPER

VERTICILLIUM WILT (V. Dahliae). In two large fields of peppers in the Harrow district, Ont., 1% of the plants was infected; in both fields the disease appeared in localized areas (C.D. McKeen).

MOSAIC (virus) affected a small percentage of the plants in a ¼-acre planting in Norfolk Co., Ont. (J.K. Richardson).

POD SPOT (non-parasitic) was widespread in Essex Co., Ont.; losses were heavy in some fields (C.D. McKeen).

POTATO

The Plant Protection Division, Science Service, has supplied the data on the certified seed potatoes produced, the acreages of the leading varieties passing inspection, the number of fields that failed to pass inspection, and the average percentage of black leg, leaf roll, and mosaic found in the fields. All fields entered for certification are planted with foundation or foundation A seed.

Table 4. Seed Potato Certification:
Number of Fields and Acres Inspected, 1946

Province	Number of Fields		Fields Passed %	Number of Acres		Acres Passed %
	Entered	Passed		Entered	Passed	
P.E.I.	7,530	6,590	87.4	35,583	31,675	89.0
N.S.	552	498	90.2	1,273	1,158	90.9
N.B.	3,079	2,282	74.1	20,692	15,528	75.0
Que.	894	617	69.0	2,205	1,486	67.4
Ont.	939	661	70.4	3,036	2,168	71.4
Man.	137	91	66.4	373	211	56.6
Sask.	142	101	71.1	128	103	80.5
Alta.	263	224	85.1	709	592	83.5
B.C.	662	564	85.2	2,666	2,335	87.5
Total	14,198	11,628	81.9	66,665	55,256	82.8
Previous Yearly Totals						
1945	11,267	9,501	84.3	50,646	40,866	80.7
1944	8,500	7,567	89.0	31,633	28,616	90.4
1943	9,562	5,520	57.7	34,947	19,148	54.8
1942	7,947	5,023	62.2	29,981	18,875	62.9

Acres Entered		Acres Passed	
1945	50,646	1945	40,866
1946	66,665	1946	55,256
Increase of 16,019 or 31.6%		Increase of 14,390 or 35.2%	

Table 5. Seed Potato Certification: Acreage Passed by Varieties, 1946.

Variety	P.E.I.	N.S.	N.B.	Que.	Ont.	Man. Alta.	B.C.	Total
Irish Cobbler	13,765	176	1,390	148	390	169	3	16,041
Green Mountain	9,264	158	3,887	1331	81	1	154	14,876
Katahdin	2,388	525	8,150	5	1274		25	12,367
Sebago	6,188	186	172	1	48	10		6,605
Bliss Triumph	5	91	1,757			60	1	1,914
Netted Gem	1					529	1211	1,741
White Rose						12	789	801
Chippewa	4		27		302	6	5	344
Warba		15	2		21	51	58	147
White Bliss			142					142
Sequoia	55						2	57
Rural New Yorker					44			44
Early Ohio						38		38
Other Varieties	5	7	1	1	8	30	87	139
TOTAL	31,675	1158	15,528	1486	2168	906	2335	55,256

Table 6. Seed Potato Certification: Rejected on Field Inspection, 1946.

Province	Leaf Roll	Mosaic	Ring Rot in field	Ring Rot on farm	Black Leg	Adjacent Diseased Fields	Foreign Varieties	Misc.	Total
P.E.I.	321	181	24		72	78	98	166	940
N.S.	26	5			8	5	1	9	54
N.B.	489	5	197	61	9	24	12		757
Que.	29	21	107	18	26	31	2	43	277
Ont.	62	2	40	50	13	36	17	58	278
Man.			24	9	4	2		7	46
Sask.	1		21		1			18	41
Alta.	12				10	4		13	39
B.C.	21	11			10	14	6	36	98
TOTAL	961	225	413	138	153	194	136	350	2,570
Rejections as a percentage of fields:									
Entered	6.7	1.6	2.9	1.0	1.1	1.4	1.0	2.5	18%
Rejected	37.4	8.7	16.0	5.4	5.9	7.5	5.4	13.7	100%

Table 7. Seed Potato Certification: Average Percentage of Disease found in Fields, 1946.

Average Percentage of disease found in	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
Fields entered: (first inspection)	%	%	%	%	%	%	%	%	%
Black Leg	.12	.06	.02	.19	.02	.19	.07	.23	.10
Leaf Roll	.54	.39	1.30	.20	.09	-	.16	.17	.20
Mosaic	.22	.10	.07	.14	.02	.01	.04	.01	.28
Fields passed (final inspection)									
Black Leg	.04	.05	.01	.07	.01	.14	.02	.07	.03
Leaf Roll	.17	.23	.30	.11	.05	-	.07	.06	.05
Mosaic	.07	.06	.08	.08	-	-	.01	-	.05

The potato seed crop grown in 1946 was the largest since the certification service was organized. The percentage of crop passing certification was also high. Although leaf roll accounted for the largest number of rejections, ring rot was the chief cause of rejection in Sask., Man., Ont., and Que. and was second only to leaf roll in N.B.

COMMON SCAB (Actinomyces scabies) was observed in all parts of B.C., but was more severe in the Interior and Northern sections than elsewhere (H.S. MacLeod). Common scab was a greater problem than usual in the Central and Northern districts of Alta.; over 50% of the seed lots are affected by scab, the amount being mostly slight to moderate. Some Netted Gem lots were also affected, which is unusual for the variety (J.W. Marritt). An attempt to increase the amount of Irish Cobbler seed in Sask. was only partially successful due to scab. Many lots averaged 45% slight scab on clay soil and 100% severe scab on some bush soils in south and central Sask. (A. Charlebois). A trace may be found in most fields in Man. and northwest Ont. (D.J. Petty). Slight scab was general in southwestern Ont., but it was less prevalent than in 1945 (F.J. Hudson). It was rather prevalent in central Ont. in 1946. In Dufferin, Durham, Peel, and Wellington Counties, the soil is fairly alkaline and loose textured, and with suitable temperature and moisture scab frequently reduces the percentage of marketable crop by 25-50%. A good mid-season scab-resistant variety would be of great value. The disease was of minor importance in northern Ont. (W.L.S. Kemp). Scab was prevalent along the lower St. Lawrence, Que. The season was favourable for scab development, the temperatures being high and rainfall low in July. In some cases where fresh manure was used infection was 10-30% (B. Baribeau). Scab was more noticeable than usual in N.B., but only in a few instances was a high percentage of tubers affected (C.H. Godwin). Common scab was prevalent in most districts in N.S. in 1946. Infection usually was not more than 10% of the tubers, but in one lot 90% were affected (R.C. Layton). As is usual in a dry season, common scab was more or less prevalent in all parts of P.E.I. In some instances infection was severe and the scabby tubers went to starch factories (S.G. Peppin). Scab infection was trace to severe on Irish Cobbler and Green Mountain, trace on Katahdin, and absent on Sebago (R.R. Hurst).

