III. DISEASES OF VEGETABLE AND FIELD CROPS

ASPARAGUS

RUST (Puccinia Asparagi) slightly damaged asparagus at Saskatoon in September.

WILT and YELLOWING (Cause unknown) affected plants here and there at the Brandon Farm, Man.

BEAN

MOSAIC (Virus) affected 50% of the dwarf beans at Summerland Station, B.C. A light infection was reported from Brooks and Edmonton, Alta. Mosaic was severe in Kentucky Wonder pole beans at Winnipeg, Man.; the plants were stunted. In nearly every planting of white beans examined a small amount of mosaic was observed in Essex county, Ont. Traces to 10% of the bean plants were affected in 12 gardens in Queens county, P.E.I.

ANTHRACNOSE (Colletotrichum Lindemuthianum). A trace was found at Brooks and Edmonton, Alta. The general infection was slight, but the disease was heavy on some plants at Brandon, Man. The disease was severe in some instances destroying the crop in Essex county, Ont., particularly in the La Salle district.

In Western Quebec 43 fields of wax beans being grown for seed were inspected twice. The fields were distributed as follows - at St. Eustache, 15; Lacole, 9; St. Valerien, 7; Lanoraie, 12. The degree of infection was: free, 10 fields; traces, 17; 1-10%, 4; 10-25%, 8; 25-100%, 4. It will be seen, however, that anthracnose was less destructive than bacterial blight. Fields where the seed was sown relatively late were less affected by anthracnose than those sown early. Fields with well-spaced rows were cleaner; fields with the seed sown in hills were less diseased although some hills were badly affected (E. Lavallee). Slight infections of anthracnose were reported from York and Westmoreland counties, N.B. The disease was general and caused slight to moderate damage in a few fields and gardens about Kentville, N.S. Slight to severe damage from anthracnose was reported in Queens and Prince counties, P.E.I.

BACTERIAL BLIGHT (Phytomonas Phaseoli) was severe at Brooks, Alta. and light to moderate at Edmonton and Olds. It was slight on one variety at Scott, Sask., and blighted material was sent from Maidstone. A trace of bacterial blight was present on garden beans at Brandon, Man.; a

trace of infection was general at Morden and infection was heavy on Davis White Seeded Wax. It also slightly infected field beans at both Brandon and Morden.

During the latter part of the season bacterial blight became widespread on white beans in Essex and Kent counties, Ont. Premature defoliation was not uncommon, particularly around Ridgetown (L. W. Koch). All the plants were moderately affected in a garden at Dunrobin.

In western Que., where 43 fields were surveyed (see anthracnose), all were affected with bacterial blight; traces were present in 6; 1-10% infection in 12; 10-25% in 7; and 25-100% in 18 (E. Lavallee). It was also noted at St. Thomas, Joliette, Montreal, and Beauce.

It caused slight damage in York and Westmoreland counties, N.B., and was severe in one garden at Kentville, N.S. and another at Charlottetown, P.E.I.

HALO BLIGHT (Phytomonas Medicaginis var. phaseolicola). A light infection was found at Brooks and Edmonton, Alta.

RUST (Uromyces appendiculatus) was observed at Quebec city, Que. It slightly affected a planting in York county, N.B. and one of Scarlet Runner in Queens county, P.E.I.

ROOT ROT (Rhizoctonia sp.) caused considerable damage at Brooks, Alta.

ROOT ROT (Cause unknown) affected odd plants at Brandon, Man.

A root rot, the cause of which was undetermined, was prevalent in the early season on white beans in Kent county, Ont. Infection ranged from a trace to 50% of the plants. The disease was frequently associated with corn maggot injury, particularly around Chatham; it was more severe on the lighter soils.

SCLEROTIAL ROT (Sclerotinia Sclerotiorum) lightly infected beans at Brooks, Alta. It was common where the pods remained damp under heavy foliage in a garden at Kentville, N.S.

GREY MOULD (Botrytis cinerea) caused slight damage to pole beans in several greenhouses in Burnaby, Vancouver, and Pitt Meadows, B.C. It was moderate to heavy at Brooks, Alta.

BROAD BEAN

MOSAIC (virus) etc. moderately affected broad bean in gardens west of and at Edmonton, Alta.

LEAF SPOT (Ascochyta Pisi) was slight on a few plants at Edmonton, Alta.

BEET

CERCOSPORA LEAF SPOT (C. beticola) was present in most gardens in the Fraser valley and Vancouver island, B.C., but the damage was generally slight. Other reports were: slight infection in a few gardens at Edmonton, Alta.; trace at Brandon, Man.; heavy in a garden at Charlottetown, P.E.I., but causing little damage.

BLACK LEG (Phoma Betae). As a leaf spot traces were present in most gardens in the Fraser valley and Vancouver island, B.C. and at Charlottetown, P.E.I.

SCAB (Actinomyces scabies). Traces were reported from one garden at Charlottetown, P.E.I.

BRUSSELS SPROUTS

CLUB ROOT (Plasmodiophora Brassicae) is commonly found on brussels sprouts in Laval county, Que., the damage being slight to heavy. Usually diseased plants are confined to spots in the field. Club root is apparently on the increase in home gardens at Kentville, N.S. The crop is often reduced 75%

CABBAGE

CLUB ROOT (Plasmodiophora Brassicae) was present in several fields at St. Martin and Ste. Dorothee, Laval county, Que.; at St. Antoine, Vercheres county, 75% of the plants were affected in a home garden (E. Lavallee). It was reported as serious in Portneuf county and at Warwick and as present in Chicoutimi. It occurred in several gardens in Queens county, P.E.I.; 15% of the plants were affected in one garden.

BACTERIAL LEAF SPOT (Phytomonas maculicola). Affected specimens were received at the Saanichton Laboratory from Terrace, B.C., an isolated district, 80 miles east of Prince Rupert.

SOFT ROT (Erwinia carotovora) destroyed 0.5% of the plants in a garden at Charlottetown, P.E.I.

YELLOWS (Fusarium conglutinans) was observed in one field at Amherstburg, Ont.; 40% of the plants were affected. (L.W. Koch)

WIRE STEM (Rhizoctonia sp.). In the past few years wire stem has become a very serious disease of seed beds in the Montreal district, Que. (E. Lavallee)

CANTALOUPE (see also Melon)

WILT (Verticillium sp.) caused a 30% loss in two fields of about 9 acres extent in the Saanich district, Vancouver island, B.C.

CAULIFLOWER

CLUB ROOT (Plasmodiophora Brassicae) was very severe on cauliflower in many local gardens at Kentville, N.S. The crop was materially reduced and in some it was a total failure.

CARROT

YELLOWS (Virus) was severe on carrots at Brandon and Winnipeg, Man. This is the first time yellows has been reported to the Survey from Manitoba. (W.L. Gordon)

In a large field of carrots in Gloucester county, N.B., 65% of the plants were affected.

LEAF BLIGHT (Macrosporium Carotae) caused a trace of damage to half an acre field of carrots at Surrey, B.C.

SCLEROTIAL ROT (Sclerotinia Sclerotiorum) caused moderate loss in storage at Kersley, B.C.

One grower lost 50% of his carrots in storage in the fall of 1937 from this disease in York county, N.B.

