III. DISEASES OF VEGETABLES AND FIELD CROPS

ASPARAGUS

STEMPHYLIWM BLIGHT (Pleospora herbarum), The disease, on asparagus at Ste, Foy, Que., was characterized by the presence of yellow lesions extending along stems and branches. The lesions eventually turned a dull brown. Both Stemphylium sp. and P. herbarum were present in the lesions, the former the more prevalent (D. Leblond).

BEAN

GRAY MOLD (Botrytis cinerea), A trace infection developed on the foliage of Golden Wax at Canaan, N. S. Damage was negligible (K. A. Harrison).

ANTHRACNOSE (Colletotrichum lindemuthianum) caused the complete loss of a 15-acre crop of Soldier beans at Millville, N. B. (S. R. Colpitts). A planting of the Jacob's Cattle variety at Kentville, N. S. was 100% infected, Damage was estimated at 95% of the crop (K.A.H.).

HALO BLIGHT (Pseudomonas phaseolicola) was rated as 2-tr.-sl. 2-91.-mod, 1-sev./6 fields surveyed in s. Alta. (E. J. Hawn). The varieties Lapin and Soldier were 5% infected in a planting at Millville, N.B. (S. R. C.). In a field at Canaan, N. S., halo blight was spread across a 2-acre field by a storm, The focal point of the infection appeared to be a single infected plant. The disease was not seep in other fields planted with seed from the same source (K. A. H.).

ROOT ROT (Rhizoctonia solani), Trace to moderate infections were seen in 2/6 fields surveyed in s. Alta, (E. J. Hawn).

SCLEROTINIA ROT (S. sclerotiorum) caused moderate damage at one end of a field of the variety Topcrop at York, P. E. I. (J. E. Campbell),

COMMON BLIGHT (Xanthomonas phaseoli) was generally very light in Sask. where the dry weather militated against its spread (R, J. Ledingham). It was troublesome in gardens at Birch Hills and Yorkton, Sask. (T. C. Vanterpool). At the Special Crops Experimental Farm, Portage la Prairie, Man., infection ranged as high as 25%. In farm fields in the Portage district the average infection was tr.-sl. in the variety Sanilac. All 7 fields surveyed were infected (W.A.F.H.).

MOSAIC (virus) was found in 2/6 fields surveyed in s. Alta. A few plants were moderately damaged (E. J. H.).

ROOT ROT. Five/7 plantings on saline soils in Man, were affected by root rot. The crowns and roots were severely damaged and isolations yielded a variety of fungi including Fusarium sp., also yellow bacteria. The high degree of salinity was due to calcium sulfate and magnesium sulfate (W.A.F.H.).

SUNSCALD caused light damage in a 30-acre field at St. Cesaire, Rouville Co., Que. (R. Crête).

Field Bean Diseases in Western Ontario in 1959

R.N. Wensley

Two surveys for field bean diseases on farms selected at random in Kent, Middlesex, Huron and Essex counties showed that the prevalence and severity of bean diseases in Western Ontario were determined largely by two factors: first, the prevailing drought during the growing period and second, the widespread substitution of the early maturing variety, Sanilac, for Michelite and other varieties. This report is based principally upon diseases of Sanilac although some finds do apply to the varieties Michelite, Clipper and Red Kidney.

Root Rot was a factor in some areas during a post-planting period of from one to two weeks, Subsequent drought, however, restricted the development of root rot and minimized its importance in most areas of western Ontario.

Anthracnose (Colletotrichum lindemuthianum) was not found, presumably because of the predominance of the anthracnose-resistant variety, Sanilac, to the exclusion of Michelite and other susceptible varieties on many farms and because of the unfavorable weather conditions that prevailed.

Bacterial Blights (Pseudomonas phaseolicola, Xanthomonas phaseoli) were prevalent in western Ontario. Severity was greatest on early maturing varieties such as Sanilac, planted early and growing under conditions of drought. The green foliage, the greater growth, and the lower incidence of disease among plants in depressions and protected border areas as opposed to those in more open situations caused many fields to assume a patch-like appearance.

Alternaria. Secondary invasion of damaged leaf tissues by Alternaria sp. was severe in numerous fields where leafhopper populations were high. Alternaria infection was also associated with bacterial blight. The incidence and severity of Alternaria infection and of bacterial blight were most pronounced on early maturing crops.

Mineral Deficiencies, Symptoms of mineral deficiencies developed in many fields of beans in Kent, Middlesex apd Huron counties, Symptoms were most pronounced on knolls, in sandy soils and in fields planted to sugar beets in 1958. Severe drought accentuated the symptoms and reduced the effectiveness of fertilization, In one field, an early application of ammonium nitrate to the surface of sandy ridges and knolls at the rate of 150 lb/acre reduced the severity of deficiency symptoms and extended the period of growth. However, under severe drought conditions no evidence was found of increased pod formation or yield, The deficiency or non-availability of mineral nutrients is expected to cause a pronounced reduction in yield in many fields,

Sclerotinia Wilt (Sclerotinia sclerotiorum) was found in one field of Cherokee (wax) and Black Valentine in Essex County. Mortality was 12 1/2 percent in Cherokee and 8 percent in Black Valentine,

BEET

SCAB (Streptornyces scabies). Three-4% of the roots in a late planting in the Dover marshes near Prairie Siding in s-w. Ont. showed deep scab lesions, The pH of the soil was about 9. Scab has not previously been observed on table beets in southwestern Ont. (G. E. McKeen).

BROAD BEAN

FUSARIUM WILT (F. oxysporum f. fabae) affected 80% of the plants of the Windsor variety in a garden at Desbiens, Roberval Co., Que. Broad beans have been grown on this plot for a number of years (L.J. Coulombe).

CABBAGE

BROWN ROT (Alternaria brassicae), A sev. infection developed in the outer leaves of cabbage in storage at Lincoln, Lunenburg Co,, N.S. By stripping affected leaves, the grower was able to salvage most of the crop (K.A.H.).

LEAF SPOT (Alternaria sp.). Light infections appeared in experimental plots at Ste. Glothilde, Chateauguay Co., Que. (R. Crête).

CLUB ROOT (Plasmodiophora brassicae) is widely distributed in cruciferous crops in N.S. The use of crop rotation as a control measure is essential (K, A. H.).

BLACK ROT (Xanthomonas campestris). The number of specimens of infected plants received at the Winnipeg Laboratory for diagnosis would indicdte that black rot continues to do avoidable damage to cabbage in Man. (W, A, F. Hagborg).

INTUMESCENCE (non-parasitic). This disorder was widely distributed through 2 adjacent townships in the Chatham, Ont. area. No recognizable cause could be determined in association with the affected plants. Intumescence is attributed to an upset in the water economy of the plant, resulting in enations on the inner surface of the leaves of the head (B.H. McNeill, C.B. Kelly).

CARROT

LEAF SPOT (Alternaria dauci) caused the defoliation of one-third of a 10-acre planting at Port Williams, N.S. (J.F. Hockey).

BLACK ROT (Alternaria radicina) was observed in 1958 carrots in storage in April and a moderate infection occurred in the field in Sept, at Neuville, Portneuf Co., Que. (D, Leblond). Three percent of the roots of the variety Nantes were affected in storage at Hillaton, Kings Co., N.S. (K.A.H.).