EARLY BLIGHT (Alternaria Solani) was reported in less than 10% of the fields inspected in B.C., mainly in the Fraser Valley. Infection was slight or, in 2 fields, moderate (H.S. MacLeod). Infection was severe in one garden at Edmonton, Alta., and was observed in several others (M.W.C.). Early blight was observed in few fields in Alta., but on one farm infection was moderate to severe (J.W. Marritt). The disease was severe in a garden at Codette, Sask., causing heavy defoliation. Tomatoes in the same garden were also heavily infected (H.W. Mead). Early blight was severe in a garden at Camp Morton, Man., where it was present the previous year. In general it was less prevalent than in 1945 (W.L. Gordon). Only traces of early blight were seen in Man., but in northwestern Ont. infection was slight to moderate and in two fields severe (D.J. Petty). Slight infections were noted in a few fields in Ont. (F.J. Hudson, W.L.S. Kemp). A slight infection developed in a few fields in Que. in early August (B. Baribeau), and in a few fields in each area in N.B. (C.H. Godwin). Early blight was fairly common in most fields in N.S. particularly in Green Mountain and Irish Cobbler. It was first reported in Colchester Co. on Aug. 10 and in King's Co. on Aug. 16. In one crop 12% Alternaria tuber rot was reported (R.C. Layton). Early blight was present in slight to moderate amounts in a few fields in P.E.I. (S.G. Peppin). Early blight was very prevalent and destructive on the late-blight resistant potato lines (Fredericton material) when grown at Charlottetown (R.R. Hurst).

GREY MOULD (Botrytis cinerea) caused the premature death of affected plants in several fields along the Lower St. Lawrence, Que. The yield of affected plants was one half or less that of healthy plants. Infection usually took place at the base of the lower petioles and then spread rapidly up and down the stem. The disease was favoured by moist weather (C. Perrault).

BACTERIAL RING ROT (Corynebacterium sepedonicum). British Columbia is particularly fortunate in being virtually free of bacterial ring rot. Several factors are believed to have contributed to this position. Besides the provincial regulations and publicity concerning this disease, a high percentage of the crop is grown from certified seed, and most of the table stock brought into the province has been inspected by the Dominion Fruit Inspectors and is handled through 40 agents.

In a careful re-survey of the Courtenay district, a trace of ring rot was found on 4 farms. The seed was all from the same source, in which a trace of ring rot was suspected the year before, but its presence was not confirmed upon laboratory examination. Field inspections for ring rot in the coastal areas had to be abandoned because late blight greatly reduced the possibility of detection.

Due to a shortage of table potatoes considerable quantities were imported during the winter and spring of 1946. Over 13,500 tons were inspected. No ring rot was detected in some 4000 tons of new potatoes imported from California. In the 9,500 tons of old potatoes, which were received from Wash., Ore., Ida., Mont., Neb., and Calif., ring rot was detected in almost 25% of the tonnage. Most of the shipments were U.S. No. 1 size B grade; and "left a lot to be desired from the standpoint of quality and freedom from disease." All lots in which ring rot was detected were detained and could only be sold to large users away from potato

producing areas, and storage spaces were disinfected before new stocks were moved in.

No ring rot was detected in 50 cars of certified seed potatoes brought into B.C., 32 from other provinces and 18 from the United States (W.R. Foster).

The amount of ring rot present in Alta. was again reduced in 1946. The disease was found on 103 farms out of 1637 inspected. It was present in nearly 900 acres, a decline of 180 acres from the previous year. There was also less disease than formerly in the infected fields.

Measures to control ring rot were adversely affected by two factors. Due to table stock being in short supply it was necessary to import potatoes from the United States. Many of these stocks were infected with ring rot and efforts to restrict their distribution to the institutional trade were only partially successful. It is known that some were planted in outlying districts of the province. In consequence, ring rot now probably occurs outside the quarantine areas.

Due to the extreme shortage of seed potatoes of early varieties, 5 carloads of U.S. Certified Irish Cobbler seed potatoes were imported from one firm in North Dakota for planting in the quarantine areas in southern Alta. Later it was found that each carload contained ring-rot infected tubers in spite of them being certified (J.L. Eaglesham). Upon enquiry from Mr. Eaglesham, it was learned that 67 growers are known to have planted these potatoes on their farms. Instructions were given in the spring, as soon as it was learned that the seed was infected, that all the crop be dug and sold on the early market as new potatoes. When the survey was made in September it was found that only a small number of fields were left undug. Most of these fields were too ripe to diagnose the disease by foliage symptoms. In the few remaining fields, it was estimated that 1/3 to ½ of the fields were affected by ring rot. In 7 infected fields percentage of infected plants was 1% in 2 fields, 5% in 3, 10% in one, and 25% in one. It seems that quite substantial amounts of ring rot must have been present in some of the seed lots in these 5 carloads (I.L. Conners).

In Sask., 21 fields out of 142 entered for certification were rejected on account of ring rot. The disease was also seen in several commercial fields; damage was particularly severe in a field of Netted Gem at Lumsden (A. Charlebois). No special survey was made for ring rot in Sask. in 1946. However, diseased specimens were received from 8 new places. The spread is in part due to the planting of table stock imported from Minn. and N.D.; ring rot was found in 8 of 14 such carloads examined at Saskatoon. Due to a crop failure in some sections of Sask. some of these potatoes were probably used for seed, in spite of warnings to the contrary (R.J. Ledingham).

Bacterial ring rot caused the rejection of 33 fields in Man. and 15 in northwest Ont. (D.J. Petty). In Ont., most of the rejections were in Durham Co. and about Sudbury (W.L.S. Kemp). The Provincial Department of Ontario conducted its annual survey of table stock. The area surveyed in 1946 was greatly enlarged to include important sections in Northern and Eastern Ont. In all, 635 cases of ring rot were found of which 499 were new. The percentage of repeat cases was unusually high - 60 fields from 264.

The cases last year were in areas which had been surveyed before and on most farms the disease was causing little damage. In consequence growers, it is thought, were not careful about their clean-up (J.K. Richardson, L.T. Richardson, H.N. Racicot).

In Que., bacterial ring rot was present in 107 fields out of 894 inspected, or 11.9% compared with 8.6% in 1945. This increase is attributed to poor disinfection of implements and lack of sanitary precautions. This disease was particularly prevalent in Témiscouata, Chicoutimi and Lake St. John districts where 78 fields were disqualified out of 463.

During inspection of the crop entered for certification, 378 commercial fields planted with table stock were visited on neighbouring farms throughout Que. Of this number 74.6% were found affected by ring rot, a trace to 10% of the plants showing foliage symptoms. Bacterial ring rot was also prevalent in the southern districts of the province (B. Baribeau). Ring rot caused the rejection of 52 strains of seed in N.B. Conditions were favourable for the development of symptoms. Table stock is in very bad condition and 1946 was the worst season on record (C.H. Godwin).