CELERY

LATE BLIGHT (Septoria Apii). A heavy infection was reported from Peace River, Alta.

Late blight (S. Apii and S. Apii-graveolentis) become very prevalent late in the season in Ontario. In many unsprayed celery fields severe blight was observed on every plant. In well sprayed fields not more than 3-4% of blight was present (J.E. Howitt and R.E. Stone).

The disease was general in Quebec as usual, but commercial control was obtained when a good spray programme with Bordeaux mixture was followed. Most growers in south-

western Quebec carried out such a programme (E. Lavallee). The disease was reported from Montreal, Quebec, Sherbrooke, Chicoutimi, Montmagny, Neuville, Cap-Sante and Portneuf. Traces of late blight were reported from Maugerville and Fredericton, N.B. and Charlottetown, P.E.I.

EARLY BLIGHT (Cercospora Apii) was severe on the experimental plots at St. Catharines, Ont., and in the vicinity.

HEART ROT (Apparently physiological) was fairly general in the celery fields in the Montreal district, Que. It was especially severe in one field at St. Leonard-Port Maurice, where 90% of the plants were affected and in a second at St. Remi, where 20% loss was encountered. It is thought that the particularly wet spring and hot summer favoured the trouble. (E. Lavallee)

BACTERIAL SPOT (Pseudomonas (Phytomonas) Jaggeri) apparently caused severe damage at Terrace, B.C. (W. Jones)

STEM CRACKING (Boron deficiency) was found in six large fields in the Montreal district, Que. It was specially noticeable in fields receiving commercial fertilizer only. No stem cracking was seen in a field of early celery, which received a dressing of chemical fertilizer only, to which borax had been added at the rate of 7-8 lbs. per acre (E. Lavallee).

CUCUMBER

BACTERIAL WILT (Erwinia tracheiphila) caused considerable damage to cucumbers both in the greenhouse and the field in Essex county, Ont. Instances of late as well as early infection were observed (L. W. Koch).

The disease was found in a few fields at St. Martin and Ste. Dorothee, Que. It caused much less damage this year than last (E. Lavallee).

FUSARIUM WILT (Fusarium sp.) appeared in scattered areas in a greenhouse crop in April in Lincoln county, Ont. (G.C. Chamberlain)

SCAB (Cladosporium cucumerinum) heavily infected one field at St. Eustache, Que., at the end of the season (E. Lavallee).

In the plots at the Experimental Station, Fredericton, N.B. six inbred or selected lines of cucumbers remained free from scab and two others showed 1% of the disease. Commercial varieties were affected as follows: Long Paris

Pickling, 4%; Macdonalds, 6%; Straight Eight, 8%; Early Fortune, 9%; Green Pack, 10%; Boston Picking, 13%; Perfection, 17%; Delcrow, 18%; Treil Gurkin, 59% (J.L. Howatt).

Scab caused slight damage on one variety at Charlottetown, P.E.I.

ANGULAR LEAF SPOT (Phytomonas lachrymans) affected 5% of the fruit in a greenhouse at Medicine Hat, Alta.

SCLEROTIAL ROT (Sclerotinia sclerotiorum) was very severe and caused a $1,000. loss in a greenhouse at Medicine Hat, Alta.

ROOT KNOT (Heterodera marioni) was observed in one greenhouse near Leamington, Ont. All plants were severely affected. A heavy application of calcium cyanamide had been made previous to planting. (L.W. Koch)

GREY MOULD (Botrytis sp. cinerea type). A few mature fruits were damaged in York and Sunbury counties, N.B.

MOSAIC (virus) was affecting 10% of the plants in a greenhouse in Lincoln county, Ont., on April 30; the growth was dwarfed and the fruit disfigured.

EGG PLANT

SCLEROTIAL ROT (Sclerotinia sclerotiorum) affected 5% of the plants at the Summerland Station, B.C.

GINSENG

STEM ROT (Undetermined) was causing severe damage in a commercial planting at Covehead, P.E.I. in August (R.R. Hurst).

HOPS

DOWNY MILDEW (Pseudoperonospora Humuli) seriously infected the canes of the Clusters variety during the harvest period at Sardis, B.C., owing to unfavourable weather conditions. The disease was controlled best in 1937 in the Agassiz yards, where the hops had been dusted with a copper lime dust throughout the season. The Clusters variety is very susceptible and it is extremely difficult to control the disease in it during unfavourable weather. No disease was observed on the Fuggles variety this year. (W. Jones)

LETTUCE

DROP (Sclerotinia sclerotiorum) destroyed 1% of the heads in a 2-acre field on low-lying peaty soil at Surrey, B.C. A light infection was observed in gardens at Edmonton, Alta.

GREY MOULD (Botrytis cinerea) affected 50% of the plants of the Hanson variety and caused moderate damage at the Sidney Station, B.C.

TIPBURN (Non-parasitic) affected 75% of the plants at the Summerland Station, B.C.

DAMPING OFF (Cause undetermined) was observed quite frequently in hot beds in the Montreal district, Que.

MELON

BACTERIAL WILT (Erwinia tracheiphila) was found affecting from 1 to 60% of the vines in Essex county, Ont. Numerous complaints concerning this disease were received. (L.W. Koch)

LEAF SPOT (Macrosporium cucumerinum) caused considerable damage at Maugerville, N.B.

LEAF SPOT (Alternaria Brassicae) was general in a field in Wentworth county, Ont. on Sept. 10; the damage was negligible.

SCAB (Cladosporium cucumerinum). A trace of scab was found in two localities in N.B.

ANTHRACNOSE (Colletotrichum lagenarium) was epidemic in Essex county, Ont., and caused severe damage. It was most destructive in the Leamington district, where it destroyed practically all the foliage in some plantations. (L.W. Koch)

WILT (Fusarium sp.) affected up to 75% of the vines on a farm in Haldimand county. According to the grower the disease has been present for at least 3 or 4 years; it appears early in the summer and spreads rapidly, generally killing the entire patch. Short rotations have been ineffective.

ONION

DOWNY MILDEW (Peronospora Schleideniana) was not as widely distributed as last year in B.C., and caused only slight damage. It first appeared near the end of July. The disease was prevalent in a 20-acre muck planting of Yellow Danver in Welland county, Ont. The disease appeared suddenly following a humid period. Diseased specimens were brought to the Central Laboratory by Geo. Gilbert, Seed Branch, Ottawa, from Caledonia Springs. The lesions were covered with Macrosporium parasiticum.

GREY MOULD (Botrytis sp.) caused slight damage to onions in storage at the Fredericton Station, N.B.

NECK ROT (Botrytis Allii). A trace was present at Fredericton, N.B.

SOFT ROT (Erwinia carotovora). Growers in south-western Ontario reported very considerable loss from soft rot in October. (J.K. Richardson)

PEA

POWDERY MILDEW (Erysiphe Polygoni) was heavy on field peas at Brooks, Alta.

Traces of powdery mildew were present in nearly every field inspected in Gaspe-south, and Mr. W.J. Tawse reported later that it became the most destructive disease there in 1937. It causes spots on the pods, which induce severe rotting in storage (E. Lavallee).

A trace was present in York county, N.B. Powdery mildew was heavy and caused moderate damage in Queens county, P.E.I., in September.