GRAY MOLD ROT (Botrytis cinerea), Specimens bearing numerous sclerotia were received from St. Pierre, Isle Orleans, Que. (D.L.).

LEAF SPOT (Cercospora carotae) is becoming more widespread in the Annapolis Valley of N.S. It caused. in association with A. dauci, a browning of tops in the Berwick area (K.A.H.). This same combination of organisms was observed in most carrot fields in s.-w. Que. In many cases infection was sev. It was 20-30% in a 15-acre field at Ste. Blaise (R. Crête).

SOFT ROT (Erwinia carotoyora). Several tons of carrots at Berwick, N.S. broke down after cold storage facilities were discontinued (K.A.H.).

FUSARIUM ROT (Fusarium spp.). Specimens of Fusarium rot of carrots in storage were received from Levis and from St. Laurent, Isle Orleans, Que. (D.L.).

VIOLET ROOT ROT (Rhizoctonia crocorum) was seen in carrots purchased in Russell Co., Ont. It is thought that they may have been grown in the adjacent muck soil area near Alfred (K.M. Graham).

SCLEROTINIA ROT (S. sclerbtiorum) was sl.-mod. in gardens in Sask. This is an important rot-inducing organism of stored carrots, particularly in urban areas where there is little opportunity for rotation of the garden plot (R.J. Ledingham). It caused a 20% loss in a lot of 200 bbl. at Berwick, N.S. (K.A.H.).

ASTER YELLOWS (aster yellows virus). Only a few infected plants were noted, late in the season, in Sask, (R.J.L.). A moderate infection was seen in a planting near Winnipeg, Man. (W.L. Gordon), It was tr. at Ste. Anne de la Pocatiere, Que. (R.O. Lachance), and at Salisbury, Albert Co., N.B. (S.R. Colpitts). Infections were very light in fields observed in N.S. in 1959 (K.A.H.). A heavy infection *causedmoderate damage in a field at Southport, P.E.I. (J.E. Campbell).

CHEMICAL INJURY. Three or four early plantings of carrots in the Jeanette Creek Marsh near Tilbury, Ont. exhibited necrotic areas on the tap root at the ground level. No pathogenic organism was associated with the necrotic tissue. Plants toppled over and died, when they were from 6-10 inches high, Up to 20% of the plants were affected and killed in 2 fields. All the affected fields had been sprayed, prior to seeding, with aldrin and the injury is thought to have been caused by that chemical. A similiar type of injury on tobacco transplants has been attributed to aldrin (C. D. McKeen).

CAULIFLOWER

LEAF SPOT (Alternaria brassicae). Specimens from Port Hope, Ont. were received at St. Catharines for diagnosis. The grower reported the infection to be serious. This disease is not often found in the field in Ont. (J.F. Bradbury).

CLUB ROOT (Plasmodiophora brassicae) was light in a 2-acre field at Ste. Martine, Chateauguay Co., Que. (R. Crête).

WILT (Sclerotinia sclerotiorum), Infections ranging from 5-15% were seen in fields from 1-10 acres in area at St. Eustache, Ste. Dorothee and St. Martin, Que. (R.C.).

LEAF SPOT (?Xanthomonas campestris) was reported from Man. The spots contained an abundance of bacteria which are suspected to be X. campestris, Testing of isolates was not complete at the time of this report (W. A. F. Hagborg),

BORON DEFICIENCY. Slight to moderate symptoms were observed in most fields in the vicinity of Montreal, Que. (R, C.).

WHIPTAIL (Molybdenum deficiency) was sl. in most fields observed at Ste. Dorothee and St. Martin, Que. (R.C.).

CELERY

EARLY BLIGHT (Cercospora apii) was sev. and caused a complete loss of 2 fields of 10 acres each at Sherrington, Napierville Co., Que. (R, Crête).

PINK ROT (Sclerotinia sclerotiorum), Light infections occurred in plots at Ste. Clothilde, Chateauguay Co., Que, (R.C.).

LATE BLIGHT (Saptoria apii) was sl. in a 10-acre field at Ste. Clothilde, Que. (R.C.).

BLAGKHEART (physiological). About 30% of the plants in a 15-acre field at St. Remi, Napierville Co,, Que, were affected. Damage, however, was light (R.C.).

CHINESE CABBAGE

BACTERIAL LEAF SPOT (Xanthomonas campestris). Trace infections were seen in a 2-acre field at Ste, Clothilde, Que. (R. Crête).

CUCUMBER

GRAY MOLD (Botrytis cinerea) was tr, in a greenhouse at Falmouth, N.S. in April (K.A. Harrison).

SCAB (Cladosporium cucumerinum). The susceptible variety Straight-8, a popular slicing variety, was heavily infected in Queens and Sunbury counties, N. B. Up to 40% of the crop in some fields was diseased (S.R. Colpitts). Damage was sev. on slicing varieties in gardens in N. S. (K. A. H.).

BACTERIAL WILT (Erwinia tracheiphila) caused sl. damage in several small gardens at Ste. Anne de la Pocatiere, Que, (R.O. Lachance). Only one case of bacterial wilt was reported 'from Kings Co., N. S. (K.A.H.).

POWDERY MILDEW (Erysiphe cichoracearum). Infections developed late in the harvest season in the field crop in Essex Co., Ont. As a consequence, damage was much lighter than usual (C.D. McKeen). It was sev. in plantings at Ste. Foy, Que. (D. Leblond). A trace infection was seen in a greenhouse at Kentville, N. S. (K.A.H.).

ANGULAR LEAF SPOT (Pseudomonas lachrymans) caused mod-sev. damage in 2 fields at Picture Butte and in 1 near Taber, Alta. (J.B. Lebeau). Only one specimen was received from Man, in 1959 (W.A.F. Hagborg).

WILT (high temperatures), Injury was observed at Birch Hills and Newdorf, Sask. (T.C. Vanterpool).

EGGPLANT

WILT (Verticillium albo-atrum). Every field observed in Essex Co., Ont. showed wilt affecting from a few to 100% of the plants. Crop losses from wilt have never been higher. Soil fumigation with Dowfume MC-2 in experimental plots gave good control. Other chemicals tested did not give satisfactory results (C, D. McKeen).

LETTUCE

GRAY MOLD (Botrytis cinerea). Infection was about 2% at Grand Pre, N. S. in plants transplanted from the greenhouse (K.A. Harrison).

DOWNY MILDEW (Bremia lactucae) was 10-15% in experimental plots at Ste. Clothilde, Que, (R. Crête).

LEAF SPOT (Phyllosticta ? mulgedii) was sl. on the variety Great Lakes at Ste. Foy, Que. (D. Leblond).

DROP (Sclerotinia sclerotiorum) Thirty % of the plants were attacked in a 15-acre field on muck soil at Sherrington, Que. (R.C.). About 15% of the plants in one corner of a 3-acre field at Grand Pre, N.S. were affected, The same area of the field was affected in 1958 (K.A.H.).

ASTER YELLOWS (Aster yellows virus) infected about 95% of the head lettuce plants that matured about mid-summer in the Komoka Marsh near London, Ont. Leafhopper populations in the marsh were very high and spraying twice a week from emergence to harvest reduced disease incidence only to 50% (C.D. McKeen). Infection was heavy at Southport, P.E.I. (J.E. Campbell). It was 15% in a 10-acre field at St. Sulpice, L'Assomption Co. and 20% in plots at Ste, Clothilde, Que. (R.C.).

