III. DISEASES OF VEGETABLE AND FIELD CROPS

ASPARAGUS

Overwintered stalks of asparagus were found bearing sclerotia of Botrytis cinerea on their surface at Waterville, N.S. on April 30. (J. F. Hockey)

RUST (Puccinia Asparagi). A moderate general infection was observed in one field on Ile Bizard, Que., on Sept. 30. (E. Lavallee)

FASCIATION (non-parasitic). An occasional stem was affected at Morden, Man.

BEAN

ANTHRACNOSE (Colletotrichum Lindemuthianum). A slight infection was found at Gwynne, Alta. (A. W. Henry). The disease was generally slight to medium at Brandon, Man., but it was severe on Plentiful; infection was slight at Morden and a trace at Winnipeg.

Anthracnose and bacterial blight (q.v.) were very severe in the Montreal district, Que., on Brittle Wax and other varieties. In many fields, the crop was a complete loss. The severity of infection varied with the quality of the seed (E. Lavallee). The disease was common in York, Sunbury, and Queens Counties, N.B., but the damage was slight (D. D. Dolan). A moderate infection was seen at Beaver River, N.S., and severely diseased specimens were brought to the Laboratory at Charlottetown, P.E.I.

ROOT ROT (Fusarium spp.). A slight infection was found in one field out of 14 inspected in the Lethbridge district, Alta. (S. B. Clay). Fusarium Solani and F. Scirpi var. acuminatum were associated with a root rot of beans at Medora, Man. (W. L. Gordon)

HALO BLIGHT (Phytomonas medicaginis var. phaseolicola). A very light infection was found on the leaves and stems only this year at Vernon, B.C. Field diagnosis was confirmed by a microscopic examination (G. E. Woolliams). A slight infection was observed in late July in 4 fields in Alta., and in the varietal plots at Lethbridge; the disease increased greatly later in the season. Severe infections were seen at Edmonton, Olds, and Grande Prairie and a moderate outbreak at Beaverlodge.

In a large garden patch at London, Ont., there were several infection areas on July 11; the disease was spreading quite rapidly and may have caused severe damage to the whole planting. It was also heavy in a field at Weston. (J. K. Richardson)

BACTERIAL BLIGHT (Phytomonas phaseoli). A trace to slight infection was found in 8 plantings mostly in the Lethbridge district, Alta., and in the plots at Lacombe. The disease was severe in many towns in Sask. Severe infections were seen at Henribourg and Melfort (H. W. Mead). In small test plots at Saskatoon, many plants of Dark Red Kidney were dead, over 75% of the leaf surface was destroyed on the remaining plants and bacteria were oozing from the few pods present, by early August; plots of other varieties showed varying amounts of leaf injury, the best being only very slightly infected. (T. C. Vanterpool)

Bacterial blight was in general severe at Brandon and Morden, Man.; it was also severe on Round Pod Kidney and other varieties, but the infection was very slight on Altoba and Rainy River. P. phaseoli only was isolated this year. (W. A. F. Hagborg)

As already reported above, bacterial blight was severe in the Montreal district, Que. Seven fields of Brittle Wax being grown for seed, were sown with seed from a field having traces of bacterial blight and anthracnose in 1939. Upon inspection, four showed only traces of disease, while in three bacterial blight infection was 2, 10, and 15% respectively. Another field sown with seed rigorously selected from healthy plants, the plants were absolutely free from disease in spite of a very unfavourable season. (E. Lavallee)

Bacterial blight was widespread in York and Westmoreland Counties, N.B.; it was more prevalent in hollows than on the tops of hills. (D. D. Dolan)

ROOT and STEM ROT (Rhizoctonia sp.). A slight infection was observed in 2 fields in the Lethbridge district, Alta.

DROP (Sclerotinia sclerotiorum) was severe in one patch in a planting of pole beans at Vernon, B.C. (H. H. Evans)

RUST (Uromyces appendiculatus) was general in a 2-acre field of Blue Lake on Lulu Island, B.C.; the damage was severe (W. Jones). A very severe infection affected a crop of Kentucky Wonder at Yarmouth, N.S. (J. F. Hockey)

MOSAIC (virus). A trace to 2% of the plants were affected in fields in the Okanagan Valley, B.C. (G. E. Woolliams). A trace to a small percentage of plants were affected in 4 fields out of 14 inspected about Lethbridge, Alta. (S. B. Clay)

MOSAIC (Phaseolus virus 1) was common on beans in York, Sunbury, Queens, and Westmoreland Counties, N.B. (D. J. MacLeod). A trace was found in scattered plantings and gardens in N.S. (J. F. Hockey)

BEET

SCAB (Actinomyces scabies) caused severe damage in a small plot at Fredericton, N.B. (D. J. MacLeod)

LEAF SPOT (Cercospora beticola) was general and caused slight damage on the Lower Mainland and Vancouver Island, B.C. A moderate infection was found at Killarney, Man., and a trace at Brandon. This leaf spot caused slight damage in York and Sunbury Counties, N.B., but it was not as prevalent as in 1939 (D. D. Dolan). Heavy infections were seen in the field or on submitted specimens in P.E.I. (R. R. Hurst)

DOWNY MILDEW (Peronospora Schachtii) was general on a row of garden beets at the Farm, Agassiz, B.C. in August; the damage was slight. (W. Jones)

LEAF SPOT (Phoma Betae) was very slight at Agassiz, B.C., in June (W. Jones). A slight infection of leaf spot and root rot was found in a field of steckling Detroit Dark Red at Armstrong; less than 1% of the plants were diseased. (R. Fitzpatrick)

RHIZOCTONIA (R. Solani). A trace was present in a garden at Charlottetown, P.E.I.

RUST (Uromyces Betae) was moderately heavy in a garden at Sidney, B.C.

ROOT ROT (cause unknown) was severe on garden beets being grown for seed at Milner, Matsqui, Agassiz, and Keating, B.C.; the stand was invariably poor. (W. Jones)

BROCCOLI

BLACK LEAF SPOT (Alternaria Brassicae) was slight on plants being grown for seed at Agassiz, B.C.