A survey for bacterial ring rot was conducted by the N.S. Department of Agriculture under the supervision of A.E. McCallum, Plant Protection Office, St. John. The survey covered Kings Co., most of Annapolis Co. and portions of six others. In all 1414 fields comprising 1546.7 acres were examined. Ring rot was found in 24 plantings as follows: Annapolis 2 garden plots, Digby 1 garden, Hants 2 gardens, Cumberland 7 fields (4 acres) and 1 garden, Kings 6 farms with 8 fields (9 acres) and Pictou 3 fields (4 acres). No infection was found in Antigonish and Colchester Counties. Suspected material was sent to J.F. Hockey for verification. An intensive survey was also conducted in the seed producing area on the North Mountain, Kings Co., and in that of Colchester Co. No ring rot was found in either area. In Kings Co., infection almost certainly came from the dehydration plant, where potatoes from other provinces were processed, through the use of contaminated bags or barrels. In other counties growers had purchased table stock potatoes, in part of U.S. origin, and used them for seed. One grower bought from P.E.I. table stock known to have had ring rot the year before. These potatoes were planted by himself and a neighbour. Previous to this survey bacterial ring rot was not known to exist in N.S. As the disease was found to occur in small fields and garden plots and was not found established in any of the main potato sections, there is considerable hope that it can be brought under control. More intensive work will be carried out in 1947 (A.E. Roland, R.C. Layton). Ring rot was found in P.E.I. in one district where the disease was detected 2 years before and in 2 districts previously free from it. In all there were 27 positive cases, 8 in seed and 19 in table stock (S.G. Peppin).

In the past year, a new variety, Teton, was distributed by the U.S. Department of Agriculture. Tests under the National Potato Breeding Programme in Maine and Wyoming have shown that Teton is resistant but not immune to ring rot (W.A. Riedl, F.J. Stevenson and Reiner Bonde, Am. Potato Jour. 23(11) : 379-389. 1946). Trials conducted at Ottawa in 1946 showed

that Teton is resistant, but that a fairly high percentage of plants may become lightly infected. The variety might, therefore, act as a carrier, and growers of the variety were warned to take extra precautions to prevent their stocks becoming infected (H.N. Racicot).

Mr. B. Baribeau, Seed Potato Certification Office, Post Office Bldg., Ste. Anne de la Pocatiere, Que., has prepared a useful mimeographed bibliography on bacterial ring rot (I.L.C.).

BLACK LEG (Erwinia phytophthora) was found in 97 (14.6%) of the fields entered for certification in B.C. and caused the rejection of 10. This was an increase over 1945. The disease was particularly severe in the Fraser valley on peat soils. In this district rainfall was abundant until July 1 (H.S. MacLeod). Black leg was unusually prevalent in garden and commercial plantings at Edmonton, Lacombe and Red Deer, Alta. (G.B. Sanford). Black leg was more prevalent than usual in seed potatoes in Alta. (J.W. Marritt). In general black leg was not prevalent in Sask., but in a few fields 5-10% of the plants were affected; one field was rejected. (R.J. Ledingham, A. Charlebois). Some rejections were recorded in Man. and Ont. (cf. Table 6). In Que., 26 fields were rejected out of 894 inspected. The disease was again almost entirely confined to the Chicoutimi and Lake St. John districts (B. Baribeau). Black leg was confined in N.B. to the Sebago variety imported for seed purposes. In several fields a high percentage of plants was infected and rot in the tubers caused some loss (C.H. Godwin). Black leg was quite severe in N.S., especially in Sebago; of the 8 fields rejected 7 were Sebago (R.C. Layton). Black leg was quite prevalent in P.E.I. especially in Sebago (S.G. Peppin). The average percentage of black leg was 2% in 10 fields of Green Mountain table stock, 1% in 15 fields of Irish Cobbler, and 4% in 15 fields of Sebago (R.R. Hurst).

BACTERIAL SOFT ROT (Erwinia ?carotovora) caused rapid breakdown and extensive damage to a crop of Netted Gem after harvest at Norquay, Sask. (A. Charlebois, L.T. Richardson). The disease was very prevalent in many lots of table stock and some seed potato fields in southwestern Ont. due, apparently, to high temperatures especially at digging time (F.J. Hudson).

WILT (Fusarium oxysporum) was reported in 116 or 17.3% of the fields inspected in B.C. and 3 were rejected. The disease was slightly less prevalent than in 1945 due probably to moisture being more abundant. It was much more severe in White Rose and Green Mountain than in Netted Gem (H.S. MacLeod). Wilt was moderate on light soils in Sask. (R.J. Ledingham). The disease was again prevalent in south, central and western Sask. (A. Charlebois). Wilt was much more prevalent in Man. and to some extent in northwestern Ont. than in 1945 (A. Petty). In central Ont. there was a marked increase of wilt over the previous year; seven fields were rejected (W.L.S. Kemp).

WILT (Fusarium and Verticillium). A small amount of wilt was found in 5% of the fields inspected and mostly located in southern Alta. (J.W. Marritt). The disease was not observed in the field in Que. (B. Baribeau). Wilt was quite common in fields throughout N.B. This is the first time that wilt was so pronounced (C.H. Godwin).

STORAGE ROT (Fusarium spp.). In all, 58 cases of storage rot were brought in for examination, January to April 1946, exclusive of cases found during the ring rot and nematode surveys in P.E.I. (R.R. Hurst).

STEM-END ROT (Fusarium Solani var. eumartii). A slight infection was found in a lot in Témiscouata Co., Que., during bin inspection (B. Baribeau).

RHIZOCTONIA (Pellicularia filamentosa (Rhizoctonia Solani) was slight in 459 fields, moderate in 49 and severe in 18 out of 662 inspected in B.C., being less prevalent than in 1945. Tuber infection was not severe (H.S. MacLeod). Rhizoctonia was general in a field at Houston, the perfect stage developing at ground level on most infected stems (G.E. Woolliams). Damage was moderate in 10% of the fields inspected and slight in the others in Alta.; the crop matured late and thus sclerotia were not abundant on the tubers at harvest (J.W. Marritt).

A slight infection was present in most fields in Man. and northwestern Ont. (D.J. Petty). Sclerotium development was usually slight to moderate on tubers at bin inspection in Ont. It was severe in one 13-acre field of Irish Cobbler on muck soil planted April 1 and still quite green in early September. The period of growth was apparently prolonged by use of DDT (F.J. Hudson, W.L.S. Kemp). A slight infection was noticed in fields in the Montreal and Chicoutimi districts, Que., with traces elsewhere. At bin inspection, a slight infection was found to be general (B. Baribeau).

Although rhizoctonia was reported in fields especially of the early varieties in N.B., the tubers were found to be singularly free of scurf at bin inspection (C.H. Godwin). Rhizoctonia was not noticeable in the field in N.S. but tuber infection was fairly general (R.C. Layton). Rhizoctonia was rarely noted in the field in P.E.I. but some sclerotia were found on tubers of Irish Cobbler from fields that matured early (S.G. Peppin).

STEM-END HARD ROT (Phomopsis tuberivora). A number of specimens were received from Courtenay, B.C. (W.R. Foster).