TIP BURN (non-parasitic) was 5% in plots at Ste, Clothilde, Que. (R.C.).

MELON

LEAF SPOT (Alternaria cucumerina). Heavy infections appeared in most fields in Essex Co., Ont. at mid-harvest (C.D. McKeen).

POWDERY MILDEW (Erysiphe cichpracearum) appeared later than usual in crops in Essex Co., Ont. and the overall damage was not heavy (C.D. McK.).

FUSARIUM WILT (F. bulbigenum f. niveum) occurred in infested soils in s-w. Ont. in fields where wilt-resistant varieties were not being grown (C.D. McK.).

ONION

BLACK MOLD (Aspergillus niger). The incidence of black mold in cooking onions reached a level of 7-8% in several crops in the Erieau Marsh near Blenheim, Ont. A similiar high incidenae of this disease occurred in stored onions after the hot, dry summer of 1955 (C.D. McKeen).

NECK ROT (Botrytis allii). Infections in the Okanagan Valley of B.C. ranged from 25-90%. Neck rot was widespread in the area and was much more serious than normal, probably as a result of the cool, rainy weather in Sept. (G.E. Woolliams). This disease is present every year in most gardens in N.S. (K.A. Harrison).

GRAY MOLD ROT (Botrytis cinerea) was sev. on the variety Philadelphia at Ste. Foy, Que. Infections were not confined to the neck, as with B. allii, but originated at any point on the bulbs. A specimen was also received from St. Nicolas, Levis Co., Que. (D. Leblond),

SOFT ROT (Erwinia carotovora). Both red and white onions from Kamouraska and L'Islet counties, Que. rotted badly in storage. Infections were as high as 50% (L.J. Coulombe).

BULB ROT (Fusarium oxysporum f. cepae). A sl. infection occurred in a planting near Winnipeg, Man. (W.L. Gordon). It was also sl. on the variety Philadelphia at Ste. Foy, Que. (D.L.). It was 5-7% in a 60-acre field at Ste. Sabine, Que. (R. Crete).

WHITE ROT (Sclerotium cepivorum). Diseased patches occurred in a planting of the variety Ebenezer near Winnipeg, Man, and the causal organism was isolated from affected plants, All the bulbs from this planting were confiscated and destroyed (W. L. Gordon), White rot has not been previously reported in the Survey on onion. One record of S. cepivorum on garlic in Canada exists. This was from Steveston, B.C. in 1952 (C.P.D.S. Ann. Rep't. 31:50, 1951 [1952] (D.W. Creelman).

SMUT (Urocystis cepulae). Infections ranging as high as 90% were seen in fields at Kelowna, B.C. The average infection was about 25% (G.E.W.). Smut was reported to be general in the area around Winnipeg, Man. It was more commonly encountered than it has been for several years (W.L.G.).

ASTER YELLOWS (Aster yellows virus). Moderate infections were observed in the Winnipeg, Man. district (W.L.G.).

YELLOW DWARF (virus) affected 20% of the young plants in a 4-acre field at La Salle in s.w. Ont, The onions were rendered unfit for bunching. The setts used in this field were grown the previous summer in the Leamington area (C.D. McK.).

PARSNIP

CANKER (Itersonilia perplexans) occurred in parsnips grown in 2 fields near Fredericton, N.B. Approximately 25% of the roots were affected and damage was severe (K.M. Graham). Isolations from cankered roots were identified as Itersonilia perplexans Derx. The only previous record of this disease in Canada is from Dixie, Ont. (C.P.D.S. 36:63, 1956 [1957] (D.W. Creelman).

PEA

FOOT ROT (Ascochyta pinodella), Infections were rated 3-tr.-sl. 1-sl.-mod. 2-mod.-sev./20 fields surveyed in s. Alta. (E.J. Hawn).

LEAF AND POD SPOT (Ascochyta pisi). Peas in town gardens in Sask., planted closely and watered frequently, showed sev. infections, Sl.-mod. infections were seen elsewhere in the province (R. J. Ledingham), A relatively heavy infection developed in canning peas late in the growing season at Charlottetown and Bedeque, P. E. I. Some losses in yield and quality resulted, though the lateness of the infection minimized the damage (J,E. Campbell),

GRAY MOLD (Botrytis cinerea). Infection was 75% on the lower leaves in a planting at Kentville, N,S. Some pods were not filling and a 10% loss was estimated (K. A, Harrison),

POWDERY MILDEW (Erysiphe polygoni) was tr. in 1 field at Lethbridge, Alta, (E,J.H.). Heavy infections developed late in the season in Sask. but the average damage was slight (R.J.L.). Mildew was general on peas in N.B., but most crops were harvested before damage became serious (S.R. Colpitts). Late season infections caused little loss at Kentville, N.S. (K,A.H.),

ROOT ROT (Fusarium spp.). Specimens were submitted from a home garden in Winnipeg, Man. (W. A, F. Hagborg). A 60% infection was recorded at Sts, Anne de la Pocatiere, Que. (L,J. Coulombe), and tr, -60% infections occurred in home gardens in N.B. (S.R.C.).

MYCOSPHAERELLA BLIGHT (M. pinodes). Infected patches up to 20 feet in diameter were found in 2 fields near Winnipeg, Man, (W, A. F.H.).

BACTERIAL BLIGHT (Pseudomonas pisi) was found in 4/20 fields surveyed in the Tabsr and Lethbridge, Alta, d'istricts, 3-tr. -sl, 1-sl.-mod, It was also present in 2/5 seed fields examined (E.J.H.),

LEAP BLOTCH (Septoria pisi) occurred in 6/20 s. Alta. fields, 5-tr. -sl. 1-sl.-mod. (E.J.H.),

ROOT ROT (various pathogens), Aphanomyces sp, was the suspected cause of root rot in 6/20 pea fields examined in the Lethbridge and Taber, Alta. districts, 4-tr. -sl. 2-mod, -sev. Damage from Rhizoctonia solani occurred in 8/20 fields, 5-tr. -sl. 2-sl. -mod. 1-sev. (E.J.H.).

PEPPER

ANTHRACNOSE (Colletotrichum atramentarium). Several fruits were found in Essex Co., Ont. with sporulating lesions bearing this fungus, It was identified by Prof. W.I. Illman of Carleton University, Ottawa (C.D. McKeen).

DOWNY MILDEW (Peronospora tabacina) was mod. on seedling plants at Vittoria, Norfolk Co., Ont. It caused leaf and stem lesions and the collapse of seedlings. Infected material was also received from Simcoe Co., Ont, (G.C. Chamberlain). This is the first report of downy mildew on pepper in Canada (D.W. Creelman),

WILT (Verticillium albo-atrum). Nearly 50% of the plants were affected in a 4-acre field at Harrow, Ont. Wilt was almost completely limited to a portion of the field that had been flooded by a heavy rainfall earlier in the season, A lesser amount occurred in other pepper fields in the Harrow-Leamington area (C. D. McK.).

BACTERIAL SPOT (Xanthomonas vesicatoria) was prevalent in a few crops in the Harrow-Leamington district of Ont. Careful investigations have shown that contaminated seed has been responsible for serious field infections in recent years. It has not always been possible to obtain disease-free seed (C. D. McK.).

BLOSSOM END ROT (physiologic) was sev. in many crops in Essex Co., Ont. (C. D. McK.).