BROAD BEAN

LEAF SPOT (Botrytis cinerea). A few spots were seen in the plots at Agassiz, B.C.

MOSAIC (virus) affected 1% of the plants in a small plot at Sidney, B.C., and 20% in a field plot at Agassiz.

CABBAGE

BLACK LEG (Phoma lingam) was general and severe on Danish Baldhead being grown for seed and a trace occurred on Copenhagen Market at Keating, B.C. (W. Jones)

BLACK ROT (Phytomonas campestris) was present in almost all plantings of early cabbage and cauliflower in the Leamington district, Ont.; the damage was moderate. (L. W. Koch)

CLUB ROOT (Plasmodiophora Brassicae) was general and caused moderate to severe damage on truck farms about Victoria and Vancouver, B.C. (W. Jones). The disease was very destructive in many fields in Laval and Jacques Cartier Counties, Que.; it was also observed in Vercheres and Chambly Counties (E. Lavallee). Affected plants were seen in a store, Charlottetown, P.E.I.

FASCIATION (?genetic). On a few plants grown for seed at Keating, B.C., the stalks of the inflorescence were flattened with small tufted foliar growth along them. (W. Jones)

CARROT

SOFT ROT (Erwinia carotovora) caused moderate loss in a seed crop at Agassiz, B.C., in June (W. Jones). Severe cases of soft rot were reported in carrots in storage in the Montreal district, Que. (E. Lavallee)

LEAF BLIGHT (Macrosporium Carotae). A slight infection was observed in a seed crop at Agassiz, B.C. (W. Jones). Some leaves on most plants were affected at Grand Forks. (H. R. McLarty)

BACTERIAL BLIGHT (Phytomonas carotae). A light infection was observed at Grand Forks, B.C. (H. R. McLarty). Infection was slight on all varieties at Morden, Man., and general and moderate, being especially heavy on Chantenay, at Brandon.

VIOLET ROOT ROT (Rhizoctonia Crocorum) was found in a plot of carrots at Comox, B.C. in January, 1941, by E. R. Bewell. The disease was confined to one end of the plot. The land was new, the carrots being the second crop. (W. Jones)

YELLOWS (Callistephus virus 1). A moderate infection was found at Brandon, Man. Yellows was widespread on carrot in York, Sunbury, Queens, and Westmoreland Counties, N.B. Infection varied from 1-15% of the plants. In a field test for resistance none of 14 varieties showed any resistance. Yellows was found on several perennial weeds growing near carrot fields. These weeds serve as foci from which the virus is spread to carrots and other susceptible crops. Macrosteles divisus, the vector, was not as active as in 1938 and 1939. Dr. M. B. Linn (Cornell Univ. Agr. Exp. Sta. Bull. 742. 1940) has recently shown the importance of affected perennial weeds as a source of virus for cultivated crops. (D. J. MacLeod)

Yellows was found affecting 7 to 25% of the plants in plantings in Annapolis Co., N.S., while some fields showed up to 40% infection in Kings County. The disease is causing appreciable economic loss. Several plants of Polygonum Convolvulus in or adjacent to carrot fields were affected by yellows, while it was common on Leontodon autumnalis, Chrysanthemum leucantheum near carrot fields (J. F. Hockey). Yellows showed up in several gardens at Charlottetown, P.E.I.

CAULIFLOWER

BLACK LEAF SPOT (Alternaria Brassicae) was general on the leaves of Early Snowball, Danish Baldhead, and Early Export being grown for seed at Parksville and Victoria, B.C. (W. Jones)

SOFT ROT (Erwinia carotovora) caused moderate damage to a seed crop of Early Snowball at Victoria, B.C. Soft rot caused moderate damage to cabbage and cauliflower in Essex Co., Ont. In one field a 2% infection at harvest resulted in a loss of 70% of the cauliflower, when the heads were picked wet and stored in crates for several days. (L. W. Koch)

CLUB ROOT (Plasmodiophora Brassicae) was general and the damage was severe about Victoria and Vancouver, B.C. (W. Jones). Club root is a serious problem in Laval and Jacques Cartier Counties, Que., on both cauliflower and cabbage. Besides some heavily infested fields, there is scarcely a field which does not show some diseased plants.

WIRE STEM (Rhizoctonia Solani) was a very serious disease of seed beds in the Montreal district, Que. Frequently 25% or even 50% of the seedlings have to be discarded. Sterilization of soil by formalin gave promising results in control. (E. Lavallee)

MOSAIC (virus). A few plants of Early Snowball were affected in a seed crop at Victoria, B.C.

BROWN HEART (boron deficiency) affected about 10% of the cauliflower in a field in York Co., N.B. (D. D. Dolan)

CELERY

EARLY BLIGHT (Cercospora Apii) was general on July 30 in a 3-acre planting in Lincoln Co., Ont. The leaves were severely spotted, and some of the older ones were almost dead. While weekly applications of spray would reduce the loss, the crop had already received a serious set back (J. K. Richardson). A slight infection was observed in a bed in June at Abord à Plouffe, Que. (E. Lavallee)

DAMPING OFF (Pythium, etc.) caused serious damage to 2 lots of celery seedlings grown in hot beds in Laval Co., Que. (E. Lavallee)

LATE BLIGHT (Septoria Apii-graveolentis) was found on all crates of celery examined on the Vancouver market, which indicated that the disease was widely distributed on Vancouver Island and the Lower Mainland, B.C.; it caused moderate damage in a ½-acre field at Cloverdale, B.C. The disease was severe in a field at Kelowna according to Mr. Ben Hay, who collected material for examination. This is the first record of late blight in the Okanagan valley; it was probably introduced on the seed. (H. R. McLarty and G. E. Woolliams)

A moderate infection was observed at London, Ont., on July 10; this was a rather severe infection for the time of year, and it was not being well controlled, although the planting was being dusted regularly (J. K. Richardson). Late blight was less severe than for several years in the Montreal district, Que. However, slight to moderate infections occurred in some fields (E. Lavallee). Late blight (S. Apii)was observed in one field in York Co., N.B.