LEAF and POD SPOT (Ascochyta Pisi). Infection was moderate to heavy at Edmonton and Lethbridge, Alta., and light at Brooks and Lacombe.

The disease was present in every field of 56 visited in Gaspe-south in July, when careful observations were made on the sources of primary infection. It was found the disease was more prevalent where the old vines had been left on the supporting stakes or in the fields. Each severe infection was found to centre around an old infected vine hanging on a stake or lying on the ground (E. Lavallee).

A slight infection was reported from Queens county, P.E.I.

ROOT ROT (Cause unknown) caused 80% damage to a 20-acre field of Laxton and Lincoln peas on Lulu island, B.C. A few plants were infected at Brandon, Man.

ROOT ROT (Rhizoctonia sp.) caused considerable damage to certain varieties at Brooks, Alta.

ROOT ROT (Fusarium spp.) caused 30 to 40% damage at the Lacombe Station, Alta.; a light infection was found in field peas at Beaverlodge. Fusarium was isolated from root rot affected plants from Renfrew, Ont.

ROOT ROT (Fusarium, Rhizoctonia). A slight amount of damage was commonly reported throughout N.B., due to root rot. (J.L. Howatt)

DOWNY MILDEW (Peronospora Pisi) was general but caused slight damage at the Sidney Station, B.C. (W. Jones). Downy mildew was found in scattered spots in 4 or 5 fields in Gaspe-south, Que. (E. Lavallee).

BACTERIAL BLIGHT (Phytomonas Pisi). A trace was observed at Edmonton, Alta.

LEAF BLOTCH (Septoria Pisi). Infection varied from light to heavy at Edmonton, Alta. and a trace was present at Beaverlodge. The Arthur variety of field peas appeared particularly susceptible at Olds. The disease was slight to moderate on the lower leaves of both garden and field peas at Morden, Man.

Leaf blotch caused severe damage in Queens and Prince counties, P.E.I., in 1937. (R.R. Hurst)

RUST (Uromyces Fabae) moderately infected garden peas at Dunrobin, Ont. It was general in York and Sunbury counties, N.B. and was present in Restigouche and Kent counties; the damage was slight.

A trace was found on peas in a field of wheat near River John, N.S. A collection was sent to Mr. A.M. Brown, Winnipeg, for culture. As a result of his work and that of Mr. F.S. Thatcher (P.D.S. 15:31) three strains of this rust on pea may now be distinguished in Canada: (1) Manitoba strain to which Vicia Cracca is immume and V. Faba susceptible; (2) Nova Scotia strain, confined to pea and (3) Quebec strain to which V. Cracca, at least, is susceptible (I.L. Conners).

A slight infection of rust was observed in Queens county, P.E.I.

MOSAIC (virus) was fairly common at Brooks, Alta.

PEPPER

MOSAIC (Virus) affected 10% of the plants at the Summerland Station, B.C., and 3% in a planting in Lincoln county, Ont.

POTATO

Mr. John Tucker, Chief Potato Inspector, has once more provided tabulations on the extent of the seed potato industry, the acreages passing inspection of the leading varieties, the extent that fields failed to pass inspection and the average percentage of the three major diseases: black leg, leaf roll and mosaic. It must be noted that all fields entered for certification are planted with certified seed.

Table 2 - Seed Potato Certification: Number of Fields and Acres Inspected, 1937.

Province	Number of Fields Entered	Number of Fields Passed	Fields Passed %	Number of Acres Entered	Number of Acres Passed	Acres Passed %
P.E.I.	3,789	3,104	81.9	15,438	13,111	84.9
N.S.	806	638	72.2	1,528	1,213	79.4
N.B.	1,667	1,496	90.0	8,631	8,053	93.3
Que.	1,620	1,024	63.2	1,741	992	57.0
Ont.	717	559	77.9	1,700	1,292	76.0
Man.	124	112	90.3	284	213	75.0
Sask.	159	141	88.7	306	252	82.3
Alta.	304	268	88.1	377	309	81.9
B.C.	258	199	77.1	373	276	74.0
TOTAL	9,444	7,541	79.8	30,378	25,711	84.6

Acres Entered		Acres Passed	
1936	20,083	1936	16,739
1937	30,378	1937	25,711

Increase of 10,295 acres or 51.2%.

Increase of 8,972 acres or 53.6%

Table 3 - Seed Potato Certification: Acreages passed by Varieties, 1937.

Variety	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.-B.C.	Total
Green Mountain	4,359	48	5,551	880	117	77	11,032
Irish Cobbler	8,316	302	562	80	242	100	9,602
Bliss Triumph	401	675	1,473			13	2,562
Katahdin	25	138	236	9	380	2	790
Dooley				7	494		501
Netted Gem					2	400	402
Early Ohio						179	179
Spaulding Rose	9		124				133
Warba		1			33	80	114
Chippewa			46		19	13	78
President		14	56	4			74
Gold Nugget					4	37	41
Garnet Chile		25					25
Others	1	10	5	12	1	149	178
TOTAL	13,111	1,213	8,053	992	1,292	1,050	25,711

Table 4 - Seed Potato Certification: Fields Rejected, 1937.

Province	Mosaic	Leaf Roll	Black Leg	Foreign Varieties	Adjacent to Diseased Fields	Misc.	Total
P.E.I.	286	4	7	93	91	204	685
N.S.	87	5	2	15	45	14	168
N.B.	100	2	3	22	13	31	171
Que.	157	12	18	13	78	318#	596
Ont.	10	8	43	31	11	55	158
Man.	0	0	4	1	0	7	12
Sask.	0	0	0	4	0	14	18
Alta.	1	0	21	7	1	6	36
B.C.	9	11	8	2	10	19	59
TOTAL	650	42	106	188	249	668	1,903
Rejections as a percentage of fields:							
Entered	6.9	0.5	1.1	2.0	2.6	7.1	20.2%
Rejected	34.2	2.1	5.6	9.9	13.1	35.1	100.0%

Late Blight 145, Wilts 104.

Table 5 - Seed Potato Certification: Average Percentage of Disease found in the Fields, 1937.

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	.03	.04	.10	.13	.30	.23	.01	.45	.20
Leaf Roll	.16	.13	.04	.14	.10	.01	.01	.02	.65
Mosaic	.51	1.05	.70	.70	.13	.02	-	.21	.93
Fields passed (final inspection)									
Black Leg	.02	.01	.10	.06	.08	.16	.01	.05	.04
Leaf Roll	.01	.06	.03	.10	.07	.01	.01	.01	.13
Mosaic	.11	.18	.29	.34	.08	.01	-	-	.17

There was a very large increase in the acreage planted for certification in 1937, an increase of 10,295 acres or 51.2%. A slightly higher percentage of fields passed inspection with the result that 25,711 acres were passed, an increase of 8,972 acres or 53.6%. The acreage of Green Mountain alone was more than doubled, while that of Irish Cobbler and Bliss Triumph was increased roughly 1,000 acres each. Of the fields inspected, 1,903 or 20.2% failed to pass inspection on account of disease or other causes. The presence of mosaic in excess of the amount permitted was, as usual, the major cause of rejection, being 34.2% of the fields rejected. Late blight and bacterial wilt and rot were nearly as important as mosaic in Quebec.