POTATO

The data presented in Tables 8 to 10 relevant to Seed Potato Certification in Canada were submitted by the Plant Protection Division, Production and Marketing Branch, Canada Dept. of Agriculture.

Both the acreage entered far certification and the number of acres passed were less than in any year since 1955, Bacterial ring rot and blackleg were responsible for more than one-third of the total rejections.

EARLY BLIGHT (Alternaria solani) was rated as sl. in 31/522 seed fields inspected in B.C. It was most prevalent in the North Okanagan district. Losses were negligible (N. Mayers), It was present in most n. Alta. fields but was not serious, On the other hand, in s. Alta. it was responsible for high economic losses in several hundred acres of table stock. Forty-two % of the seed fields inspected showed tr-sl. infections (R.P. Stogryn). Early blight caused considerable anxiety to growers in the Rosemary, Ranier, Vauxhall and Taber areas of s. Alta. (E.J. Hawn). It was sl. on early varieties in n. Sask. (A. Charlebois), and a few sl. infections were seen in Man, and n.w. Ont. (D.J. Petty). Infections were widespread in the Muskoka-Parry Sound, Sudbury, Algoma and Manitoulin areas of Ont, (H,W. Whiteside), Its incidence increased slightly in the Guelph, Ont. district (E.W. Arthur). In e. Ont.., early blight was 29-sl. 10-mod./58 fields (E.H. Peters), In Que., infections were 233-sl. 60-mod. 8-sev./1,039 fields. It was mostly confined to the Chicoutimi and Lake St. John districts (B, Baribeau). A 50% infection was seen on the variety Osseo at Ste. Anne de la Pocatiere, Que. (H, Genereux). It was sl. in N.B. (C.H. Godwin); occurred in 39/263 fields inspected in N.S. (R.C. Layton), and was sl. in P.E.I. (G.C. Ramsay).

GRAY MOLD (Botrytfs cinerea) attacked the lower leaves and caused defoliation in many N. B. potato fields in mid-August (S.F. Clarkson).

Table 8 Seed Potato Certification

Acreage Passed by Variety and Province - 1959

Variety,	P.E.I.	N.S.	N.B.	Que,	Ont.	Man. -Alta.	B.C.	Total
Sebago	18,658	13	403	133	332		10	19,549
Katahdin	967	16	4,835	199	176	4	6	6, 203
Kennebec	1,492	206	3,093	610	75	42	96	5,614
Netted Gem	13	43	835		3	1,631	1,078	3,603
Red Pontiac	185	32	1,463		2	651	38	2, 371
Irish Cobbler	1, 254	39	267	54	54	160		1, 828
Green Mountain	440	30	139	1,065	26	2	25	1, 727
Keswick	63	22	420	199	64		4	772
Warba	25	6	6		17	192	93	339
Fundy	85	19	84		2			190
Chippewa	9	1	87		88			185
Huron			20	4	147		1	172
White Rose			100				38	138
Canso	105	1		1			23	130
Waseca	1				5	107		113
Cherokee	51	16		9	3	12		91
Others	17	28	74	8	5	255	49	436
Totals	23, 365	472	11,826	2, 282	999	3,056	1,461	43,461

Table 9 Summary of Fields and Acres Entered and Passed - 1959

Province	No. of Applications	FIELDS Entered	FIELDS Passed	% Passed	ACRES Entered	ACRES Passed	% Passed
P.E.I.	3,341	5,144	4,626	89.9	26,336	23,365	88.7
N.S.	74	263	240	91.2	532	472	88.7
N.B.	555	2,063	1,818	88.1	14,762	11,826	80.1
P.Q.	617	1,039	569	54.7	4,386	2,282	52.0
Ont.	189	529	447	84.5	1,239	"99	80.6
Man.	26	139	125	89.9	1,348	1,215	90.1
Sask.	17	111	87	78.4	363	126	34.7
Alta.	68	266	236	88.7	2,062	1,716	83.2
B.C.	202	522	340	65.1	2.570	1.461	56.9
Totals	5,089	10,076	8,488	84.2	53,598	43,462	81.0
1958	5,859	11,251	9,669	85.9	58,855	49,472	84.0
1957	5,982	11,417	9,879	86.5	57,617	48,588	84.2
1956	6,130	11,440	9,575	83.3	53,926	44,398	82.1
1955	6,365	12,003	10,239	85.3	51,627	42,173	81.7

Table 10 Fields Rejected on Field Inspection - 1959

Province	Leaf Roll	Mosaic	Bacterial Ring Rot	Blackleg	Wilts	Adjacent Diseased Fields	Foreign Variety	Misc.	Total
P.E.I.	1	45	32	146	6	22	160	182	594
N.S.	3	3			4	3	8	2	23
N.B.		10	119	2		3	22	89	245
P.Q.	5	28	222	59	1	20	36	99	470
ONT.	14	3	9	12	7	9	6	22	82
MAN.	5	2	3					4	14
SASK.			7	1	2		1	13	24
ALTA.			7	6				17	30
B.C.	125	1		3				53	182
Total	153	92	399	229	20	57	233	481	1,664 *

* The discrepancy between the total given herein and the total rejections calculated from the data in Table 9 is explained as follows:
The figures in Table 10 include lots which were rejected at shipping and bin inspection, whereas the figures in Table 9 refer to field inspections only.

Rejection as a percentage of fields:

Inspected	1.5	0.9	3.9	2.2	0.2	0.5	2.3	4.7	16.5
Rejected	9.3	5.5	23.9	13.8	1.2	3.4	14.0	28.9	100.

BLACK DOT (Colletotrichum atramentarium) was sev. on the varieties Norland and Irish Cobbler in plots at the Experimental Farm, Ste. Anne de la Pocatiere, Que. (H.G.).

BACTERIAL RING ROT (Corynebacterium sepedonicum) was found in the 1958 crop in 2 storehouses at Grand Forks, B.C. No 1959 seed stocks were found infected, but ring rot wits found in 1 table stock field (N, M.). Twenty-four /266 fields were rejected in s. Alta., 17 of which were contact cases (R.P.S.). It was found in 7/11 1 seed fields in Sask. (A. C.), and appears to be increasing in prevalence in that province (A.C., R.J. Ledingham). Three/139 Man. fields were rejected (D. J, Petty). One field of Huron at Scotland, Ont. was infected (F.J. Hudson). Ring rot incidence decreased in the Barrie, Ont. district, Only 5/297 fields were rejected (H. W. W.). One field of Sebago in Waterloo Co., Ont. (E. W. A.), and 2/58 fields in e. Ont. were infected (E.H.P.). Rejections in Que. were 22211,039 fields, involving more than twice the acreage rejected in 1958 (B. B.). In N. B., 119/2, 063 fields inspected were infected. An additional 74 fields wexe rejected because of ring rot in table stock on the same farms. A total of 2,561 acres was involved (C.H.G.). No ring rot was found in N.S. in 1959 (R. C. L.). It was found on 27 farms involving 32 fields and 306.5 acres in P.E.I. There were also 44 contact cases involving 308.5 acres. Of the 27 farms involved, 12 cases were diagnosed in the field, twelve during harvesting and 3 after harvest (G. C, R.). Forty-seven cases of ring rot were diagnosed at the Charlottetown, P. E.I. laboratory (J.E. Campbell).