STEM CRACKING (boron deficiency). No special survey was made, but a few lots of celery showing cracked stem have been seen on the public market in Montreal, Que. (E. Lavallee). The disease was found to be prevalent in Levis Co., where the boron content of the soil is extremely low, the plants remain small and the heart is affected by a dry rot. (R. Lachance)

BLACK HEART (physiological). About 2% of the plants were affected in one field in York Co., N.B.

CHINESE CABBAGE

CLUB ROOT (Plasmodiophora Brassicae) caused 10-15% damage in Laval Co., Que., in the one observation made. (E. Lavallee)

CUCUMBER

LEAF BLIGHT (Alternaria cucumerina (Ell. & Ev.) Elliott) occurred in sufficient quantity to cause alarm at Ottawa, Ont., but it was checked by the dry weather in late summer (D. B. O. Savile). The disease was moderate in a garden at Charlottetown, P.E.I. (R. R. Hurst)

SCAB (Cladosporium cucumerinum) was noted on cucumbers on the Bonsecours market, Montreal, Que. (E. Lavallee). Scab was absent until late in the season in N.B., when young fruits were severely attacked while many of the mature fruits remained free from disease. In trials at Fredericton, Maine #2 and West Indian Ghurkin were resistant of 29 varieties tested; Maine #2 has also many desirable commercial qualities. (D. D. Dolan)

ANTHRACNOSE (Colletotrichum lagenarium). Numerous crops under glass were damaged in Essex Co., Ont., in April and May; the disease was localized in some greenhouses, while in others it was general. The actual damage varied widely. (L. W. Koch)

BACTERIAL WILT (Erwinia tracheiphila). The damage was severe in the plots of the Horticulture Department of the University, Winnipeg, Man. (W. A. F. Hagborg). Infections were common in the Montreal district, Que., but the disease was not severe (E. Lavallee). Infection was moderate and damage considerable at L'Assomption, Que. Abundant infection, such as this, is to be expected near rivers, where Echinocystis lobata grows abundantly

supplying inoculum and ensuring a large number of beetles. (D. B. O. Savile)

FOOT ROT. Fusarium Scirpi var. acuminatum and F. oxysporum forma were associated with a foot rot and wilt at Homewood, Man. (W. L. Gordon)

ANGULAR LEAF SPOT (Phytomonas angulata) was not as prevalent in York and Kings Counties, N.B., as in 1939; the damage was slight. (D. D. Dolan)

COTTONY LEAK (Pythium sp.) was found in a fruit growing in the Station garden, Summerland, B.C. (M. F. Welch)

STEM and FRUIT ROT (Sclerotinia sclerotiorum). A severe infection was seen in a greenhouse at London, Ont. Numerous lesions were present on the vines and fruit and about 15% of the vines were killed. (J. K. Richardson)

MOSAIC (virus). A ¼ acre plot in Lincoln Co., Ont., was so severely infected that the fruit were all distorted and unsaleable (J. K. Richardson). A few affected plants were seen at Bordeaux, Que. (E. Lavallee). A trace (2 plants) was infected in a garden in Sunbury Co., N.B. (D. J. MacLeod).

EGG PLANT

EARLY BLIGHT (Alternaria Solani) was observed at Charlottetown, P.E.I., and FRUIT ROT (Phomopsis vexans) at Macdonald College, Que.

GARDEN CRESS

ROOT ROT (Rhizoctonia Solani) was causing considerable damage in a greenhouse in London, Ont. on Dec. 3, 1939. The soil was probably improperly sterilized. (J. K. Richardson)

HOP

DOWNY MILDEW (Pseudoperonospora Humuli). A severe infection occurred early in the season in the hop yards at Sardis, Agassiz, and Sumas, B.C. on Clusters and Golding. All symptom phases were present, viz. basal spike (shoot) leaf, lateral and terminal growth. The disease was checked owing to dry weather later in the season and the efficient application of spray; the cones escaped infection. (W. Jones)

CHLOROSIS (virus) was more general than usual in the hop areas

in B.C. and the symptoms were more pronounced in Fuggles. A slight infection was also present in Golding. (W. Jones)

JERUSALEM ARTICHOKE

RUST (Puccinia Helianthi) was general and the infection moderate at Waterville, N.S. (J. F. Hockey)

KALE

DOWNY MILDEW (Peronospora parasitica) was general, but the damage was slight at the Station, Sidney, B.C.

LETTUCE

ROT (bacterial) affected about 2% of the plants of New York 88 in a seed crop at Streetsville, Ont. The infection spread from the leaf margins into the head, finally rotting the hearts (J. K. Richardson). A soft rot caused slight damage to head lettuce in two gardens at Saskatoon, Sask. (T. C. Vanterpool)

DOWNY MILDEW (Bremia Lactucae) was severe causing much damage to the seed crop at Parksville, Victoria, and Agassiz, B.C. The disease was general on most of the outer leaves at Streetsville, Ont.; the loss was not severe as the crop was being grown for seed (J. K. Richardson). Downy mildew was general and stunted the growth, causing a 20% loss in a greenhouse at Dartmouth, N.S.

RUST (Puccinia patruelis) was very common on cultivated lettuce at Clearwater Bay, Lake of the Woods, Ont.

DROP (Sclerotinia sclerotiorum) affected less than 1.0% of the heads in a planting in the Grand Forks district, B.C. Infection was slight to moderate in several gardens at Edmonton and in a varietal test at Olds; it was moderate to severe in a test at Lacombe. Drop affected about 10% of the plants being grown for seed in the Horticulture plots, Experimental Farm, Ottawa, Ont.; about 1% were also affected by soft rot (Erwinia carotovora). Severe damage was reported in a greenhouse crop at London, Ont.; about 0.5% of the plants were affected in a seed crop at Streetsville.

BIG VEIN (virus). About 40% of the plants were affected in a field at Burlington, Ont. This is, as far as I am aware, a new virus disease for Ontario. Little is known except that it is of virus nature and may cause serious loss to the grower (J. E. Howitt). For a description of the disease see I. C. Jagger and N. Chandler (Phytopath. 24:1253-1256. 1934).