LATE BLIGHT (Phytophthora infestans) was found in 31% of the fields inspected in B.C. in 1946 compared to 6.7% in 1945. Where the crop was not protected losses were heavy. However, properly sprayed and dusted fields showed little foliage infection and tuber rot was negligible (H.S. MacLeod). A slight infection was observed on the lower leaves in a field of Netted Gem at Springside, Sask. An affected tuber was received from Norquay (A. Charlebois). Late blight was first observed in Man. on July 16 in the potato plots at the University by O. Olsen. Later in the month it was reported from Fort Garry, Rathwell, Kelwood, Neepawa, and Ste. Annes. Hot, dry weather in late July checked the disease and it was much less prevalent that in 1945 (W.L. Gordon). Infection was moderate to severe in the Dryden area, northwestern Ont. (D.J. Petty). Late blight was of little importance on potatoes in Ont. due to the absence of humid weather in late summer and fall and to improved spraying and dusting practice (W.L.S. Kemp). On account of the

excessively dry season there was no late blight reported in Quebec except from the Lake St. John and Chicoutimi districts and the South Gaspé, where precipitation was normal. It was reported in the Gaspé about Aug. 3, in the Eastern Townships on Aug. 12 and in Chicoutimi Aug. 23. Some tuber rot occurred, infection being a trace to 1% (C. Perrault, B. Baribeau). Owing to the hot, dry summer late blight did not appear in N.B. until September. The disease was most prevalent in late-planted fields and as high as 5% of the tubers were affected. Tuber infection in table stocks amounted to 30% in some cases (C.H. Godwin). Late blight was fairly general in N.S. but infection was light except in some late fields, which were not sprayed. It appeared first in mid-August. Some crops in unsprayed garden plots were reported a complete loss from rot. Infection was highest 50% (average 5%) in Cumberland Co., and highest 6.5% (average 1%) in Pictou. Little rot developed where a spray programme was carried out (R.C. Layton). Late blight was very prevalent in P.E.I. late in the season. Most of the Irish Cobbler crop escaped the disease as the season was dry and plants died down early. All late varieties stayed green due to the absence of killing frost. Nor was it possible to kill the vines artificially due to lack of material. In consequence blight continued to spread late in the season (S.G. Peppin).

PINK ROT (Phytophthora erythroseptica) was isolated in pure culture from tubers received from Cochrane, Ont. (L.T. Richardson).

PYTHIUM ROT (P. ultimum). W. Newton and C. Lines (Sci. Agr. 27 (2): 72-73. 1947) have shown that dusting the freshly cut sets with certain fungicides, particularly Fermate, greatly reduces the amount of rot that develops when the sets are planted (I.L.C.).

LEAK (?Pythium ultimum). Affected specimens were received from Trout Mills, Ont.; the trouble developed in 7-10 days after digging (L.T. Richardson).

STEM ROT (Sclerotinia sclerotiorum) was observed in several fields in the Fraser Valley, B.C. In two fields of White Rose it was severe and caused the death of many haulms, but the attack came late and apparently caused little reduction of yield (H.S. MacLeod).

SILVER SCURF (Spondylocladium atrovirens) was reported as follows: slight infection in a few lots at bin inspection in Que. (B. Baribeau); prevalent in one lot of tubers submitted for tuber indexing in N.B.; infection varied from slight to severe on the individual tubers (C.H. Godwin); very little seen in N.S. (R.C. Layton); slight infection in a few late fall shipments from P.E.I. (S.G. Peppin).

POWDERY SCAB (Spongospora subterranea) was very severe on smooth-skinned varieties on peat soils in the Cloverdale district, B.C. Many fields produced crops fit only for the glucose factory. One 10-acre field entered for certification passed field inspection but at harvest the 200 ton crop was unfit for seed. The crop was sold to the factory for $15 per ton on account of powdery scab, instead of realizing $35-40 per ton as table stock or even better prices as certified seed (H.S. MacLeod). A slight to moderate infection was observed in Témiscouata and Kamouraska Counties, Que.; a slight infection was found in one bin in the Chicoutimi

district (B. Baribeau). A little powdery scab was found in 3 lots in N.S. (R.C. Layton).

STEMPHYLIUM LEAF SPOT (S. consortiale (Thüm.) Groves & Skolko) is similar to early blight except that the spots are lighter brown and lack the concentric rings typical of early blight. This leaf spot is general, although usually slight, in B.C., as is early blight. It is favoured by high humidity. Groves and Skolko have reported its occurrence on seeds of agricultural crops, but the fungus has not been previously recorded as a pathogen of potato. An account of the disease has been published in Sci. Agr. 27(3); 130-135. 1947 (N.S. Wright).

WILT (Verticillium spp.) was observed in several fields of White Rose and 2 of Green Mountain in B.C. (H.S. MacLeod). Wilt was not uncommon on light soils in Sask. (R.J.L.). Wilt was reported in 29 fields out of 498 inspected in N.S. and the average infection in the infected fields was 0.4%. Specimens from all affected fields were sent to the laboratory, Kentville, for determination (R.C. Layton). Wilt is very common in Sebago and is particularly troublesome in fields of table stock in P.E.I. (R.R. Hurst). Wilt caused the rejection of 43 fields in P.E.I.; it is more prevalent in Sebago than in other varieties (S.G. Peppin).

LEAF ROLL (virus) was found in 170, or 25.9% of the fields inspected in B.C. and caused the rejection of 21. It was about half as prevalent as the previous year (H.S. MacLeod). It was recorded in 29% of the fields inspected in Alta., but infection was generally low. The increase in affected fields was in part due to leaf roll being present in imported stock (J.W. Marritt). Leaf roll caused rejection of one field and percentage of infection was higher than usual in Sask. (A. Charlebois). Leaf roll was severe in some plantings, particularly in city gardens (R.J. Ledingham). Only traces of leaf roll were noted in Man. and northwestern Ont. (D.J. Petty). The increased use of DDT has greatly improved control of leaf hoppers, but not, apparently, of aphids. Leaf roll caused more rejections in central Ont. than all other diseases combined (W.L.S. Kemp). Leaf roll was slightly more prevalent in Que. than in 1945 and caused the rejection of 29 fields. Leaf roll became more prevalent the closer the fields were to the south and southwestern parts of the province (B. Baribeau). Leaf roll continues to be a serious problem in N.B. Although the disease was about as prevalent as last year, conditions were favourable for current season spread and it is suspected that some spread may have occurred (C.H. Godwin). Leaf roll was much more prevalent in N.S. compared with the all-time low of 1945. (R.C. Layton). Leaf roll was more prevalent than in 1945 and again infection was greatest in those sections of P.E.I. nearest to the mainland of N.B. (S.G. Peppin). Examination of table stock fields in August revealed average infection of 23% in Irish Cobbler and Green Mountain fields (R.R. Hurst).

MOSAIC (virus) was found in 283 fields and caused the rejection of 11 in B.C. The disease was present in more fields but the level of infection was lower than in 1945 (H.S. MacLeod). Very little mosaic was recorded in Alta., Sask., Man., and Ont. (J.W. Marritt et al.). Mosaic caused the rejection of 21 fields as against 5 in 1945 in Que. This increase is attributed to the prevalence of aphids in potato fields in 1945.