BLACKLEG (Erwinia atroseptica) was rated as 75-tr. 2-sl. 2-mod. 1-sev./522 fields inspected in B.C. Six fields were rejected. In general, black-leg was more prevalent in B. C. than in previous years (N, M.). It caused the rejection of 6 n. Alta. fields and in s. Alta. was present in 837O of the fields inspected, It is, without doubt, the most troublesome disease in seed stocks in the province (R.P.S.). Incidence was slightly lower in Sask. than in 1958. Black leg occurred in 20% of the fields inspected and caused the rejection of 1/111 fields (A.C.). It was tr.-mod. in 11% of the fields seen in Man. and in 64% of those in n.-w. Ont. (D. J. P.). A few fields in s.-w. Ont. had sl. infections (F.J.H.). Eleven/297 fields were rejected in the Barrie, Ont. district, nine of which were of the variety Sebago (H. W, W.). Blackleg was at about the same level in the Guelph district as in 1958 (E. W. A.). and was noted in 8/58 fields in e, Ont. (E.H.P.). The disease was found in 604/1, 039 fields in Que, and caused the rejection of 59. Its incidence was somewhat lower than in 1958 (B.B.), as was the case in N.B. (C.H.G.). It was recorded in 110/263 N.S. fields but none were rejected (R.C.L.). In P.E.I. 146/5, 144 fields were rejected (G.C.R.).

SOFT ROT (Erwinia carotovora) occurred in some potato stocks in the southern part of Simcoe Co., Ont. (H. W. W.). It caused considerable loss in some fields of Katahdin near Strathroy in s.-w. Ont. (F,J.H.), At Hillaton, Kings Co., N.S. soft rot caused the loss of 2 bins, each of 1200 bbl, of Kennebec, in storage. Other stored stocks in Kings Co. were affected to a lesser degree (K.A. Harrison).

DRY ROT (Fusarium spp.) was less prevalent than usual in the stored 1958 crop in Que. Of the infected varieties, Keswick seemed the most susceptible (B.B.). It was of little consequence in N.B. (C.H.G.), and was rated as sl.-mod. in P.E.I. (C.G.R.).

WILTS (Fusarium oxysporum, Verticillium albo-atrum) were seen in only 2 B.C. fields (N.M.). They were present in 13% of the fields inspected in n. Alta., mostly in the variety Warba, and in 27% of s. Alta. fields (R.P.S.). The incidence of wilts was lower in Sask. than in 1958. Six % of the fields inspected were diseased compared With 17% in 1958 (A.C.). At Portage la Prairie, Man., one field showed 1% (D.J.P.). Considerably lass Wilt was seen in s.-w. Ont. than in 1958 (F.J.H.). In the Barrie district, six/297 fields were rejected because of Verticillium wilt (H.W.W.). They were found in Durham Co. (E.W.A.) and in 6/58 fields in e. Ont. (E.H.P.). Verticillium wilt caused appreciable losses in a few fields of Kennebec in the vicinity df Sherbrooke, Que. (B.B.). It occurred in 47/263 fields inspected in N.S. and caused the rejection of 4. The variety Kennebec was the most seriously affected although all fields of Fundy examined showed some Verticillium wilt. There was a decrease in wilt incidence in P.E,I. and only 6/5, 144 fields were rejected (G.C.R.).

SILVER SCURF (Helminthosporium atrovirans) was found in the field at harvest time in the Barrie district of Ont. (H.W.W.). Sl. infections were reported on a few forms in Que. (B.B.).

ROOT-KNOT NEMATODE (Meloidogyne arenaria) was found at Grand Forks, B,C. at planting time in seed stocks of Netted Gem (N.M.). A subsequent field survey of the area confirmed the presence of root-knot nematodes in samples representing 1051282.5 acres surveyed (W.R. Orchard).

RHIZOCTONIA (Pellicularia filamentosa) was recorded in 409/522 fields inspected in B.C., 299-sl. 95-mod. 15-sev. It was most prevalent in the Okanagan, Grand Forks and Pemberton areas (N.M.). It was found in all fields observed in n. Alta. but tuber infection was light compared with 1958. In s. Alta, it was sl. in 67% of the fields compared with 90% in 1958 (R.P.S.). Rhizoctonia was not of importance in Sask. (A.C.) and sl. infections only occurred in most fields in Man. and n.w. Ont. (D.J.P.). A decreased incidence was recorded in s.-w. Ont, (F.J.H.) but an increase was noted in the Barrie district (H.W.W.). Rhizoctonia was fairly general in the Guelph district and remained at about the 1958 level (E,W.A.). It was recorded as 27-sl. 2-mod./58 fields in e. Ont. (E.H.P.). It was found in 100/1,039 fields and in 248 bin lots in Que, and was less prsvalent than in 1958 (B.B.). It was sl. in a few fields in N.B. (C.H. Godwin). Only 1 severely infected lot was seen in N.S. with infection rated as 25% mod-sev. (R.C.L.).

LATE BLIGHT (Phytophthora infestans) was seen in only 2/522 fields inspected in B. C. (N.M.). It was not recorded from the 3 Prairie Provinces (R.P.S., A.C., D.J.P.). Sl. infection was recorded at Upsala and Dorion in n.-w. Ont. (D,J.P.) and it was prevalent in Dufferin Co, where Sebago was the variety chiefly affected (H.W.W.). Blight incidence was very low in the Guelph, Ont. district (E,W. A.) and scattered infections on susceptible varieties were seen in e, Ont. (E.H.P.), In Que. it was reported in 22% of the fields inspected compared with 50% in 1958 (B.B.).

Epidemiology of Potato Late Blight in Quebec - 1959

Henri Généreux

A very light infection of potato late blight was first recorded July 28 on Kennebec in Nicolet Co. The disease appeared later than in previous years, due to the unusually dry, warm weather,that prevailed throughout July. During the first week of August, traces of the disease were recorded in Portnewf and Labelle counties and, by the middle of the month, light infections were observed in Napierville, Chicoutimi and Bonaventure counties.

The prolonged summer drought ceased by the second week of August and warm, humid and rainy conditions persisted throughout the Province, except in the Gasp6 Peninsula where precipitation was below normal. Temperatures averaged from two to four degrees above normal although there were small deficiencies along the St. Lawrence valley below Québec. The conditions which prevailed during August were favorable for sporulation and spread of late blight, Incidentally, towards the end of August, most fields in Labelle county were severely infected, The disease had made little progress in Lake St. John and Chicoutimi districts. Unsprayed fields were severely infected in Portneuf and Wolfe counties, Traces of blight were also recorded in Lennoxville, Ste. Anne de la Pocatiere, St-Arsène, Temiscouta Co., and l' Alverne, Bonaventure Co.

The disease progressed rapidly until September 10, favoured by temperature and humidity. It was reported as being widespread and severe in Labelle, Joliette, Eastern Townships, Portneuf, Lake St. John and Chicoutirni, Kamouraska, Témiscouata and Carleton counties, A few scattered fields were found infected from Rimouski to Gasp6 and in the Baie Comeau region.

A very cold spell between September 14 and 18 brought the mercury down to freezing, killing the foliage in many regions and checking the spread of the disease. Many farmers had also applied vine killers to reduce damage to their potato crop.

By September 15, tuber rot had been found in Laval and Kamouraska counties. At harvest time, tuber rot was sometimes severe in wet and heavy soils whereas only traces were found in sandy soils in the most severely affected regions.