LIMA BEAN

LEAF SPOT (Phytomonas viridifaciens) was general but light in a test row at Vineland, Ont. (J. K. Richardson)

MELON

LEAF SPOT (Cladosporium cucumerinum) reached epidemic proportions in the Leamington district, Ont., as in former years, two weeks after harvesting began, and caused severe damage. Rain was frequent and spray material was quickly washed off. (L. W. Koch)

BACTERIAL WILT (Erwinia tracheiphila) caused severe damage in the Horticulture plots, at the University, Winnipeg, Man. Slight infections occurred in Essex Co., Ont.

LEAF SPOT (Septoria Cucurbitacearum) was moderate on young plants in the field on June 17 at Ottawa, Ont.; no disease was noted when they were set out. (H. N. Racicot and D. B. O. Savile)

MUSHROOM

BUBBLES (Mycogone perniciosa) was general in a bed of mushrooms at Mimico, Ont.; the crop was a loss. (G. C. Chamberlain)

ONION

NECK ROT (Botrytis Allii) was very slight on onions in storage in December, 1940, in the Okanagan Valley, B.C. (G. E. Woolliams). Neck rot and soft rot (q.v.) caused considerable loss in Sweet Spanish and other types in Essex Co., Ont., particularly in the Leamington marsh. (L. W. Koch)

SOFT ROT (Erwinia carotovora) was particularly destructive to Sweet Spanish onions in Essex Co., Ont. In all crops examined, excepting one, soft rot was present and usually neck rot also at the time of harvesting. In one field, the loss was 50-100 bu. in 8 acres of crop. (L. W. Koch)

FUSARIUM BULB-ROT (F. oxysporum) is present in most fields about Vernon, Kelowna, and intermediate points, B.C.; infection may be as much as 25% or more, while the average loss is about 5%. (G. E. Woolliams)

LEAF BLIGHT (Mycosphaerella allicina (Fr.) Migula) occurred on the older leaves of onions in a planting at Weston, Ont. The perithecia were abundant on the infected leaves and were at times also present on downy mildew lesions. It was also noticed in other districts (J. K.

Richardson). The organism was tentatively identified as Mycosphaerella allicina (Sphaerella allicina Auersw.). (I. L. Conners).

DOWNY MILDEW (Peronospora Schleideniana) was general and caused slight damage on the Lower Mainland and Vancouver Island, B.C. (W. Jones). It was observed in several fields through Ont.; in some patches 40% of the tops were destroyed quite early in the season. (J. E. Howitt). Downy mildew moderately infected a seed crop in St. Jean Co., Que. (E. Lavallee)

BLACK LEAF SPOT (Stemphyllium botryosum) was general and severe on a few rows of onions being grown for seed at Cobble Hill, B.C. (W. Jones). A trace was observed at Morden, Man. (J. E. Machacek).

PURPLE BLOTCH (Macrosporium Porri Ell.). A specimen of this leaf spot collected at Pictou, N.S., Aug. 27, 1931 was recently discovered in the Herbarium. The fungus agreed with the exsiccati Reliquae Farl. 180 and Ell. & Ev. Fungi Columb. 1229. The fungus is really an Alternaria (J. W. Groves and I. L. Conners).

PARSLEY

LEAF SPOT (Septoria Petroselini) was general in one garden at Sidney, B.C. (W. Jones).

PARSNIP

LEAF SPOT (Cercospora pastinacea) was abundant at Ste. Clothilde, Que. (J. G. Coulson and I. H. Crowell).

LEAF SPOT (Ramularia Pastinaceae) was general on crops grown for seed at Keating and in the Fraser Valley, B.C.; the damage was slight to moderate. (W. Jones).

YELLOWS (virus) about 1% of the plants in a garden in York Co., N.B., showed evidence of yellows (D. J. MacLeod). It affected less than 1% of the plants in a 4-acre field in Colchester Co., N.S. (J. F. Hockey).

PEA

LEAF and POD SPOT (Ascochyta Pisi). Infection was a trace to moderate in the varietal plots at Lacombe and Olds, Alta. A moderate infection was observed at Morden, Man. The disease was severe at East Farnham, Que., in 5 acres of Tall Telephone peas for use in the green pod towards the end of the cropping period. (E. Lavallee)

POWDERY MILDEW (Erysiphe Polygoni). Infection was slight to severe

in patches at Morden, Man. A heavy infection was observed on American Wonder in Queens Co., P.E.I.

ROOT ROT (Fusarium spp.). Infection was usually slight on peas at Lacombe, but it was severe on Laxton's Superbe. A light infection was found in a private garden in Saskatoon, Sask. F. oxysporum forma was associated with a root rot of peas at Elkhorn, Man. (W. L. Gordon).

ROOT ROT and BLIGHT (Fusarium spp. and Aphanomyces euteiches). Many complaints were received this summer that fields were being ruined in Ontario. Some fields were inspected in which fully 30% of the vines had been destroyed by this disease complex. In nearly all fields, where it was causing serious trouble, resistant varieties had not been sown. (J. E. Howitt).

DOWNY MILDEW (Peronospora Pisi) was widely distributed in both commercial and seed crops, but the damage was very slight in the Fraser Valley and on Vancouver Island, B.C. (W. Jones). A slight infection, mostly on the lower leaves, was seen at East Farnham, Que. (E. Lavallee).

LEAF SPOT (Septoria flagellifera). Traces were present in the gardens at the University, Winnipeg, Man. (W. L. Gordon). It was fairly conspicuous in a field at Douglas, Ont. This is the first report of S. flagellifera in Eastern Canada. (G. A. Scott and I. L. Conners)

LEAF BLOTCH (Septoria Pisi). Infection was a trace to slight on the varieties at Lacombe and Olds, Alta. The disease was quite common on field peas in the Ottawa Valley, Ont. (G. A. Scott). Leaf blotch was very heavy on Ryders Universal in a trial at Charlottetown, P.E.I.

ROOT GIRDLING (Rhizoctonia Solani). A slight infection occurred on World Record and Thos. Laxton at Winnipeg, Man.