In early August a mild type of mosaic appeared in some fields of Green Mountain in the Chicoutimi district but disappeared in about 2 weeks (B. Baribeau). Little change occurred in the amount of mosaic in N.B. in 1946 (C.H. Godwin). Mosaic was more noticeable than in past years in N.S. However, inbreeding appears to be more effective against mosaic than other virus diseases (R.C. Layton). Mosaic caused the rejection of 181 fields out of 7527 inspected in P.E.I. As in previous years, Green Mountain was more affected than other varieties (S.C. Peppin). In a survey of table stock fields, the average infection was 29% in 35 fields of Green Mountain in P.E.I., 17% in 21 of Irish Cobbler, 6% in 7 of Sebago and 5% in 5 of Katahdin (R.R. Hurst).

PURPLE DWARF or HAY WIRE (virus) was found in 13% of the fields inspected in Alta., but the percentage of infected plants did not exceed 1% (J.W. Marritt).

PURPLE or BUNCH TOP (virus) was seen in 22% of the fields inspected in Alta. and in 13 fields the percentage of infected plants exceeded 1% on second inspection (J.W. Marritt). A low percentage of plants showing symptoms of purple top was observed in fields at Olds, Innisfail, Red Deer, Lacombe, and Edmonton. Tubers from plants affected in 1945 produced, without exception, normal plants in 1946 (G.B. Sanford). Purple top could be found in all districts of Man. and northwestern Ont., percentage of infected plants being a trace to 3% (D.J. Petty). An occasional plant was found for the first time in fields entered for certification in the London area (F.J. Hudson). Only an odd plant was found affected in fields inspected in central Ont. These plants were mostly located near road fences. It is believed that insects had transferred the virus from the common milkweed (W.L.S. Kemp). Purple top was seen in nearly every field visited between Toronto and Penetang. Symptoms suggestive of aster yellows were also seen on wild carrot and goldenrod growing along the fences (L.T. Richardson). Purple top was fairly common in Sebago and Katahdin in N.B. (C.H. Godwin). Purple top was observed in 54 fields, all of Katahdin and Sebago, in N.S. The percentage of infected plants was over 1% in 15 fields and the maximum was 2.4%. DDT was used quite generally with good results (R.C. Layton). Purple top was prevalent in P.E.I. in some fields of Irish Cobbler, in which it caused premature death and reduced yields. The disease affected a trace to 25% of the plants in some fields of Sebago (R.R. Hurst).

G. Beal and F.M. Gannon (Am. Pot. Jour. 22(12): 362-372. 1945) have made a statistical study of the distribution of purple top within fields planted in tuber units. They conclude that "the cause of purple top may operate variously over a field but with similar freedom along and across the rows of potatoes". There is also no tendency for the condition to be transmitted from an infected plant to its neighbour. In discussing these findings with D.J. MacLeod the hypothesis was advanced "that in the field an alternation between potatoes and some weed occurs and that the transmission of the disease from one potato plant to its neighbour may be rare" (I.L. Conners).

SPINDLE TUBER (virus) was found in one field in the Lethbridge district, Alta. (J.W. Marritt). A few affected plants were found in the Winkler district, Man. (D.J. Petty). A trace was observed in fields in central and eastern Ont. (W.L.S. Kemp). Spindle tuber was not reported in Que. this year, but some offshape tubers were found in some lots during bin inspection (B. Baribeau). The disease was reported in N.B. in a few cases, which were brought out by the extreme hot weather (C.H. Godwin). Spindle tuber was not reported in the field in N.S., but a few off-shape tubers were found in Katahdin, Sebago, and Green Mountain (R.C. Layton). The disease was found in P.E.I. in more fields than in 1945; it occurred mostly in Katahdin and Sebago (S.G. Peppin). Spindle tuber rarely exceeded a trace in table stock fields in P.E.I. (R.R. Hurst).

WITCHES' BROOM (virus) was the principal virus disease in crops of White Rose and Netted Gem grown for seed in the Cariboo district, B.C., in 1946. Infection ranged from 0.1% to 2.0%. Plants showing all stages of the symptoms from extreme dwarfing to very slight involvement of the upper foliage were seen within the same tuber unit (N.S. Wright). Witches' broom was found in 77 fields entered for certification in B.C. (H.S. MacLeod). Only about 2% of the fields inspected in Alta. contained witches' broom and the percentage was small (J.W. Marritt). Under Witches' Broom of potato (P.D.S. 25: 74) read: "15" for "12" in the phrase "the typical symptoms of Solanum virus 12" (I.L.C.).

BOLTERS (cause undetermined) were very widespread in Irish Cobbler in Kings and Queens Counties, P.E.I., and affected a very low to a high percentage of plants. Affected plants remained green long past the normal life of the variety giving the fields a spotty appearance. The name for the trouble was proposed by D.J. MacLeod (R.R. Hurst, H.L. McLaren).

CHEMICAL INJURY. One grower in N.B. lost a portion of his crop from storing his potatoes in barrels that originally contained copper dust (C.H. Godwin).

FALSE LEAF ROLL was general in a planting of Katahdin at Innisfail, Alta. (M.W.C.).

FROST INJURY. Due to unfavourable weather harvesting the potato crop in the Eastern Irrigation District, Alta., was delayed. About 25% of the tubers were still unharvested when they were frozen in the ground the third week of October (J.W. Marritt). Many fields of potatoes were frozen to the ground on July 23 across northern Sask. particularly towards the west and potato tops throughout Sask. were killed during the nights of Aug. 31 and Sept. 1 (A. Charlebois). Frost caused some damage in districts north of Montreal, Que.; elsewhere damage was slight (B. Baribeau). Frost caused over 2% loss in some fields of the late varieties in N.S. (R.C. Layton). There was considerable damage from contact frost throughout P.E.I. following heavy frosts freezing the soil and then the potatoes being turned out on the frozen ground by the potato digger before it has had time to thaw out. There were also several cases of low-temperature injury due to frost entering the storage house, which was, in at least one instance, improperly constructed (R.R. Hurst).

GIANT HILL was reported in 121 or 18.3% of the fields in B.C., compared with 40% in 1945 (H.S. MacLeod). Giant hill was seen in 29 fields in Alta., the infection never exceeding 1% (J.W. Marritt). An occasional affected hill was seen in fields inspected in Que. The number seems to be increasing, especially in Green Mountain (B. Baribeau). Giant hill was found in 7 fields of Green Mountain in N.S. and in 2 fields 1% of the plants were affected (R.C. Layton). Giant hill was reported from several districts in P.E.I. (S.G. Peppin).

MAGNESIUM DEFICIENCY was unusually severe in P.E.I. in 1946. There was a significant reduction in yield and grade due to this deficiency (G.W. Ayers).