Blight wits first reported in N.B. on July 13 in a 2-acre field of Keswick at Plaster Rock, Victoria Co. A few other isolated cases were reported in late July and early Aug. but extremely dry weather checked the development of the disease. It did not gain any headway until late Aug, following a prolonged period of heavy rainfall which hampered spraying. By Sept, 6 late blight could be found in many fields in the St. John River Valley, Most seed fields and commercial table stock fields were top-killed but tuber rot, in some instances, caused serious losses. Blight was very prevalent in the non-commercial potato growing areas of the province (G.C,R., S,F.C.). A mod, infection was reported on July 6 in N.S. This is a week earlier than it has ever been reported previously. However, it did not become general throughout the province until Aug, 10. after which date it reached serious proportions. It was found in 160/263 fields inspected, Despite a vigorous spraying schedule the losses from late blight in the commercial potato gqowing areas would be between 20 and 30% with some fields a complete loss. Some instances of heavy losses from tuber rot in storage have been reported (R.C.L.). Late blight appeared in P.E.I. about July 15 and caused considerable damage in inadequately sprayed fields (G.C.R.).

Distribution by Provinces of Physiologic Races of Phytophthora infestans in Capada in 1959

K.M. Graham

During the fall of 1959, 113 samples of blight-infected potato tubers and tomato fruits were received from commercial fields and National Potato Trial plots located in five provinces, A summary of the races received is given in Table 11.

Table 11 Determinations of Races of P. infestans in 1959

Race	N.S.	N.B.	P.E.I.	Que.	B.C.	Total
1	6	-	7	-	-	13
3	-	-	-	-	2	2
4	12	6	17	21	1	57
1 + 4*	1	1	1	-	5	8
1.4	3	14	1	9	-	27
1.3.4	1	-	1	-	-	2
1.2.3.4	-	-	-	2	-	2
1.2.3.4.5	-	-	-	1	1	2
Total	23	21	27	33	9	113

* Indicates a mixture of races 1 and 4

Of especial interest is the occurrence of Race 3 for the first time in material received from British Columbia, and the appearance of *Race* 1.2.3.4.5. in British Columbia and Quebec. Race *3* occurred on three seedlings numbered 3425-11, 3426-29 and F5563 in a National Potato Trial located at Agassiz, B.C., while Race 1.2.3.4.5 occurred on seedling 3426-1 at Agassiz and on the variety Manota at Ste, Anne de la Pocatiere, Que.

Occasionally, races more highly specialized than 0 and 4 were determined in commercial varieties lacking genes for resistance. This is shown in Table 12.

Table 12 Races Determined in Major Commercial Varieties in 1959

Variety	No. ,of determinations of Race: 4	1	1 t 4*	1.4,	1.3.4
Irish Cobbler	6	-	1	-	-
Sebago	3	-	-	-	-
Katahdin	3	1	-	2	-
Fundy **	-	1	-	3	-
Avon **	-	1	-	1	-
Kennebec **	-	6	-	2	-
Green Mountain	12	-	-	1	1
Keswick **	-	1	-	6	-
Netted Gem	2	1	-	1	1
Red Pontiac	1	-	1	1	-

** Variety containing 1 or more genes for'resistance to blight.

LEAK (Pythium ultimum) caused losses in the Grand **Forks,** B. C. district. It was **also** found in 1 field on Vancouver Island (N. M.). Trace infections were seen in a **5-acre** field of Green Mountain and in a planting of Teton at Ste. Anne de la Pocatiere, Que, (H.G.).

POWDERY SCAB (Spongospora subterranea) was reported in a few bins in the lower St. Lawrence valley in Que. (B.B.), and caused a 15% infection in Bliss Triumph at Scott's Bay, Kings Co., N. S. (R. C. L.).

COMMON SCAB (Streptomyces scabies) was generally light in B.C. but caused some losses in white-skinned varieties, particularly in the Okanagan Valley (N. M.). In n. Alta. infections were less heavy than in 1958, but caused the down-grading of some stocks of Warba. Some early varieties showed moderate infections in s. Alta. (R.P.S.). Sl. infections were seen in Sask. (R.J.L.) with 1 severe infection at Donwell (T. C. Vanterpool). Sl. -mod infections occurred on early varieties near Winkles, Man. (D. J.P.). Deep scab lesions were seen in north Simcoe Co., Ont. (H. W. W,) and light infections were general in s.w. Ont. (F,J.H.). Scab incidence, though widespread in the Guelph, Ont, district, was 5-10% below that of 1958. Serious damage was encountered in only a few cases.

Throughout the area damage ranged from sl.-20% (E.W.A,). It was prevalent in light, sandy soils in e. Ont. (E.H.P.). In Que., scab incidence was at about the 1958 level. Infections were 284-sl. 12-mod. 14-sev./1,039 fields inspected. Some sev. infections were as high as 25-60% (B.B.). Scab incidence in N.B. was lower than in the past 2 years (C.H.G.), and it was also generally low in N.S. where only 1 sev. infection was seen (R.C.L.). A moderate level of scab was encountered in P.E.I. (G.C.R.).

JELLY END ROT (various fungi). Specimens from the market in Quebec City, Que. yielded Whizoctonia and Fusarium spp. (D. Leblond).

LEAF' ROLL (virus) reached a serious level in B.C. in both seed and table-stock fields, In seed fields it was rated 92-tr. 9-sl. 18-mod. 103-sev./522 inspected. The highest levels were recorded in the Lower Mainland, Lulu and Sea Islands and in the Okanagan Valley. The variety Netted Gem was the most seriously affected since it is particularly susceptible to net necrosis due to current season infection, Due mainly to leaf roll, no Netted Gem potatoes were certified in the Fraser Valley and a large part of the acreage in the North Okanagan was rejected. Heavy losses were experienced by table-stock growers, The presence of necrosis caused the downgrading of affected stocks from Canada No, 1 to No, 2. at a price differential of $12.50 per ton, Based on the 5,665 tons of potatoes sold up to Nov. 30, leaf roll necrosis was responsible for the loss of $20, 823. Losses will be even heavier since large quantities of Netted Gem were still on hand at this date (N.M.).

Leaf roll incidence also rose sharply in Alta. It caused the reduction in grade from Foundation to Certified of 100 acres in n. Alta, and was found in 571154 fields in s. Alta, (R.P.S.). Approximately twice as many Sask. fields, compared to 1958, were infected (A.C.). Six fields were rejected in Man. (D.J.P.). It was present in 150/297 fields inspected in the Barrie district causing the rejection of 13 (H.W.W.). Its incidence in s.-w. Ont, and the Guelph district was less than in 1958 (F.J.H., E.W.A.), and 3/58 fields in e. Ont. were rejected (E.H.P.). Leaf roll was found in 228/1,039 Que. fields (B.B.) and was at a low level in N.B. and P.E.I. (C.H.G., G.C.R.), It was found in 128/263 fields in N.S. and was considerably more prevalent than in 1958. Three fields were rejected (R.C.L.).

MOSAIC (virus) caused the rejection of seed fields in all provinces but Sask. and Alta. but its incidence was much lower than in 1958. It was responsible for 5.5% of the total rejections as compared with 15.7% the previous year, A few of the representative reports are given below (ID.W.C.).