RUST (Uromyces Fabae). A single pustule was found in the University garden, Winnipeg, Man. Rust was heavy in one crop of field peas near Ottawa, Ont. Traces were seen at St. Valerien, Ste. Martine and Oka, Que. (E. Lavallee). At L'Assomption rust was moderate to severe on varieties under test. (D. B. O. Savile)

MOSAIC (virus) was present at Keating and Sidney, B.C.

ROOT ROT (cause unknown) was general in a few seed crops at Keating, B.C.; the damage was slight.

PEPPER

CUCUMBER MOSAIC (virus) was quite severe in sweet and hot peppers in a planting in Lincoln Co., Ont. Although the infection was general and leaf mottling definite, some plants had normal fruit, while on

others the fruit were badly misshapen. (J. K. Richardson)

MOSAIC and STREAK (Solanum virus 1, strain L). A trace was found in a small garden in York Co., N.B. The identity of the virus was established. (D. J. MacLeod)

MOSAIC (Solanum virus 2). A well defined veinal mottle was found on 3 plants in a garden in Fredericton, N.B. The virus was proved by inoculation on standard differentials. (D. J. MacLeod)

POTATO

Mr. L. S. McLaine, Chief of the Plant Protection Division, Production Service, has kindly supplied the tabulations on the extent of the seed potato industry, the acreages of the leading varieties passing inspection, the extent that fields failed to pass inspection, and the average percentage of the diseases - black leg, leaf roll, and mosaic - found in the fields. All fields entered for certification are planted with certified seed.

Table 3 - Seed Potato Certification: Number of Fields and Acres Inspected, 1940.

Province	Number of Fields		Fields Passed %	Number of Acres		Acres Passed %
	Entered	Passed		Entered	Passed	
P.E.I.	5,283	3,551	67.2	24,114	16,222	67.3
N.S.	641	514	80.2	1,494	1,245	83.3
N.B.	3,265	2,479	75.9	16,183	12,668	78.3
Que.	1,161	638	54.9	2,041	922	45.2
Ont.	1,124	783	69.7	2,435	1,735	71.3
Man.	115	98	85.2	194	150	77.3
Sask.	132	111	84.1	239	188	78.7
Alta.	186	157	84.4	243	192	79.0
B.C.	481	345	71.7	1,168	772	66.1
TOTAL	12,388	8,676	70.0	48,111	34,094	70.1

Acres Entered		Acres Passed	
1939	40,286	1939	31,545
1940	48,111	1940	34,094
Increase of 7,825 acres or 19.4%		Increase of 2,549 acres or 8.1%	

The acreage entered for certification surpassed for the third successive year the previous high of 1931, when 38,424 acres were entered. However, the acreage passing inspection only this year surpassed the previous high, also in 1931, when 32,592 acres passed field inspection due to higher percentage of the acreage failing to meet the requirements. There has been a steady increase in the acreage entered and passed since the low year of 1936 when 20,083 acres were entered and 16,739 passed. Mosaic, as usual, was the chief cause of rejection throughout Canada, especially in P.E.I. and Que.

Table 4 - Seed Potato Certification: Acreages Passed by Varieties, 1940.

Variety	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.-Alta.	B.C.	Total
Green Mountain	4,925	79	6,980	797	104	39	70	12,994
Irish Cobbler	10,785	263	576	87	271	112	6	12,100
Katahdin	398	458	3,500	26	766	4	63	5,215
Bliss Triumph	73	328	1,544			9	1	1,955
Netted Gem					8	204	544	756
Chippewa	24	4	43		344	10	1	426
Rural New Yorker					213			213
Early Ohio						67		67
Up-to-Date		56					9	65
Warba		1			27	26	7	61
Other Varieties	17	56	22	15	2	59	71	242
TOTAL	16,222	1,245	12,668	922	1,735	530	772	34,094

Nevertheless, the rejection for leaf roll noteably exceeded those for mosaic in N.B. and Ont. Bacterial ring rot accounted for the rejection of 264 fields in 1940 against 342 the previous year. The prompt rejection of all fields and bins showing the slightest trace of bacterial ring rot has definitely checked the disease for where the premises, machinery, bags, etc. have been carefully disinfected and new seed procured, the disease has not reappeared. Diseased seed, on the other hand, after most careful selection invariably gives a diseased crop, usually with enhanced losses.

Table 5 - Seed Potato Certification: Fields Rejected, 1940

Province	Mosaic	Leaf Roll	Black Leg	Bacterial Ring Rot	Foreign Varieties	Adjacent Diseased Fields	Misc.	Total
P.E.I.	1,050	88	20	16	69	190	299	1,732
N.S.	46	22	1		19	23	16	127
N.B.	206	323	6	121	61	47	22	786
Que.	207	26	39	111	12	105	23	523
Ont.	31	126	18	7	36	50	73	341
Man.			1	8		2	6	17
Sask.	2		6		2		11	21
Alta.	1	4	3	1	2	3	15	29
B.C.	41	17	3		2	24	49	136
TOTAL	1,584	606	97	264	203	444	514	3,712
Rejections as a percentage of fields:								
Entered	12.8	4.9	0.8	2.2	1.6	3.6	4.1	30.0%
Rejected	42.7	16.3	2.7	7.1	5.4	12.0	13.8	100%

Table 6 - Seed Potato Certification: Average Percentage of Disease Found in Fields, 1940.