NET NECROSIS was severe in some districts in B.C., particularly about Cloverdale, and caused the rejection of several crops. It seems to be most serious in Netted Gem, less so in Green Mountain and is rarely, if ever, found in White Rose (H.S. MacLeod). Net necrosis caused the rejection of one lot in Alta. A high percentage of necrosis was present in table stock grown on vacant lots about Calgary (J.W. Marritt). Net necrosis was found in a few lots at bin inspection in Que., a few tubers being slightly affected (B. Baribeau).

PHLOEM NECROSIS (?psyllids) caused severe damage to a planting of Warba at Calgary, Alta. (G.B. Sanford).

POTASH DEFICIENCY caused moderate to severe damage to a field of Irish Cobbler in Queens Co., P.E.I. We were first attracted by the general bronzing over the field. Closer examination revealed: young plants a dark green, older leaves yellowish, bronzing of leaves at tips and edges (R.R. Hurst).

STEM-END BROWNING. Slight browning was seen in a very small percentage of tubers in one lot at bin inspection in Que. (B. Baribeau). A few cases were reported in P.E.I. in December (S.G. Peppin).

VASCULAR DISCOLORATION varying from almost nothing to nearly 100% resulted from the application of herbicides to kill the tops in B.C., where many growers used herbicides this season. When lots were examined about 2 months later it appeared that the discoloration was disappearing (H.S. MacLeod). Severe vascular discoloration was observed in Chippewa potatoes which had been sprayed with Dow 66, Sinox General and Krenite in experiments in Ont. From 50 to 90% of tubers showed some browning throughout the vascular ring. Tests conducted 2 weeks later on Katahdin potatoes in a different locality caused very little discoloration (J.K. Richardson). Some stem-end browning was observed in N.B. during tuber inspection in crops from fields on which chemicals were used to kill the tops (C.H. Godwin).

SPLIT TUBERS were observed in a few fields along the lower St. Lawrence, Que. This condition was probably due to soil moisture permitting rapid development of the tubers after a prolonged period of drought. Rapid suberization of the exposed tissues prevented tuber rot (C. Perrault).

PUMPKIN

CURLY TOP (Beta virus 1). A trace was found in a seed crop at the Station, Summerland, B.C. (G.E. Woolliams).

RADISH

BLACK ROT (Alternaria Raphani). A small percentage of the roots was found infected in a seed crop at Kelowna, B.C., but no lesions were found on parts of the plant above ground. The pathogen was isolated (G.E. Woolliams).

BLACK ROT (Aphanomyces Raphani). Diseased specimens were received from Normandin, Que. (L.T. Richardson).

CLUB ROOT (Plasmodiophora Brassicae) was observed occasionally on radish in Queens Co., P.E.I. (R.R. Hurst).

RHUBARB

?MOSAIC (virus) has affected 7 plants in a planting of 16 in Queens Co., P.E.I. There is considerable necrosis of the stalks (R.R. Hurst).

CROWN ROT (cause unknown). Two plants out of five were affected in a 3-year-old planting in a city garden, Saskatoon, Sask. The plants grew from old plants that have never shown the disease (T.C. Vanterpool). The disease was prevalent in 1946 and caused severe damage in some plantings in and about Saskatoon (R.J. Ledingham).

SALSIFY

WHITE RUST (Cystopus cubicus) heavily infected Sandwich Island salsify in the Botanical Garden, Montreal, Que. (J.E. Jacques).

SHALLOT

YELLOW DWARF (Allium virus 1) affected 6% of plants in a garden planting at Kentville, N.S. (J.F. Hockey). Previously reported only on onion in B.C.

SPEARMINT

RUST (Puccinia Menthae) was reported to be causing damage to spearmint in the Thedford Marshes, Ont. (J.B. Howitt).

SQUASH

WILT (Erwinia tracheiphila). About 15% of the plants were stunted and showing the early stages of wilt in about ½-acre field of Hubbard squash in Lincoln Co., Ont. (J.K. Richardson).

POWDERY MILDEW (Erysiphe Cichoraceaarum) was observed on squash at Lytton, B.C. (G.E. Woolliams).

SWEET CORN

RUST (Puccinia Sorghi). Infection was a trace on Vineland Inbred #1 and moderate on V.I. #3 in a planting in Lincoln Co., Ont. (J.K. Richardson).

SMUT (Ustilago Maydis). A light infection was noted at Saskatoon and in a garden at Codette, Sask. (H.W.M.). Smut was prevalent again on sweet corn in many parts of Ont. (J.E. Howitt). Traces were observed in Queens Co., P.E.I. (R.R. Hurst).

PHOSPHORUS DEFICIENCY affected 2% of the ears in a garden in Queens Co., P.E.I. The deficiency was apparent by delayed maturity during the pollination period. Silks developed slowly; the cobs were defective, showing many seed rudiments and irregular kernel rows (R.R. Hurst).

TAMPALA

WILT (Sclerotinia sclerotiorum) destroyed 30% of the plants in a small planting in the University garden, Ft. Garry, Man. (W.L. Gordon).

TOBACCO

Dr. L.W. Koch has prepared the usual summary of tobacco diseases in Ont. and Que.

Diseases in the Seedbed

YELLOW PATCH (excessive nutrients) was prevalent in the new tobacco belt in Ont. during the early part of the season. However most cases were mild or moderate and with the advent of higher temperatures and better growing conditions recovery was the rule rather than the exception. In the old tobacco belt this trouble was reported or observed in only a few seedbeds.

DAMPING-OFF (Pythium sp., Rhizoctonia sp., etc.) was both prevalent and serious in seedbeds of all Ont. districts more particularly in the early part of the season. Most damage occurred in outside, cotton-covered seedbeds in Kent Co. where the rainfall was excessive soon after the seed was sown. In this area numerous beds were sown a second or a

third time due to death of the seedlings either prior to emergence or soon afterwards. Applications of Fermate later in the season definitely appeared to check the disease although early applications resulted in some injury.

BLACK ROOT ROT (Thielaviopsis basicola) caused some damage in Kent Co. and also in parts of Norfolk Co. In the latter district cases were usually traceable to imperfect steaming at the edge of seedbeds and sometimes along the central walks. Mild damage was reported from the tobacco-growing districts in Que. Little damage was reported from Essex Co., Probably because resistant varieties now comprise most of the acreage grown.

BLUE MOULD (Peronospora tabacina) again occurred in epidemic form throughout the tobacco-growing areas of Ont. The disease has not yet appeared in Que. Strong evidence of overwintering was observed in Norfolk Co. in a greenhouse where sanitation measures were not practised following an outbreak last year. This greenhouse was well isolated from others and no other outbreaks occurred elsewhere in the district for more than a week. There was also strong evidence of infection in both the old and new tobacco belts as the result of spore showers from across Lake Erie. This conclusion was reached because widespread outbreaks occurred within very short periods in certain districts with no previous cases of the disease having been reported or observed.

The symptoms of blue mould were unusual in a few seedbeds in the Leamington area where the fungus frequently invaded the main stem tissues causing elongated, black, necrotic streaks resembling those caused by black leg (Erwinia aroideae).