LATE BLIGHT (Phytophthora infestans) was found in most of the potato growing areas of the lower mainland of B.C. this year. It appeared about July 20, in constrast with its appearance on July 7 in 1936, the earliest appearance on record. However, in certain sections it spread more rapidly than in 1936 and some fields were severely attacked and their yield much reduced. In some instances defoliation by late blight caused a 30% reduction in the yield of marketable potatoes. In other fields the loss was much less, due to the plants being fully grown before late blight developed or conditions being unfavourable for the development of the disease. It is estimated that late blight caused 15% reduction in the yield of marketable potatoes in the Fraser valley in 1937. Most of the crop was harvested while the weather was fine and the soil dry. Although 15% of the tubers in a few shipments of table stock were affected with late blight, the average amount of rot was estimated to be 2%.

While spraying for late blight is not general, many growers now agree that spraying would be advisable and there was an increase in the number who did spray in 1937. Good results were obtained where the spraying was properly done with an efficient machine. In our own spraying experiment on Lulu island this year, the sprayed plots yielded an average increase of 28.5% in marketable potatoes over the unsprayed check plot, a difference of 115 bu. per acre. Late blight rot in the tubers at the time of harvest was: sprayed, 0; check, 1%. (H.S. MacLeod)

Late blight was first reported on July 11 in N.B. Due to the hot dry weather during July and August the disease was held in check. Later, especially in unsprayed fields a large amount of rot developed. In general the disease caused little damage (J.L. Howatt).

Late blight was found in Kings county, N.S. on July 15 and Colchester county on July 28. By August 10 it was fruiting vigorously in Early Bliss Triumph, but the alarmed

growers sprayed heavily with clear bluestone, and only a small amount of rot was found afterwards. Severely blighted fields were found in Colchester, Cumberland, and Pictou counties, but less than 2% of rot developed in the tubers. Drought conditions set in about mid-August which doubtless was also a factor. (W.K. McCulloch)

Late blight was of little consequence until September, when a widespread outbreak developed and caused considerable loss. Many farmers were dismayed to find a high percentage of rot in storage due to this late outbreak in P.E.I. (R.R. Hurst).

RHIZOCTONIA (Corticium Solani) was present in almost every crop of potatoes inspected in B.C., but it varied a great deal in severity in different crops. The disease is generally quite prevalent and it probably causes a greater reduction in marketable potatoes per acre than any other disease. However, it was not nearly as severe on the 1937 crop as it has been in previous years. Sclerotial development was also much less on tubers than usual.

While the moisture and temperature of the soil was probably the chief cause for a light development of the sclerotia on the tubers in 1937, many growers are paying more attention to selection of clean seed for planting, to seed treatment, and to more suitable rotation of crops. In our experiments conducted on Lulu Island this year, the highest yeild of marketable tubers was obtained from the plot planted with clean seed untreated; being 13.5% above the next best, which was from rhizoctonia-affected seed treated with corrosive sublimate. (H.S. MacLeod)

Rhizoctonia was severe on potatoes which were harvested late and the sclerotia were definitely more abundant on potato stock in the Lethbridge area. (J.W. Marritt)

Slight rhizoctonia infection was common in the field in N.S. At tuber inspection, infection ranged from a trace to 80% of crop, with an average of about 6%. Considerable rhizoctonia was found on Bliss Triumph this year, but Katahdin and Irish Cobbler suffered most. (W.K. McCulloch). The white mycelium of the Corticium stage was first noticeable at Glenmount at the base of the stalks on July 10 (K.A. Harrison). There was considerable loss from rhizoctonia due to stolen lesions in July in P.E.I.; it fruited on a trace to 10% of stems in August; sclerotia were beginning to show on the tubers in September (R.R. Hurst).

BLACK LEG (Erwinia phytophthora) affected 32 fields out of 258 inspected in B.C. and resulted in the rejection of 5.

Black leg was more common than usual in the latter part of the season in districts in northern and western Alberta,

where heavy rains occurred from July 15 to the end of September. It was the chief cause of field rejections and some certified seed lots, in which black leg had never been found previously, showed traces. Little black leg was found in northern Saskatchewan and less than the usual amounts occurred in the irrigated districts in southern Alberta (J.W. Marritt). The disease was absent from southern Saskatchewan and not prevalent in Man. (J.W. Scannell)

In N.S. about 9% of the fields inspected showed black leg. Generally it occurred in small amounts, but a new variety, Golden, showed 4% and one field of Green Mountain 12%. Bliss Triumph plantings, which comprise 50% of the total, were practically free from black leg; careful seed treatment is carried out by the growers of Bliss Triumph.

EARLY BLIGHT (Alternaria Solani) was quite prevalent in B.C., especially in areas near the coast. It was severe in some fields in the southern part of Vancouver island and caused moderate reduction in yield (H.S. MacLeod). A light infection was reported at Edmonton, Alta. Early blight was first reported on July 28 in Colchester county, N.S. By the middle of August it was widespread on all common varieties, but the infection was slight. In Antigonish county, along with the early drought, it cut the yield of Irish Cobbler in half (W.K. McCulloch). It caused moderate damage to Irish Cobbler in P.E.I. A trace of Alternaria Tuber Rot was noticed in one lot of Green Mountains in October. (R.R. Hurst).

SILVER SCURF (Spondylocladium atrovirens) was not reported this fall in N.S. nor was it very noticeable in storage last spring (W.K. McCulloch).

POWDERY SCAB (Spongospora subteranea) was reported in 2% of the fields in Kings and Colchester counties, N.S. It was not seen in the other counties visited. Infection was slight except in one field of Bliss Triumph where a 10% infection was present. Variable amounts of powdery scab were noted on Irish Cobbler both this year and last in P.E.I. (R.R. Hurst).

BACTERIAL WILT and ROT (Phytomonas sp.). Since the last Report was prepared the causal organism has been isolated and shown to be very closely related to both Phytomonas michiganensis (E.F. Sm.) Bergey et al, the cause of bacterial canker of tomatoes, and Bacterium sepedonicum Spiekermann (Phytomonas sepedonica according to Bergey's terminology), the cause of bacterial ring rot of

potatoes, a disease recorded from Germany and very similar to this disease (D.B.O. Savile and H.N. Racicot. Bacterial wilt and rot of potatoes, Sci. Agric. 17:518-522, fig. 1-3 1937).

Table 6 summarizes the information available on the distribution of bacterial wilt of potato in Quebec. The disease was somewhat less prevalent in 1937 than in 1936.

Bacterial wilt and rot was first found in N.B. on August 26, in a field of Spaulding Rose. The disease was observed in 36 fields; 21 were Spaulding Rose, 7 Green Mountain, 1 Chippewa and 7 Katahdin. All the fields of Spaulding Rose were grown from seed imported the present season from Maine. One of the Green Mountain lots was planted with seed secured from Quebec in 1937, but the other 6 were planted with N.B. seed of some years' standing. While the seed of the Katahdin and Chippewa lots was not imported this year, the varieties were originally secured from Maine. Of the infected fields, 31 were in Carleton county, 4 in Victoria and 1 in Madawaska. The percentage of diseased plants varied from a trace to 50%, the average being about 20%. (J.L. Howatt and C.H. Godwin).

VERTICILLIUM WILT (Verticillium ?albo-atrum) affected from 2 to 14% of the Irish Cobbler plants in affected fields in Prince and Queens county, P.E.I. and resulted in the rejection of 40 fields.