It was 18-tr. 3-sl, 1-mod. 1-sev./522 fields inspected in B.C. The Lower Mainland had the highest incidence (N.M.). Mosaic increased slightly in prevalence in the Guelph district, causing the rejection of 1 field and the reduction in grade of another (E.W.A.). Two fields were rejected in e. Ont. (E.H.P.). It was found in 414/1,039 Que. fields and was responsible for the

rejection of 28. This represents a considerable decrease from the 1958 level (B.B.). Ten fields, mainly Green Mountain and Keswick were rejected in N.B. (C.H.G.). Mosaic continues to be the most serious virus disease problem in potatoes in N.S. It was found in 140/263 fields and caused the rejection of 3 (R.C.L.).

PURPLE TOP (virus) was found in 26% of the fields inspected in n. Alta., principally in the variety Warba and was tr. in 4.5% of the s. Alta, seed fields (R.P.S.). Sl. infections were seen at Lethbridge and Taber, Alta. (E.J. Hawn), Trace infections were encountered in Sask. (R.J. Ledingham), It continues to be a problem in the Algoma and Sudbury areas in Ont, (H.W.W.). In Que., sl. infections were seen in 3 fields (B.B.), and it was tr. in plots at Ste. Anne de la Pocatiere (R.O. Lachance). Trace infections occurred in N.B., N.S. and P.E.I. (C. H.G., R.C.L., G.C.R.).

SPINDLE TUBER (virus) is becoming more prevalent in the Barrie, Ont. district (H.W.W.). A few affected plants of the varieties Cherokee and Kennebec were found in the Strathroy and Melbourne districts of s.w. Ont. (F.J.H.). It caused the rejection of 2 fields in Que. (B.B.). The incidence of spindle tuber was much greater in N.B. than in 1958. Fourteen fields, principally of Kennebec and Netted Gem, were rejected (C.H.G.). It also appears to increasing in N.S. in Kennebec (R.C.L.) and in P.E.I. (G.C.R.).

WITCHES BROOM (virus) was 17-tr. 1-sl. 1-sev./522 B.C. fields (N.M.), and occurred in tr. amounts in n. Alta. (R.P.S.).

GIANT HILL occurred in 17% of the fields inspected in s. Alta. The 1958 total was 43% (R.P.S.). It was seen in a few fields in the northern part of the Barrie, Ont. district (H.W.W,) and as tr. amounts in a few fields in N.S., mostly in Green Mountain and Netted Gem (R.C.L.).

HOLLOW HEART (physiologic) occurred in 20% of the larger tubers of Kennebec in s.e. B.C, (N.M.). It was very common in 1959 in Que. In some lots as many as 40% of the tubers were affected (B.B.).

FROST caused slight to moderate damage in unharvested potato crops in Sask. (R.J.L.). Damage in Ont. was restricted to Ontario, Northumberland and Durham counties (E.W.A.), Frost injury was seen in 22% of the bin lots inspected in Que. Losses ran as high as 25-30% in some lots (B.B.).

STEM-END BROWNING (physiologic) was observed in a few bin lots of Green Mountain, Katahdin, Kennebec and Sebago in Que. (B.B.).

RADISH

LEAF SPOT (Alternaria raphani). The foliage of one greenhouse crop in Essex Co,, Ont. was heavily infected (C. D. McKeen).

CROWN AND ROOT ROT (Rhizoctonia solani). A moderate infection was recorded at Ste. Fog, Que. (D, Leblond).

RHUBARB

RED LEAF (cause unknown) was seen in a home garden in Saskatoon, Sask. (T. C. Vanterpool). It was also found in garden plantings in Taber, Milk River and Lethbridge, Alta. (E. J. Hawn).

SPINACH

DAMPING OFF (Rhiooctonia solani). A 5-acre field in the Erieau Marsh near Blenheim, Ont. was killed early in May. Destruction of young plants was most severe on the dry knolls, Several plantings made in Aug, and early Sept. at Kingsville, Ont. were destroyed, High temperatures favored the progress of the disease (C, D. McKeen).

SQUASH

STORAGE ROT (various fungi), Rhizopus sp. caused the loss of 25% of a lot of squash stored at Norton, Kings Co., N, S. Infection was occurring through the stems which had not thoroughly dried out, Botrytis cinerea and Cladosporium sp. were responsible for a moderate amount of rot of immature squash in storage at Berwick, N. S. (K. A. Harrison).

STORAGE BREAKDOWN (physiologic). A breakdown of epidermal and parenchyma tissue occurred in 7000 bu, of Butternut squash in s.-w. Ont, after 3 1/2 months in cool storage, Bacteria were found in the tissues and breakdown developed rapidly when the squash were removed to a higher temperature. Squash can normally be held in storage' for 5-6 months before breakdown occurs.. High summer temperatures may have predisposed the crop to early storage breakdown (C. D, McKeen).

SWEET CORN

EAR ROT (Fusarium culmorum). This fungus, usually confined to the roots and stems, had spread to ears at Agassiz, B. C. (M. J. Pratt).

SMUT (Ustilago maydis) was observed at the Provincial Plant Protection Station, Ste. Foy, Que. Specimens were also received for identification from 7 places in 6 counties; Compton, Beauce, Dorchester, Rimouski, Temiscouata and Bonavanture, between Sept, 1 and 21. It was more common than usual in 1959 (D, Leblond). It was also common in Kamouraska Co,, Que. (R. O. Lachance). Trace amounts were found in many areas of New Brunswick (S. R. Colpitts).

SEED ROT (various fungi). June plantings of corn in N. B. suffered tr. -40% damage because of cold, wet weather (S. R. C.).

SWEDE TURNIP

CROWN GALL (Agrobacterium tumefaciens) was identified on a single specimen from a storage warehouse in s. Alta, (E. J. Hawn).

GRAY MOLD (Botrytis cinerea) caused 2% loss in stored roots at Grand Pre, N. S. (K. A. Harrison).

SOFT ROT (Erwinia carotovora) was reported from Kings, Cumberland, Pictou and Cape Breton counties, N. S. It was much more prevalent than usual (K. A. H.).

CLUB ROOT (Plasmodiophora brassicae) was light in a 2-acre field at St. Remi, Napierville Co. and 10% in a 10-acre field at St. Sulpice, L' Assomption Co, , Que. (R. Crête).

SKIN ROT (Rhizoctonia solani). Severe infections developed in April in roots in storage at Grand Pre, Kings Co,, N.S. Twenty % of the roots were infected. A field of Laurentian swedes at Vernon Mines, Kings Co., was 100% infected when lifted. Skin rot rendered the crop uafit for table use, This disease is becoming more troublesome each year (K.A. H.).

STORAGE ROT (Sclerotinia sclerotiorum). Infected specimens were received, during the winter, from Levis and Champigny, Que. (D. Leblond). A trace amount was seen in stored Laurentian roots at Grand Pre, N.S. (K. A. H.).

SCAB (Streptomyces scabies) affected about 3% of the roots in a 3-acre field at Oromocto, N. B. but did not impair the market value (S, R. Colpitts), Slight infections were noted in Prince Co. , P. E. I, (J. E. Campbell).

BROWN HEART (Boron deficiency) was recorded from Quebec City, Ange Gardien, Montmorency Co. and Cookshire, Compton Co,, Que. (D, L.).