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	.07	.01	.06	.19	.09	.76	.26	.05	.08
Leaf Roll	.22	.57	1.05	.15	.58	.03	.03	.15	.37
Mosaic	1.21	1.09	.74	1.02	.31		.12	.18	.76
Fields passed (final inspection)									
Black Leg	.07	.01	.03	.07	.04	.42	.01	.02	.03
Leaf Roll	.17	.39	.18	.15	.18	.03	.01	.05	.09
Mosaic	.29	.38	.18	.25	.11			.03	.12

COMMON SCAB (Actinomyces scabies) was reported from across Canada. Scab was even present on most lots of Netted Gem in the Perryvale and Flatbush districts, Alta.; the surface of the tubers was not well netted, which may have permitted an unusual amount of infection. Scab is a problem in the certification of otherwise suitable seed in Sask., where in 23% of the fields that passed inspection, scab was present on 50% or more of the tubers harvested (J. W. Marritt). From Man. eastward the average infection was about 2.0% of the tubers. In Ont., scab was not serious, due probably to abundance of moisture and low soil temperatures. In a hot, dry growing-season over 40,000 bushels of potatoes otherwise suitable for certification have been rejected in Ont. on account of scab (O. W. Lachaine). Scab was of minor importance in N.B., except in 3 fields where lime had been applied in the past (C. H. Godwin). The same was true in N.S.; however, in one field of Netted Gem 90% of the tubers were affected (W. K. McCulloch). Scab was more prevalent in P.E.I. than in 1939; in a few fields all tubers were affected with deep scab (S. G. Peppin). For the first time, rotting has been found following heavy scab infection. (R. R. Hurst)

EARLY BLIGHT (Alternaria Solani) was found in northern Alta.; the damage was slight. A moderate infection was reported at Morden, Man. A slight infection was present in most fields in the Fort William area, Ont., except in one field, where it was severe in the lower part of the field, which, on account of its location was probably covered by fog for a number of hours for several days a week (J. W. Scannell). Early blight was observed in several districts in Que. from Montreal to Ragueneau (B. Baribeau). Slight infections were observed in Carleton and Victoria Counties, N.B. Early blight and drought reduced the yield of early varieties such as Bliss Triumph and Irish Cobbler about 25% in N.S., but the late varieties like Katahdin and Green Mountain were benefited by late rains and produced heavy crops. Little Alternaria rot was found. The disease caused slight to moderate damage in a few fields in P.E.I. One case of tuber rot was found in Irish Cobbler in October.

RHIZOCTONIA (Corticium Solani (Rhizoctonia Solani) caused only slight damage in fields entered for certification in Alta., and the development of sclerotia at bin inspection was small, averaging 5% slight to moderate. Rhizoctonia was present in most fields inspected in Man. but only to a slight degree. However, sclerotia were rather abundant in the tubers at bin inspection. Growers are advised to dig early to reduce the formation of the black scurf. This behaviour of the organism is particularly noticeable in the best potato growing areas in Rhineland, Stanley and Portage la Prairie municipalities.

Little rhizoctonia infection was seen in the field in Que.; average tuber infection was 2.5% in 403 bins inspected. Damping off due to rhizoctonia caused less misses in N.B. than in 1939 when it was prevalent. Infected plants were found in most fields, but the number was not large. Sclerotia were also less abundant on the tubers than in 1939. The potato area in York Co. was almost free from the disease. Rhizoctonia

was reported in 30% of the fields of Irish Cobbler and Bliss Triumph in N.S. and 50% of Katahdin, but the symptoms were milder than usual. It was first reported on July 15 and was fairly common by August 12. The average infection on the tubers was 3.5%, about the same as last year. Many crops were virtually clean, but heavy infections were numerous. One 100-acre field produced only 28 barrels of graded seed per acre instead of the normal yield of 60 to 80 barrels; the loss was largely due to rhizoctonia on the tubers (W. K. McCulloch). Rhizoctonia was less prevalent than usual in P.E.I., although much of the crop was harvested late.

TUBER ROT (Erwinia carotovora). Considerable damage was caused to stored potatoes at Winnipeg, Man., by a soft rot of the tubers during the fall of 1940. Careless handling and storing were responsible. (W. L. Gordon)

BLACK LEG (Erwinia phytophthora). Affected material was received on July 31 from Vallican, B.C. (D. B. O. Savile). The disease was present in 10% of the fields inspected in Alta. and 17% in Sask., but the amounts present were very small. Black leg was unimportant in Ont.; infection was less than half of what it was in 1939. Black leg was unusually prevalent in the Chicoutimi and Lake St. John districts, Que. Of 39 fields rejected out of 1,161 inspected, 21 were in the above districts. The weather was cool and wet in the early season. The disease was of little importance in N.B.; 6 fields were rejected on account of the disease out of 3,265 inspected. Some late infection was reported. Black leg was slightly more prevalent in N.S. than in 1939; it was present in 15 and caused the rejection of one field out of 641 inspected, infections ranging up to 2.6%. Seed treatment has been somewhat neglected due to the low prices for potatoes prevailing for the last 2-3 years. Twenty fields of 1,732 inspected were rejected for black leg in P.E.I., although it was less prevalent than usual.

STEM-END ROT (Fusarium Solani var. eumartii) was not observed this year in Ont. Many growers have obtained new seed. (O. W. Lachaine)

TUBER ROTS (Fusarium spp.). The following species were isolated from rotting tubers at Winnipeg, Man. in 1940: F. caeruleum, F. sambucinum f.6, F. Solani and F. oxysporum. The first two species were the most common (W. L. Gordon). Storage rot caused slight to severe damage in Irish Cobbler and Green Mountain throughout P.E.I., large quantities being destroyed during the winter 1939-40. Fusarium wilt developed in fields planted with affected stock. Isolations from affected tubers and wilted plants were of the identical organism. (R. R. Hurst)

WILT (Fusarium sp.) was present to some extent in Man., but only 3 fields were rejected for wilt as compared to 50 in 1939. The sharp reduction is largely due to the use of new seed, for according to W. L. Gordon the infection may readily come from the soil in the Prairie Provinces (W. J. Scannell). Fusarium wilt was the cause of rejection of 21 fields

in Ont. in 1940 compared to 30 in 1939. Fusarium wilt affected a few fields at St. Pascal and one at Riviere Bleue, Que., but no fields were rejected. A brownish discoloration of the xylem tissues affected 1-2% of Katahdin tubers in some fields around Millville, N.B. (J. L. Howitt). Examination revealed that this vascular necrosis (q.v.) was associated with a Fusarium sp. (F. S. Thatcher).

WILT (Fusarium and Verticillium) was present in 4% of the fields in Alta. and 15% in Sask. The disease appears to be most prevalent in Alta. about Edmonton and Calgary, where 2 fields were rejected; it appears to be increasing in Sask.