Table 6 - Seven year summary of field inspection reports on the distribution of bacterial wilt of potato in the Province of Quebec. (B. Baribeau).

	Year						
	1931	1932	1933	1934	1935	1936	1937
Counties:							
Visited	49	44	49	51	52	44	53
Wilt present	18	8	22	34	20	29	25
Parishes:							
Visited	298	207	228	254	209	195	200
Wilt present	50	21	70	159	46	94	84
Fields:							
Visited	2,069	1,394	1,616	1,989	1,717	1,592	1,620
Rejected for wilt.	37	9	34	168	58	160	104

Affected plants show a flagging at the leaf tips followed by a definite wilting, the symptoms developing from terminal leaflets inwards and toward the main stem. The vascular tissue is brownish, the discoloration extending into the tubers (R.R. Hurst).

WILT (Cause undetermined) was reported in Irish Cobbler in Antigonish and Kings counties, N.S., but in very small amounts.

FUSARIUM WILT (Fusarium spp.) was again prevalent in Manitoba and southern Saskatchewan. In the former province it was present in practically every field inspected. Five fields out of 124 were rejected and several commercial fields showed 5% of the plants affected. (J.W. Scannell).

MOSAIC (virus) was present in 75 fields out of 258 inspected in B.C., with the result that 10 were rejected. As in previous years only small amounts of mosaic were found except in the garden plots and gardens on vacant lots at Edmonton, Calgary and Medicine Hat, Alta., and in fields surrounding these centres. The disease was less prevalent than previously, especially at Calgary, due to the use of better seed (J.W. Marritt). Mosaic is not as common in Manitoba as it was formerly. It is hardly ever found in Bliss Triumph, while a few years ago it was not unusual to find 75% of the plants affected with mosaic (J.W. Scannell). Mosaic was found in 64% of the fields inspected in N.S. and 10% were rejected. Infection varied in the individual fields from a trace to 30%. It was most severe in Bliss Triumph and Green Mountain, but is increasing noticeably in Irish Cobbler (W.K. McCulloch).

LEAF ROLL (Virus) was found in 82 fields out of 258 inspected and 9 were rejected for leaf roll in B.C. The leaf roll situation is showing a similar improvement in Alberta as was reported for mosaic. About 30% of the fields entered for certification in N.S. were infected with leaf roll, the infection varying from a trace to 8%. In one commercial field in Colchester county, infection was 40% and the yield was probably reduced 25%. (W.K. McCulloch).

ROOT ROT (Fusarium orthoceras App. & Wr. var. longius Scherb.) Wr.). As a result of root rot 5% of the plants were dead in a field at Rosthern, Saskatchewan on August 20. Similar symptoms were reported in a garden at Unity.

VIOLET ROOT ROT (Rhizoctonia Crocorum). Two potatoes affected with violet root rot were received at Ottawa from

Winterburn, Alta. on October 30. The correspondent stated that he had found affected tubers in one hill of Wee McGregor and a few hills of De Vernon. In 1936, he had noticed in a patch of Nantes carrots, a few having similar symptoms. "The disease attacked the carrots consecutively for a distance of a foot to four or six feet and sometimes in two or more adjacent rows." There were four small infected spots in the patch. The area, where the disease appeared in the potatoes, is distinct, for the land previously in carrots was summerfallowed in 1937.

COMMON SCAB (Actinomyces scabies) was not prevalent in the Prairie Provinces. It was very prevalent in Ont. Fields were observed where over 20% of the tubers showed disfiguring scab spots (J.E. Howitt and R.E. Stone). Scab was found in all counties under inspection in N.S. It ranged from a trace to 15% and averagedabout 1.5% of the crop. Heaviest infections were on Irish Cobbler; many clean crops were seen (W.K. McCulloch). In the plots and fields of the Charlottetown Station, P.E.I., scab varied from slight to very heavy. In one experiment where lime was applied in 1936, scab was present as follows: 500 lbs. per acre, one tuber affected out of 526; 1,000 lbs., one tuber out of 868; 1,500 lbs., 18 tubers out of 773; 2,000 lbs., 51 tubers out of 827 (R.R. Hurst).

DRY ROT (Fusarium Solani (Mart.) App. & Wr. var. eumartii (Carp.) Wr.). Diseased tubers affected with what appeared to be this disease were received at Ottawa from Everett, Ont. According to information received by Mr. John Tucker, it affected 60% of the tubers in a field at Alliston and 15% in one at Mt. Bridges in 1936. All fields were planted with Dooley. For an account of the disease see (Carpenter, C.W. Jour. Agr. Res. 5:183-210. 1915). (I.L. Conners)

PSYLLID YELLOWS (virus) was found at Medicine Hat, Calgary and Drumheller, Alta. In all cases it was closely associated with the growing of tomatoes in greenhouses. It was more prevalent and severe at Calgary than last year, while it caused less damage at Medicine Hat. None was found at Edmonton this year and Drumheller was a new centre for the disease (J.W. Marritt).

WILT (Cause unknown). Throughout Alta. and northwestern Saskatchewan there is present a disease, the most striking symptom of which is the purple colour of the margins of the leaves on the upper parts of the plants. It was present in 1936 and has increased this year until it is the most prevalent disease except black leg (J.W. Marritt).

What is probably the same disease, was also noted in Manitoba, where it was severe this year. It may be the same as the wilt reported in Minnesota and Wisconsin (A potato wilt caused by the tarnished plant bug, Lygus pratensis L. J.G. Leach and Phares Decker. Abstract Phytopathology 28:13. 1938; Fusarium avenaceum, a vascular parasite of potato. J.G. McLean. Abstract Phytopathology 28:16. 1938). (I.L. Conners).

YELLOW DWARF (virus) was found in 20 fields chiefly Dooley, out of 100 inspected in Middlesex county, Ont. The highest percentage of disease found in any one field did not exceed one per cent. The inspected fields, however, were planted with better than average seed, which had, in most instances, been certified within the past 2 or 3 years. Most disease was found in fields planted with seed which had been grown locally for 2 or more years. Yellow dwarf appears to be fairly widely distributed throughout the county and it is obvious it must have been present to some extent in locally grown potatoes previous to 1937. The trouble would probably have been found before, but inspections have been confined previously to fields entered for certification. No yellow dwarf was found in fields planted with certified seed which had been brought in from outside districts and grown for the first time in the county (John Tucker). Yellow dwarf has not previously been reported to the Survey, but its occurrence in Ontario was noted by C.C. Wernham in 1933 (Black, L.M. A study of potato yellow dwarf in New York. Cornell Univ. Agr. Exp. Sta. Memoir 209. 1937, p.10). The clover leaf hopper, an important vector of the virus, is also apparently known in Canada. (I.L. Conners).

DRY ROT (Armillaria mellea) affected a few tubers of Columbia Russell on newly cleared land at Golden, B.C.

PHOMA ROT (P. tuberosa) caused severe damage in one bin of Irish Cobbler in P.E.I. in January 1937.

LEAK (Pythium ultimum) caused a loss of 5% in a 4-ton shipment of potatoes from Duncan, B.C. The tubers were harvested October 5, when the temperature was about 70°F. (W. Jones).