Attempts to control the disease in glass-covered seedbeds by periodically raising the temperature to 100-110°F, 3-4 hours per treatment, failed completely in certain beds whereas the treatment effectively checked the disease in others. Apparently the humidity is also an important factor: high temperature should probably be combined with low humidity for effective control.

Blue mould was responsible for the complete loss of some seedbeds in the old tobacco belt and for delayed development in more than half of the seedbeds in the entire province. In consequence, there was a shortage of tobacco seedlings of all types in certain districts and a general delay in planting throughout all districts.

BLACK LEG (Erwinia aroideae) was observed in some seedbeds of Essex and Kent counties, Ont. Loss of plants occurred only in outside, cotton-covered seedbeds.

MUSHROOMS caused considerable damage in cotton-covered seedbeds in Kent Co., Ont. Damage resulting from these fungi is of real importance in this area and has increased greatly during the past five years.

FRENCHING was observed in a few seedbeds of flue-cured tobacco in the Norfolk area, Ont. Damage was slight.

GRAY MOULD (Botrytis cinerea) was observed in one seedbed in Norfolk Co., Ont., being apparently responsible for considerable leaf destruction. It was observed that the seedlings were too numerous and consequently ventilation was inadequate in the affected bed.

Diseases in the Field

BLUE MOULD (Peronospora tabacina) caused less damage in the field in Ont. than during the previous year. Numerous infected plants were transplanted and infection was frquently observed on the lower leaves of plants in the field, but it usually did not continue to spread throughout the growing season as it did in 1945.

BROWN ROOT ROT (cause undetermined) was prevalent in the old tobacco belt on susceptible varieties and where tobacco was grown on the lighter soils usually after corn. Where the disease appeared symptoms were more severe than usual. In the experimental plots, the severest symptoms developed where no fertilizer was applied.

BLACK ROOT ROT (Thielaviopsis basicola) was mild throughout Essex and Kent counties, Ont., where drought conditions prevailed particularly during the latter part of the season. In certain parts of the new tobacco belt considerable damage occurred in poorly-drained fields. The affected areas appear to be gradually increasing throughout this belt. Black root rot was responsible for some damage in the L'Assomption area, Que.

MOSAIC (virus) was prevalent throughout both the old and new tobacco belts of Ont. and some damage resulted in both Ont. and Que. Apparently cucumber mosaic was responsible for most of the damage in Essex and Kent Counties.

STREAK (virus) again occurred in the Erieau district of Kent Co., Ont., and at various locations throughout the burley-growing districts; damage was slight.

FRENCHING (cause undetermined) was prevalent in certain areas of the new tobacco belt, Ont. It caused considerable damage in the Port Hope district.

SORE SHIN (Rhizoctonia Solani) was observed in some fields of Essex Co., Ont., where it was the primary cause of breakage of some mature plants at the ground level by high winds.

ANGULAR LEAF SPOT (Pseudomonas angulata) caused widespread damage in the old tobacco belt, Ont., towards the end of the growing season.

LEAF SPOT (physiological) was widespread on burley varieties throughout the old tobacco belt, Ont.; damage was severe in some fields.

RING SPOT (virus) was observed on isolated plants in numerous fields throughout the burley districts in Ont.

Other Observations

MOSAIC (virus) was general in flue-cured tobacco fields in Que., but heavy infections were found only in those where rotation was not practised (F. Godbout).

TOMATO

EARLY BLIGHT (Alternaria Solani) was reported as follows: heavy infection chiefly on the lower mature leaves in the University garden, Point Grey, B.C. (I.C. MacSwan); severe in a garden, near a patch of severely infected potatoes at Codette, Sask. (H.W. Mead); mixed infections of early blight and Septoria leaf spot in many fields in Essex Co., Ont. (C.D. McKeen); causing severe defoliation, which reduced quality of fruit in Norfolk Co. (J.K. Richardson); slight defoliation in a planting of staked tomatoes in Lincoln Co., Ont. (G.C. Chamberlain); infection heavy causing considerable defoliation in a field at St. Martin, Que. (R. Desmarteau); very common late in the summer in P.E.I. (R.R. Hurst).

NAIL-HEAD SPOT (Alternaria tomato). Diseased specimens from tomatoes being marketed at Lethbridge, Alta., were sent for identification (A.W. Henry). Nailhead spot affected 25% of the fruit in a planting in Carleton Co., Ont. (L.T. Richardson).

GREY MOULD (Botrytis cinerea). The fungus was found fruiting on flower pedicels and adjacent parts of the stem in a field of early tomatoes near Leamington, Ont. (C.D. McKeen).

LEAF MOULD (Cladosporium fulvum). In the spring crop of greenhouse tomatoes, V121 was heavily infected in most houses in southwestern Ont. In the fall crop, V121 is also becoming heavily infected. The variety V473 is being grown in a few houses; in some infection is negligible, whereas in others a light infection is developing (C.D. McKeen).

BACTERIAL CANKER (Corynebacterium michiganense). A slight infection was seen in several fields of Earleana being grown for processing at Cawston, B.C. (G.E. Woolliams). Infection was severe on plants from one seed source in a planting at Edmonton, Alta. (M.W. Cormack). The disease was severe in some rows of Bounty in test plots of C.S.G.A. at the University, Fort Garry, Man. (W.A.F. Hagborg). A slight infection was reported by a grower from Waterford, Ont., who submitted specimens (J.K. Richardson).

WILT (Fusarium sp.). In several greenhouses in southwestern Ont. a few plants were infected by Fusarium in both the spring and fall crops. A diseased plant seldom produces any fruit, but losses are generally light because the number of affected plants is usually small (C.D. McKeen).

FRUIT ROT (Phoma destructiva). Severe rotting was found at Edmonton, Alta., in fruit which were stacked with the vines and covered in the fields for a short period before being placed in storage. The pathogen was isolated (M.W. Cormack).

LATE BLIGHT (Phytophthora infestans). During the latter part of Aug. late blight reached epidemic proportions throughout most of Kent Co., Ont., and was severe in parts of Essex, Elgin, and Norfolk Counties. The disease was checked when the temperature became higher (70-90°F) in September. Some fields were destroyed, but in others the loss was only one to a few sets (L.W. Koch, C.D. McKeen). Infection from late blight was a trace to 100% in Norfolk and Lincoln Counties. In many 5-10 acre fields the crop was a total loss after the first picking. In Norfolk Co. it was estimated that the loss was close to 50% of crop. The disease was most severe in plantings set with southern-grown stock (J.K. Richardson). Late blight was very prevalent throughout Ont. in 1946. Specimens were received from nearly every tomato-growing county in the province. In many cases the foliage was badly blighted and a large percentage of the fruits affected (J.E. Howitt). Late blight was prevalent late in the season at Ottawa and vicinity. From observations made in the plots of the Division of Horticulture, it appeared that some varieties were much more susceptible than others (I.L.C.). Late blight destroyed 15% of the green fruit after they were picked from a planting at Ste. Anne de la Pocatière, Que., and left to ripen inside (R. Pelletier). Due to the hot dry weather only a trace of late blight occurred on tomatoes in N.B. (J.L. Howatt). Infection was usually only a trace in P.E.I. (R.R. Hurst).