PSYLLID YELLOWS (Paratrioza cockerelli) was virtually absent at Medicine Hat, Lethbridge, and Calgary, Alta., in 1940. Only late in the season affected plants were observed here and there in a few fields near Lethbridge and one suspected hill was found at Calgary. Net necrosis of the tuber was associated with the attack by this insect as in previous years. Since pysllid yellows, as originally described, makes no mention of a net necrosis of the tuber, it would seem advisable during further investigation of these troubles to treat them separately (G. B. Sanford). Psyllid yellows was observed in one field entered for certification at the Experimental Farm, Lethbridge, Alta.; not over 5% of tubers were affected by severe necrosis. (J. W. Marritt)

PHOMA ROT (P. tuberosa) was observed in several lots of potatoes in P.E.I. in the spring, 1940. (R. R. Hurst)

BACTERIAL RING ROT (Phytomonas sepedonica). A survey was made in September by the Alberta Department of Agriculture in southern Alberta under conditions favourable for the detection of bacterial ring rot, but complicated by the presence of wilt due to Verticillium (q.v.), Fusarium, or other causes. Bacterial ring rot was found in 89 fields on 71 farms with an estimated acreage of 673.5 acres out of 262 fields examined. In all, 120 fields were judged healthy upon field examination; from the remaining 142, samples were taken and the disease was found upon microscopic examination by L. E. Tyner in 89, as already mentioned. In 1939, ring rot was found on 40 farms amounting to 179.5 acres. The disease is largely concentrated about Lethbridge in 8 contiguous townships embracing the most important potato growing district of Alberta. The other 3 townships centre about Retlaw, Barnwell, and Taber. Field evidence indicated that the use of diseased seed was responsible for its further spread. Serious outbreaks have been traced to uncertified seed, often of an unnamed variety, bought from a neighbour.

The disease has also been spread by the use of contaminated machinery, utensils, storage bins and sacks, and by the lending and borrowing of such equipment. One field at Lethbridge inspected for certification was affected; it was found in table stock on this farm in 1938 and 1939. The disease was also seen once at Medicine Hat.

Bacterial ring rot was found at Estevan, Sask. in a field of Early Ohio being grown for table stock; the seed had come originally from North Dakota. The disease was not found in any fields entered for certification. It was found at 6 points in Man. in 1940. At 5 places the disease had not been reported before, but on one farm at Birds Hill, Man., ring rot was suspected in 1938 and was definitely recognized in 1939. Premises and machinery were disinfected. The seed for 1940 consisted of carefully selected tubers of the varieties in which disease had been found in 1939 and also fresh seed. Nevertheless 6 out of the 7 varieties were diseased when examined in the field. These observations indicate that all potatoes produced on a farm should be disposed of and new seed obtained, as well as premises, machinery, bags, etc., being thoroughly disinfected. The growing of several varieties on a farm also increases the hazard of introducing the disease.

Bacterial ring rot was found in 14 farms in Ont. by the Inspection Service; one farm was in northwestern Ont., four in the Cochrane district, while the remainder were in Timiskaming, Parry Sound and eastward. Most of the fields were planted with certified seed. A study of the individual outbreaks indicate that the use of diseased seed is the commonest way for the disease to be introduced onto a farm. Some outbreaks point to the inoculation of sound seed by contact with contaminated bags, by storage in wholesale houses, where seed and table potatoes are handled by the same men and truck drivers.

Bacterial ring rot was found in 111 fields out of 1,161 entered for certification in Que. in contrast to 130 fields diseased out of 976 in 1939. The amount of disease in affected fields was also less, ranging from 7 to 25%. The disease was about as prevalent as usual in fields planted with table stock. On farms where ring rot was present in 1939 and where disinfection of the premises was made and certified seed used, no disease was present except in a few cases. Where it appeared again, some of last year's potatoes were still on the premises for use on the table during the summer. Certified seed planted in tuber units and in which a trace of bacterial ring rot was observed and carefully rogued out, as well as the rejection of all suspected units at digging time, yielded some tubers in which the disease was detected. (B. Baribeau)

Fewer fields entered for certification were found affected by bacterial ring rot in N.B. than in 1939. Very little disease was present either in the field or in the tubers at bin inspection. It was found on 151 premises. In fields planted with uncertified tubers, the disease was definitely due to replanting of diseased seed.

Bacterial ring rot was not observed in N.S. in 1940. A scattered crop of volunteer plants was found in the field showing the disease last year. Although the disease was not detected in them, they were dug up and burned. Twenty-five cases of bacterial ring rot were found in P.E.I. in 1940; 18 were in certified seed and 7 in table stock. In most fields only

a trace was present. None were on farms where the disease was found previously. Every hope is entertained that the disease will be eliminated if vigilance is maintained.

LATE BLIGHT (Phytophthora infestans) caused great losses to potato growers in Ont. In many fields, the disease was severe and at digging time 50% of the tubers were affected and many more rotted after they were stored (J. E. Howitt). Late blight was epidemic in 1940, this year being comparable to 1928 and 1934. The loss would be at least 20% of the late potato crop in central, western and northern Ont. (O. W. Lachaine)

Late blight was first observed in the Chicoutimi district on July 27, and a few days later about Montreal and the Eastern townships. It appeared at Ste. Anne de la Pocatiere on July 31, but it failed to develop on account of dry weather. It began to spread in early September there and elsewhere along the lower St. Lawrence; slight damage was caused, but traces were observed on almost every farm at bin inspection. Only a few cases of evident loss from tuber rot were noted. More growers sprayed than usually, 5 to 7 applications being made.

Late blight was more serious in N.B. than in 1939. It was first reported in an early planted field at Woodstock on July 12 and elsewhere in Carleton Co. on July 23. The same week it appeared in Victoria Co. The disease spread rapidly the week of August 4 to be checked 2 weeks later by dry, hot weather. A few table stock fields were completely dead about Bath on August 25. Late blight in various stages of development was present everywhere in September. About 30% of the seed stock was withheld from certification until Dec. 1.