NET NECROSIS (cause unknown). One lot of Green Mountain from Carleton county, N.B. showed 15% stem-end browning and net necrosis. Many of the seedling varieties at the Fredericton Station were affected 100%. (J.L. Howatt).

FERTILIZER INJURY. Many misses and weak plants in P.E.I. were attributed to the fertilizer being in contact

with or in close proximity to the seed piece. (R.R. Hurst).

GIANT HILL (virus) was present in 155 out of 258 fields inspected in B.C., but there were no rejections on account of the disease. Traces were found in a field of Green Mountain in P.E.I.

WITCHES' BROOM (virus) was present in 17 fields out of 258 inspected in B.C.; 2 were rejected due to the disease. Witches' broom was again found in a number of fields in small percentages in Alberta and northern Saskatchewan. In a garden at Charlottetown 75% of the plants were affected.

SPINDLE TUBER (virus) was very prevalent in Manitoba, and to a less extent in Saskatchewan. It was found in 23 fields out of 124 in Manitoba. It was noted in the plots at Charlottetown, P.E.I.

BORAX INJURY. Borax in commercial fertilizers applied at the rate of 30 lbs. per acre immediately before seeding caused severe seed-piece rot and stunted the plants in a field of Green Mountain in P.E.I. (R.R. Hurst).

RADISH

CLUB ROOT (Plasmodiophora Brassicae) was not as severe as in 1936 on radish, although other cruciferous crops in the same garden at Kentville, N.S., were destroyed.

RHUBARB

CROWN ROT (Cause unknown) affected 20% of the Victoria plants on a low-lying piece of ground in Sumas county, B.C. The crowns became rotten, showing brownish discoloration of tissue; affected plants eventually died (W. Jones). Only three plants were affected at the Lacombe Station, Alberta. It caused slight damage in the University gardens, Saskatoon, Saskatchewan. Reports of this disease were received from the northern part of the province only, but it is still widespread in Saskatchewan. (T.C. Vanterpool). Odd plants of Ruby were affected at Brandon, Man. Crown rot affected 10% of the Ruby plants in a garden in Queens county, P.E.I.

STREAK (Probably virus) caused about a 3% loss in a 3-year old plantation of Ruby at Saskatoon, Saskatchewan. The disease appears to be spreading. Two plants (Nicotiana sp.), which were inoculated with the juice of streak-

affected rhubarb developed mottling and necrosis. The control plants remained healthy. The plants in this plantation originally came from a Ruby seedling nursery (See P.D.S. 14:46). (T.C. Vanterpool).

WITCHES' BROOM (?virus) affected an occasional plant at Saskatoon, Sask. Dr. H. T. Güssow who saw some of these plants, thought that the trouble might well be due to a virus. (T.C. Vanterpool).

CROWN GALL (Phytomonas tumefaciens). One large gall was seen on rhubarb at Kentville, N.S.

PHYLLOSTICTA LEAF SPOT (P. straminella) was heavy in patches at the Morden Station, Man.

ASCOCHYTA LEAF SPOT (A. Rhei) was very heavy in Queens county, P.E.I. in August.

ANTHRACNOSE (Colletotrichum erumpens) Infection was a trace at Morden, Man.

FROST INJURY to rhubarb at Saskatoon, Sask., set the plants back and delayed the first picking. The petioles became water-soaked near their attachment to the blade; leaves became brown between the viens and finally dried up completely (T.C. Vanterpool). The leaves were severely frosted on May 19 in York county, N.B. (S.F. Clarkson).

SALSIFY

WHITE RUST (Cystopus cubicus) moderately affected salsify in a field in Jacques-Cartier county, Que. (E. Lavallee).

SPINACH

DOWNY MILDEW (Peronospora Spinaciae) scattered infections were present in a 3-acre block of King of Denmark spinach, a supposedly resistant variety, in Lincoln county, Ont. (G.C. Chamberlain).

SQUASH

POWDERY MILDEW (Erysiphe Cichoracearum) was fairly prevalent on Hubbard squash at the Summerland Station, B.C.

BACTERIAL WILT (Erwinia tracheiphila). Scattered vines were affected in a field in Lincoln county, Ont.

SOFT ROT (Rhizopus and Pythium) caused a loss of 10% in stored squash at Halifax, N.S., in November. Rhizopus and a Pythium-like fungus were obtained from the rotting tissue. (J.F. Hockey).

SWEET CORN

SMUT (Ustilago Zeae). Traces only of smut were found in many plantings in King and Annapolis counties, N.S.

LEAF and STALK SPOT (Bacterial origin). Infection was light to moderate in several gardens at Edmonton, Alta., while a trace was present at Lacombe.

TOBACCO

The report on tobacco diseases presented below was prepared by Dr. G.H. Berkeley from notes gathered by himself or supplied to him by Mr. G.E. Turcotte, L'Assomption, Que.; Mr. R. Bordeleau, Farnham, Que.; Dr. L.W. Koch, Harrow, Ont.; Mr. P. Newell, St. Catharines, Ont.; Mr. F.A. Stinson, Delhi, Ont.; and Mr. R.J. Stallwood, Tillsonsburg, Ont.

MOSAIC (virus) was more general in Ontario in 1937 than it was in 1936. Although the average percentage of infection was not high, many fields contained 50 to 75% mosaic-affected plants. Almost without exception, the high percentages were found in fields in which tobacco had been grown in 1936. High incidence of mosaic in tobacco after tobacco has been observed each year for the past four years. Experimental field tests have also demonstrated the same thing. Mosaic was by no means as general in the two tobacco growing districts of Quebec as it was in Ontario, though a few fields with heavy infection were observed. Also overwintering of mosaic in the soil is not as important a factor in Quebec as it is in Ontario. Evidence was obtained which suggests that mosaic is spread more readily by cultivation when the plants are wet than when they are dry. This also has been demonstrated by experimental field tests. Where the preventive measures recommended have been carefully practiced mosaic has been greatly reduced, and in some cases almost eliminated.

RING SPOT (virus). A single case of ring spot was reported by Dr. L.W. Koch in Essex county.

BLACK ROOT ROT (Thielaviopsis radicicola). In the burley and dark tobacco districts of Essex and Kent counties,

Ont., where precipitation in the early part of the season was considerably above normal, black root rot was prevalent, causing moderate loss in some cases. In some fields where drainage was poor the plants in 'low spots' were suffocated by water logged soil conditions. In such cases black root rot may or may not have been a contributory factor. In the new flue cured belt black root rot was more abundant than last year, due to the abnormal rainfall, but cannot as yet be considered of great consequence in this section. In Quebec on the other hand, black root rot was scarce and unimportant because of the dry weather during the early part of the season. Even susceptible varieties on contaminated soil showed little if any effects from this disease. Though black root rot is the most important disease in most seasons in the two tobacco growing districts of Quebec, it was nevertheless unimportant in 1937.

BROWN ROOT ROT (Non-parasitic) though present in most seasons in the tobacco growing districts of Quebec, and in the new flue cured districts of Ontario, is nevertheless unimportant in these sections. In Essex and Kent counties in Ontario where it has become a general practice to precede tobacco with corn, brown root rot has become of considerable importance. It was quite widespread in its distribution again this year. Our observations coincide with those reported from certain states of the U.S.A., namely that crops of corn, timothy, etc. preceding tobacco favour brown root rot. In Ontario corn is the most important crop in this connection. It has also been observed that brown root rot is more severe on the high spots of an infected field, and that certain varieties are more susceptible to this disease than others.