DAMPING OFF and STEM ROT (Phytophthora parasitica) reached epidemic proportions in the hothouses, Belle River, Ont., causing the damping off of 50% or 15,000 seedlings. An additional 10% of the plants developed stem lesions, wilted and died after they were set out in the greenhouses (C.D. McKeen).

BACTERIAL SPECK (Pseudomonas tomato). A moderate infection was observed on the leaves and fruit of Bounty in the plots at the University, Fort Garry, Man. (W.A.F. Hagborg).

BACTERIAL SPECK (Pseudomonas punctulans) was found in several fields in Essex and Kent Counties, Ont. in both early and late crops. In most fields the damage was slight, but one grower suffered a 4% loss (C.D. McKeen).

SEPTORIA LEAF SPOT (S. Lycopersici) was very common and severe in many fields of both early and late tomatoes in Essex and Kent Counties, Ont. In one field near Leamington, defoliation was extensive (C.D. McKeen). The disease caused severe defoliation with losses particularly of quality in fields of canning tomatoes in the Niagara Peninsula (J.K. Richardson). Leaf spot was general in most fields on Isle Jésus, Que., but infection was less than usual causing no de oliation (E. Lavallée).

WILT (Verticillium albo-atrum) was general throughout the Lillooet district, B.C. Nearly every plant was affected and the loss was estimated to be 35%. The small amount of foliage remaining after the attack exposed many of the fruits to sunscald. The disease was also present on several varieties being grown for seed at the Summerland Station. In greenhouses, the use of the buried tile system to steam and also to warm the soil has controlled the disease almost completely (G.E. Woolliams, R.E. Foster).

BACTERIAL SPOT (Xanthomonas vesicatoria). Infection was severe in several varieties, including Earliana, Best of All and Alacrity, in the plots at Lacombe, Alta. (G.B. Sanford). The disease affected 2-3% of the green fruits in one field in Kent Co., Ont. (C.D. McKeen).

FERN LEAF (virus). A few affected plants were found in the fall crop in every greenhouse inspected in southwestern Ont. (C.D. McKeen).

MOSAIC (virus) was found in several sections of the B.C. Interior, both in the greenhouse and in the field (G.E. Woolliams). In plantings for seed purposes in Lincoln Co., Ont., the percentage of mosaic-infected plants was: 19.5% in John Baer, 17.7% in Stokesdale, 7.0% in Harkness, 4% in V121 and none in Rutgers, Penn., Heart, Vetomold, Valiant and Bounty (G.C. Chamberlain). Mosaic severely affected 80% of the plants in a 5-acre field at St. Martin, Laval Co., Que. (E. Lavallée, R. Desmarteau).

SPOTTED WILT (virus) affected a few plants in a greenhouse in Prince Albert, Sask. (R.J. Ledingham, T.C. Vanterpool). A few plants were noticed to be infected at planting time at the Laboratory, St. Catharines, Ont.; they produced no fruit in the field (J.K. Richardson).

STREAK (virus). A few affected plants were seen in a greenhouse at Leamington, Ont., in the fall crop (C.D. McKeen).

BLOSSOM-END ROT (non-parasitic) affected 5% of the fruit of V121 in a greenhouse at Victoria, B.C., in June. The root system was small, due to overwatering when the plants were transplanted (W.R. Foster). Blossom-end rot was common in Sask., especially in city and town gardens, but loss in any one garden was small (T.C. Vanterpool, R.J. Ledingham). The trouble was prevalent and caused moderate damage in early and late crops in Essex Co., Ont. (C.D. McKeen). Very dry weather followed by heavy rains at the end of summer caused considerable blossom-end rot about Quebec City (D. Leblond). An occasional case of blossom-end rot was seen in gardens at Charlottetown, P.E.I. (R.R. Hurst).

MAGNESIUM DEFICIENCY was found to be general in one greenhouse near Victoria, B.C., in which heavy applications of potash had been applied for many years. Application of magnesium sulphate appeared to correct the condition (W.R. Foster). Magnesium deficiency was observed in 13 gardens in Queens Co., P.E.I.; the damage was moderate (R.R. Hurst).

TURNIP

SCAB (Actinomyces scabies) was reported on Swede turnips as follows: moderate infection on Laurentian in a field at St. Joachim de Tourelle and in another at Matane, Que. (C. Perrault); slight infection on Acadia in a field near Truro, N.S. (J.F. Hockey); trace on Laurentian in Queens Co., P.E.I. (R.R. Hurst).

BLACK LEG (Phoma lingam) caused severe damage as a dry rot in 40 tons of turnips at Calgary, Alta. The fungus was isolated and its pathogenicity proved (G.B. Sanford). Black leg caused severe losses in several

districts in Ont. The disease was not observed by the shippers until after the roots were waxed when decay rapidly developed. In a few instances car lots were condemned upon arrival in the United States (J.D. MacLachlan). Black leg caused considerable loss in a crop of Laurentian at Wolfville, N.S. (J.F. Hockey). Black leg caused slight to severe damage to swede turnips throughout P.E.I. (R.R. Hurst).

CLUB ROOT (Plasmodiophora Brassicae) caused the loss of over 50% of the roots in a 3-acre field of turnips at Rivière des Prairies, Que. (R. Desmarteau, J.E. Jacques). It caused slight to severe losses to Laurentian swede turnips in Queens Co., P.E.I. (R.R. Hurst).

BLACK ROT (Xanthomonas campestris) caused little damage in Ont. Apparently seed treatment has reduced the incidence of the disease to the point where it is virtually no longer a problem (J.D. MacLachlan).

DAMPING OFF (various fungi) caused severe damage in a 5-acre plot at Edmonton, Alta. Treatment of the seed with Arasan gave protection (L.E. Tyner).

STERILITY (virus). A single affected plant of Laurentian brought in from Prince Co., P.E.I. (R.R. Hurst).

MOSAIC (virus). In a small area in a field of Laurentian swede turnips near Walkerton, Ont., affected plants displayed the following symptoms: leaves few per plant, spindly, both blade and petiole brittle, blade with marked mosaic pattern, basal leaves dying; roots very stunted, much branched, no commercial value. From kodochromes and samples G.H. Berkeley identified the disease as mosaic (J.D. MacLachlan).

BROWN HEART (boron deficiency) was moderate to severe in many localities in Ont. Spraying or dusting the foliage with borax is giving satisfactory control (J.D. MacLachlan). Brown heart affected every root in a field of Laurentian at Deschambault, Que.; trace was present in the plots at Ste. Anne de la Pocatière (R.O. Lachance). Traces were present in Laurentian in Queens Co., P.E.I. (R.R. Hurst).

WATERMELON

WILT (Fusarium spp.) was quite general in a commercial field at Lillooet, B.C.; the pathogen was isolated (G.E. Woolliams). Two affected plants received from Fenwick, Ont. (J.K. Richardson).