TOMATO

EARLY BLIGHT (Alternaria solani), Moderate damage was caused by a 75% infection at Alberni, B.C. There was a high incidence of foliar infection accompanied by wilt and leaf-drop symptoms. Some fruit infection occurred resulting in dark, sunken lesions at the stem end (W. R. Orchard). It was slight in both the early basket crop and canning crop in Essex Co., Ont. (C. D. McKeen). Incidence was very high in the Oromocto, N. B. area. Complete defoliation resulted in many fields, Damage from this disease was estimated to be greater than that from late blight (S. R. Colpitts). Early blight in Kings Co., N.S. was kept at a low level by the frequent application of fungicides (K. A. Harrison),

NAIL HEAD SPOT (Alternaria tomato) was seen in Toronto, Ont. on tomatoes from Mexico (J.F. Bradbury).

GRAY MOLD ROT (Botrytis cinerea) developed in growth cracks at Oromocto, N.B. (S.R.C.).

LEAF MOLD (Cladosporium fulvum) was prevalent in s.w. Ont. and caused extensive foliage destruction in plastic greenhouses where high humidities prevailed during the late spring. It also caused serious foliage loss in susceptible varieties grown as fall greenhouse crops where artificial heat was not supplied soon enough (C, D. McK.). A mod. infection occurred in April in a greenhouse crop at Beamsville, Ont, (G.C. Chamberlain). A 20% infection caused mod. damage at Ste. Anne de la Pocatiere, Que. (L. J. Coulombe).

ANTHWACNOSE (Colletotrichum atramentarium). Incidence of anthracnose, late in the harvesting season in s.w. Ont. rose to such a level as to cause appreciable rejections of tomatoes at canning factories (C. D. McK.). Trace infections were seen on the variety Asgrow at Ste. Foy, Que. (D. Leblond). It caused mod. damage on Bounty at Ste, Anne de la Pocatiere, Que, (L. J.C.), and was tr. -3% at Oromocto, N.B. (S.R.C.). Infection occurred late in the season in Kings Co., N.S. and reached a level of 10% (K.A.H.).

BACTERIAL CANKER (Corynebacterium michiganense) was widespread in plantings in the Okanagan Valley, B.C. in 1959 (G.E. Wooliams). Canker was disgnosed on specimens from the Brooks and Taber areas of s. Alta. (E.J. Hawn). An extremely heavy infection caused a total loss of the crop in a 5-acre field of Bounty near Watford, Ont, The symptoms in the early stages were indistinguishable from those of virus streak. However, inoculation experiments established the identity of the disease. Trace infections were seen in other varieties in adjacent fields (B.H. McNeill).

ROOT-KNOT NEMATODE (Meloidogyne incognita). A moderate infection occurred in the University greenhouses, Vancouver, B.C. (W.R.O.).

PHOMA ROT (P. destructiva) was moderate in intensity in the Quebec City area at the end of the season (D.L.).

LATE BLIGHT (Phytophthora infestans). Moderate infections developed in the Quebec City area late in the growing season (D.L.). Late blight was sev. at St. Roch, L'Islet Co. (L.J.C.), and mod. at Ste, Anne de la Pocatiere late in the season (H, Genereux). Unsprayed fields in the St. John River valley N.B. were heavily infected (S.R.C.), and unprotected plantings in Kings Co., N.S. were 75% defoliated (K, A. H,).

SCLEROTINIA ROT (S. sclerotiorum) affected a few plants in a field at Kentville, N.S. (K. A, H.).

WILT (Verticillium spp.). V. dahliae was found affecting plantings throughout the Okanagan Valley, B.C. (G.E.W.). V. albo-atrum infection was sev. in many crdps planted for the early basket trade and wilt incidence was high in several canning crops in s.-w. Ont. Considerable evidence of differences in resistance was noted. Trellis 22, a variety grown on stakes, was found to be highly susceptible (C. D, McK.).

BACTERIAL SPOT (Xaqthomonas vesicatoria) was found in canning crops in Essex and Kent counties, Ont. Contaminated seed proved to be the source of infection (C.D. McK.).

BLOTCHY RIPENING (virus), A severe outbreak occurred in the variety Truck Queen at Falmouth, N.S. Growth was lush and a heavy mosaic infection was present (K.A.H.).

BROWN WALL (virus) was prevalent in several fall greenhouse crops and in staked varieties at Leamington, Ont, (C.D. McK.).

MOSAIC (virus) was present throughout the Okanagan Valley, B.C. in both field and greenhouse crops (C.E. W.). A few canning erbps at Harrow, Ont. suffered heavily from infection with tobacco mosaic virus. Other crops in the district were infected with potato virus X, the virus being transmitted from potatoes by cultivating machinery (C,D. McK.). Mosaic infection was 25-40% causing moderate stunting and spindly tip-growth in a large greenhouse at St. Catharines, Ont. (G,C.C.). Greenhouse crops at Falmouth and Kingston, N, S. were 100% infected (K. A. H.).

STREAK (virus) was found extensively in tomato fields at Vernon, B.C. (G.E.W.). Double-virus streak was generally prevalent in canning crops, regardless of variety, in Halton and Wentworth counties, Ont. Infection was as high as 50% in some fields (B.H. McN.). Infection was 20% in Waltham Forcing at Truro, N.S. (K.A.H.).

BLOSSOM-END ROT was serious in a few instances in Sask. and most gardens showed some amount of the disorder (R.J. Ledingham). It was very serious in July and August at Ste, Foy, Que. Specimens were also received from Beauce and Bellechasse counties (D,L.). A few slight cases were seen in Kings Co., N. S. (K.A.H.).

CATFACE was prevalent in June in N.B., due probably to the cool, damp weather (S.R.C.).

GROWTH CRACKS appeared in crops in the Oromocto, N.B. district in Aug. Heavy rains had followed a dry period in July (S.R.C.).

CHEMICAL INJURY. Drift of 2,4-D from other crops caused extensive crop losses in several commercial tomato fields at Vernon, B.C. (G. E. W.). The same chemical, applied to a nearby grain field, caused a moderate amount of twisting of leaves and narrowing of leaf blades in a tomato field at Woodside, Kings Co., N.S. (K.A.H.).

Storage Diseases of Tomatoes in Nova Scotia in 1959

C. L. Lockhart

A survey was made of the organisms causing rots of tomato, variety Quebec #13 in controlled atmosphere cold storage in Nova Scotia, For this purpose infected tomatoes were collected for laboratory examination and/or counts were made of the rots as they were removed from storage fram October to December 1959. A total of 608 isolations were made. The results df the survey are given in Table 13.

Table 13 Organisms isolated and the percent of tomato rots as averages for 1959.

Organism	Controlled atmosphere	Control
Phoma estructiva	23.0	40.0
Alternaria tenuis	19.1	20.4
Fusarium oxysporum Fusarium avenaceum	3.2 (61.0*)	0.0(70.0)*
Botrytis cinerea	13.7	8.5
Alternaria solani	0.1	3.3
Colletotaichum atramentarium	0.4	1.2
Penicillium sp.	1.8	5.4
Aspergillus sp.	1.6	0.0
Mucor sp.	6.2	0.0
Macrosporium sp.	0.0	1.5
Pullularia pullulans	0.0	8.3
Unidentified fungi	11.0	7.0
Bacteria	1.3	6.2

(*) represents counts of Fusarium found overgrown mainly as secondary rots.