FRENCHING (Non-parasitic) was observed in Quebec and Ontario both in the field and in the plant bed. Although frenching is by no means general in distribution and is considered a minor trouble, yet several fields were observed this year in which there was a high percentage of a severe type. Frenching was also observed in a mild form occurring on tip leaves or suckers only, the rest of the plant giving no indication of its presence. Several cases of this type were noticed both in Quebec and Ontario on soil that had not previously grown tobacco.

ANGULAR LEAF SPOT (Phytomonas angulata) was scarce in Quebec, only one or two cases being reported, while in Ontario it was encountered on several occasions both in the old and new belts, though its distribution was quite limited.

WILDFIRE (Phytomonas Tabacum) was not encountered in either Quebec or Ontario.

PHYSIOLOGICAL BLACKFIRE (Possibly angular leaf spot). A large blackfire type of spotting was found in a section of the new flue cured belt in Ontario. The spots were large, angular, black and with concentric target-like lines suggesting blackfire, particularly since the spotting occurred late in the season following topping. This disease was reponsible for severe loss on several farms. However along with the blackfire type of spotting, smaller more typical angular leaf spots occurred on the same plant, but more especially on the sucker growth. Whether or not both types of spots have been caused by the angular leaf spot organism, or whether the larger, black, concentric spot may be of physiological origin has not as yet been determined.

PHYSIOLOGICAL LEAF SPOT. A small, brown, leaf spotting of flue cured and burley varieties was again common this year in both Quebec and Ontario. The spots are at first dark brown in colour but later may turn white. This disease has been especially severe in certain fields of flue cured tobacco, and its distribution in 1937 was quite widespread. Certain observations suggest that this trouble may be associated with a nitrogen, potassium balance.

JOHN WILLIAMS LEAF SPOT (Cause unknown) was observed in Quebec on cerain broadleaf varieties, but more particularly on John Williams.

A somewhat similar type of white spotting, often occurring as rings or partial rings, was also observed on White Stem Orinoco, Yellow Mammoth and Bonzana varieties at St. Catharines.

LIGHTNING INJURY was brought to our attention a few times.

HOLLOW STALK (Erwinia carotovora) was observed both in Quebec and in Ontario, though only in a few fields. It was of no importance.

HAIL INJURY. A hail storm on July 2 caused considerable damage in the Delhi district, while hail just previous to harvest time almost completely destroyed the crop in a few fields in the L'Assomption district in Quebec.

NEMATODES (Heterodera marioni). Mr. Stinson of the Delhi Tobacco Station reports finding the root knot nematode present on tobacco in the Delhi district.

SEED BED TROUBLES. With the exception of flooding and a 'yellow patch' condition in certain seed beds little trouble was encountered with seed beds in 1937. In the flue cured belt many seed beds were seriously affected with a 'yellow patch' condition that in some cases caused complete loss of the bed. Microscopic examination of the roots of dwarfed and yellowed seedlings in an early stage of growth suggested that in some cases the roots had been attacked by parasitic organisms, while in others the roots appeared to be free from organisms. A preliminary investigation has suggested that certain cases of the 'yellow patch' may be associated with the type of muck used in the seed bed (acidity too high), or with too heavy applications of manures and incorrect plant bed management. In other cases, however, there appears to be a definite brown root rot condition apparently caused by parasitic organisms which as yet have not been identified.

Also a few beds were found in which damping-off was a factor. A few cases of blackleg and black root rot in the seed bed were brought to our attention.

MINERAL DEFICIENCIES. Potash and magnesium deficiencies were noticed in many fields particularly in the new belt of Ontario.

A few cases of sand drown were observed, and the effects of leaching were apparent on 'high spots' in certain light types of soil.

TOMATO

BLOSSOM END ROT (Non-parasitic) affected less than 1% of the fruit in greenhouses about Victoria, B.C. It was worse in the field; in one small area it caused a 20% loss on Best of All variety. A slight amount of blossom end rot was present on Grand Rapids tomatoes in a greenhouse in Lincoln county, Ont., in April. The disease caused less damage than usual in the Montreal district, Que. The damage was slight to moderate in several gardens in York county, N.B. It was quite severe in a garden at Kentville, N.S. Blossom end rot caused considerable damage to staked tomatoes at Charlottetown, P.E.I., while most unstaked plants were free. The weather was hot and dry during the summer in the Maritime Provinces.

MOSAIC (virus) was not so general as in 1936 in B.C., because growers now exercise more care. It is still fairly prevalent in the oriental greenhouses in the Vancouver district. In one greenhouse on Vancouver island 98% of 26,000 plants were affected (W.R. Foster and W. Jones). A trace of mosaic was present at Morden, Man. It

affected 60-70% of the plants in a greenhouse in Lincoln county, Ont., but the plants did not become infected until late and the damage was not extensive. In the Leamington district where tomatoes are sometimes grown continually on the same soil the disease is severe although mosaic was found frequently in Essex and Kent counties (L.W. Koch). A small amount of mosaic was noticed in garden plots and in one commercial planting in York county, N.B.

AUCUBA MOSAIC (virus). A few plants showing pronounced symptoms of aucuba mosaic were seen in a greenhouse at Falmouth, N.S.

LEAF MOULD (Cladosporium fulvum) was general in the majority of greenhouses on Vancouver and Lulu islands, B.C.; damage varied from a trace to 30%. Some of the greenhouses are poorly located and constructed and thus the development of the disease is favoured by poor ventilation. On Vancouver island, greenhouse operators have obtained good control if they fumigate with sulphur frequently before the disease appeared. If fumigation is not begun until after the disease appears, control is not very effective (W. Jones and W.R. Foster). It was also noted on fruit received in Toronto from B.C. Leaf mould was general in a greenhouse in Lincoln county, Ont. in April, after a period of dull, cool weather. It was also quite general on staked tomatoes on July 31 in the same county. Leaf mould affected 75% of the foliage in a greenhouse at Falmouth, N.S. in August. The disease was general in the experimental plots at Charlottetown, P.E.I.

EARLY BLIGHT (Alternaria Solani) was general in the Fraser valley, B.C. and caused much damage; it was not nearly so prevalent on Vancouver island. Spraying with Bordeaux has not proven effective. The addition of a good spreader apparently will be necessary. Cutting off and removal of infected lower leaves is considered an important control measure (W. Jones). Early blight moderately to severely infected tomato seedlings grown in sand culture in the greenhouse at Morden, Man. The disease was widespread and prevalent in large acreages of staked and field tomatoes in Lincoln county, Ont.; it caused considerable loss of leaf (G.C. Chamberlain). Early blight was present in several fields in the Montreal district, Que., but it caused much less damage than usual. It was severe in York and Sunbury counties, N.B. The plants were diseased in the seedling stage, before they were transplanted to the field. Spraying with Bordeaux after the plants were transplanted kept the disease from spreading (J.L. Howatt and S.F. Clarkson). The disease caused 25% defoliation in a

garden at Kentville, N.S. Early blight was general, but not severe, on all varieties in Queens county, P.E.I.

LATE BLIGHT (Phytophthora infestans) caused 10% loss in a garden at Vancouver, B.C.; the disease was not general.

SEPTORIA LEAF SPOT (S. Lycopersici) was unusually severe during 1937 in south-western Ont. In many fields the plants were completely defoliated resulting in total loss of crop. Early varieties were affected more severely than later ones (L.W. Koch).

VERTICILLIUM WILT (Verticillium sp.) is not very common in the Victoria district, B.C. Growers are gradually adopting methods of steam sterilizing the soil. Where the soil is sterilized and soil temperature is raised to above 60°F. before planting, the disease seems to be effectively controlled (W. Newton). It appeared in scattered areas in plantings in two greenhouses near St. Catharines, Ont., in late April; it affected up to 5% of the plants.

FUSARIUM WILT (Fusarium sp.) affected 1% of the plants in a field near Colborne, Ont. and a trace in another field in Northumberland county. The plants were imported from Georgia, U.S.A. and Fusarium sp. was isolated from diseased plants in both instances (G.C. Chamberlain). Fusarium wilt was observed 3 times in fields of late varieties in Essex and Kent counties causing moderate damage. Isolations were not made, but Fusarium spores were abundant on the surface of affected stems and mycelium was present in the tracheae. (L.W. Koch).

STEM ROT (Sclerotinia sclerotiorum) affected a few plants in a greenhouse on Lulu Island, B.C. About 8% of the plants were killed in a greenhouse at Medicine Hat, Alta.

DAMPING OFF (Pythium sp.) caused a loss of 10,000 plants in a planting of 900,000 plants at Fonthill, Ont. The soil was not sterilized; the seed was treated with Bordeaux (G.C. Chamberlain).

ROOT KNOT (Heterodera marioni) was found in 2 greenhouses in the Victoria district, B.C., but it is not of general occurrence.

SOFT ROT (Erwinia caratovora) became serious toward the end of the early tomato season in Essex county, Ontario.

Fruit both in the field and in transit was affected. Several carloads shipped to Western Canada were rendered useless by this disease (L.W. Koch).

GREY MOULD (Botrytis sp.) was fairly common in greenhouses in the Victoria and Vancouver districts, B.C., but damage was slight. It usually follows bruising during pruning operations. A number of affected fruits were forwarded to St. Catharines by the Fruit Branch at Toronto from a shipment from B.C.

ANTHRACNOSE (Colletotrichum phomoides (Sacc.) Chester). Fruits apparently affected with anthracnose were obtained from Essex, Ont. The spores were present, but no isolations were made (L.W. Koch). It was found on fruit received from the southern part of Essex county (G.H. Berkeley). Anthracnose was present on fruit from a garden at Westboro, and affected fruits were seen on the local market at Ottawa (4923). It was reported to have occurred at the Experimental Station, Fredericton, N.B. previous to 1922 (P.D.S. 3:59), but it has not been noted since except on imported fruits (I.L. Conners).

NAILHEAD SPOT (Macrosporium tomato) reached epidemic proportions on early varieties in Essex and Kent counties, Ont.; practically all fields of these varieties were affected to some extent. (L.W. Koch).

BACTERIAL SPOT (Phytomonas vesicatoria) was observed once causing slight damage in Essex county, Ont. The symptoms agreed with those described for bacterial spot and an abundance of bacteria were present in incipient lesions (L.W. Koch).

BUCK EYE ROT (Phytophthora terrestria) affected less than 1% of the fruits in the Victoria and Vancouver districts, B.C.

RIPE FRUIT ROT (Oospora lactis). A moderate infection was observed at Steinbach, Man. (W.F. Hanna).

VIRUS DISEASES continue to lower tomato yields under glass in B.C. by at least 25%. The losses are particularly heavy in houses operated by Chinese, probably because they handle their plants more than other growers. The necessity of washing the hands before touching the plants is not fully appreciated.

The losses in the main are due to a double virus disease, tomato streak and potato X virus. Tomato streak alone is also widespread, although it is less virulent than

the double virus disease. Tomato aucuba mosaic was rare, but exceedingly virulent when present. Likewise a very virulent form of tomato ring mosaic streak (tomato streak X Newton) was found in several greenhouses affecting over 50% of the plants. (W. Newton).

SPOTTED WILT (virus). Some 20 to 30% of the plants were affected in a greenhouse at Medicine Hat, Alta. The determination of the disease was verified by Prof. T.C. Vanterpool.

STREAK (Single virus). Five per cent of the plants were affected in a greenhouse in Lincoln county, Ont., in April.

STEM GIRDLE (Phytophthora ?parasitica) killed fully 10% of the plants before they were more than 18" to 24" high in a greenhouse near Grimsby, Ont. in September. The fungus was still active in late September, though chiefly on replacements of earlier casualties. It answered perfectly the disease described by Reddick (Phytopathology 10:528-534. 1920). It was apparently brought in with the plants in soil from a rather poorly prepared compost. In the early part of the outbreak most of the lesions were a half to two-thirds of the way up the stem, but on the older plants in late September, the lesions were usually located at the crown. (D.L. Bailey). This is the first report of stem girdle to the Survey, and is apparently new to Canada.

TURNIP

BROWN HEART (Non-parasitic) was found in several fields of Swede turnips at Pemberton Meadows, B.C., but the use of borax is becoming more general and the disease less common (W. Newton). Brown heart is found on all turnip varieties growing in boron-deficient areas in N.B. Excellent control is being obtained by the use of boron (J.L. Howatt). The disease was prevalent throughout P.E.I. on land not treated with borax. There were no complaints where borax had been applied at the rate of 15 to 20 lbs. per acre. It appeared, however, that dry weather did reduce the effectiveness of the borax in 1937. (R.R. Hurst).

SCLEROTIAL ROT (Sclerotinia sclerotiorum) was found on several farms at Pemberton Meadows, B.C., causing damage in storage.

CLUB ROOT (Plasmodiophora Brassicae) is a widespread disease in N.B.; it varies in intensity according to

conditions. In many sections the so-called resistant variety, Wilhelmsburger is little better than the susceptible variety, Ditmars (J.L. Howatt). It destroyed two small rows of a white garden variety at Kentville, N.S. Club root is widespread in P.E.I. and sometimes the crop is a total loss. In plot experiments and in the greenhouse, many crucifers have contracted club root. Barbarea vulgaris was affected, although it is reported to be immune. Among the other plants affected were: kohl rabi, marrow-stem kale, Camelina microcarpa, Lepidium sativum, L. virginicum, Thlaspi arvense and Brassica arvensis (R.R. Hurst).

BLACK ROT (Phytomonas campestris) affected a single plant in 300 in a planting in Queens county, P.E.I.

BLACK LEG (Phoma lingam) affected a trace to 75% of the plants in 12 fields in P.E.I., causing considerable damage in some fields. (R.R. Hurst).

SCAB (Actinomyces scabies) was present on 4% of the roots in 10 rows examined in Queens county, P.E.I.; the damage was nil.

SOFT ROT (Erwinia carotovora) infected 50% of the roots on some varieties in the University gardens, Edmonton, Alta.

STORAGE ROT (Corticium Solani) affected a trace to one per cent of the roots in storage in April. It was causing a destructive rot. (R.R. Hurst).