Late blight was not general in N.S. in 1940. A slight infection was reported in Colchester Co. on July 26 and in Kings Co. on Sept. 24. Tuber rot was also not general. In Kings Co. where the largest potato acreage is found, only a very small amount was present. In 3 late fields of Irish Cobbler in Cumberland Co., 1-10% of rot occurred.

Late blight infection was generally slight in most sections of P.E.I. In fact, 1940 was not a "blight year". A few severe outbreaks were recorded, where the loss amounted to 50% of the crop. Rather heavy infections were found on Sebago, whose resistance is not of a sufficiently high order to be of much practical benefit.

LEAK (Pythium ultimum) was observed causing some decay at Salmon Arm and Summerland, B.C. Diagnosis of the disease was confirmed by W. Jones. (G. E. Woolliams)

SILVER SCURF (Spondylocladium atrovirens). A few lots were slightly affected in Que. The disease was noticed in a few lots of Irish Cobbler in N.B. Some silver scurf could be seen on tubers of the

new crop by November in P.E.I. One lot of Irish Cobbler was severely affected in April.

POWDERY SCAB (Spongospora subterranea) was found only on a few farms in Que. On two farms in the Bath area, N.B. infections of 7 and 10% respectively, were recorded. Traces were reported in other areas of Carleton and Victoria Counties. A trace of powdery scab was found in 4 or 5 fields of Bliss Triumph in N.S. and 40% of the tubers were affected in a half-acre field of Irish Cobbler. No powdery scab was recorded in P.E.I.

WILT (Verticillium sp.) caused the death of about 35% of the plants in a field at Ponoka, Alta. and it was present in several other fields at Calgary, Lethbridge and Edmonton. Verticillium was isolated from material from Ponoka and from some other points. Wilt due to Verticillium appears to be on the increase. Fusarium spp. were apparently less important as a cause of wilt since only saprophytic forms have been isolated (G. B. Sanford). Wilt was reported again in Cumberland Co., N.S. (cfr. P.D.S. 19:53 and earlier); the amount of wilt was small. Isolations from the affected material made by the Kentville laboratory yielded Verticillium (W. K. McCulloch). In 1940, 170 fields of Irish Cobbler were rejected in P.E.I. for Verticillium wilt compared to 67 in 1939. The disease is becoming more widespread in its occurrence from year to year. Conditions were particularly favourable this year for readily detecting wilt in the field for there was little rainfall and the symptoms were not masked due to attacks of early and late blight. (G. W. Ayers)

GIANT HILL (virus suspected). A trace to 1% of the plants were affected in a few fields in the Lethbridge district, Alta. Giant Hill affected 1% of the plants in a field of Green Mountain in Kings Co., N.S. Traces were apparent in other fields of Green Mountain and also of Bliss Triumph.

LEAF ROLL (virus) was present in 30% of the fields inspected in the Edmonton district, Alta., and in 50% of those about Lethbridge; infection ranged from a trace to 5%. It was chiefly in stock of Netted Gem brought to Alta. last spring. This disease was common, often in high percentages, in gardens in Edmonton and Calgary. Leaf roll, mostly in traces, was found in 9% of the fields inspected in Sask. The disease was rare in Man. Up to 1% of the plants were affected in some fields of Chippewa in the Thunder Bay district, Ont. Leaf roll appeared to be increasing in Ont.; 126 fields were rejected for certification in 1940 compared to 52 in 1939. In all, 26 were rejected on account of leaf roll in Que., compared to 5 in 1939; it was particularly prevalent at Ragueneau. Leaf roll was the greatest single cause for rejection in 1940 in N.B., where 323 fields were turned down for leaf roll. The disease has become a factor in seed production in counties, where it was previously unimportant. Leaf roll was reported in 57.8% of the fields inspected in N.S. and 3.4% were rejected. The disease was definitely on the increase in Green Mountain and Irish Cobbler in P.E.I.

MOSAIC (virus). A small amount of mosaic was present in stock of Netted Gem brought to Alta. last spring. It was prevalent in gardens in Edmonton and Calgary. Small percentages of mosaic were found in some fields; climatic conditions were favourable for the development of symptoms, and mosaic was observed in some lots not previously found affected. Mosaic was rare in Man. and northern Ontario. It was present in some plants of Chippewa. Mosaic was not particularly serious except in 4 fields where 15-30% of the plants were affected. Mosaic was slightly less prevalent in Que. than in 1939, although the symptoms were unusually clear. Mosaic was very severe at Ragueneau, where nearly 70% of the plants were affected in commercial plantings. Wet cool weather in June and July was ideal for the development of mosaic symptoms. This year 206 fields were rejected for mosaic in N.B. as against 112 in 1939. Mosaic was found in 54% of the fields inspected in N.S. and caused the rejection of 7.2%; it is becoming more noticeable in Katahdin.

In plots of the differentials at Fredericton, N.B. two plants of Samsun tobacco were found affected by strain L of Solanum virus 1 and 3 plants of Datura stramonium by strain G. A vein-banding mosaic caused by Solanum virus 2 was found in 2% of the plants of White Burley tobacco in a garden at Fredericton. (D. J. MacLeod)

PURPLE DWARF, which was called Purple Top in previous reports (P.D.S. 19:56), was again present in many fields throughout Alta. It appeared in the progeny of both certified and uncertified stock. The number of affected plants in a field rarely exceeded 1% and many fields appeared to be free from the disease. In a few special cases, 3-5% of the plants were diseased. Purple dwarf is perpetuated through the tubers and was transmitted to healthy plants by grafting. (G. B. Sanford)

One fifth of all fields inspected in Alta. contained a trace to 2% of affected plants. It was found in all parts of the province except the Perryvale district. A trace was also found in several fields in Sask. (J. W. Marritt)

?PURPLE TOP (see Purple Dwarf above) was found chiefly in Katahdin in N.B., but two cases were reported in Green Mountain. This condition appears in the plants late in the growing season and is easily rogued. (C. H. Godwin)

SPINDLE TUBER (virus) was not at all common in Man. and northwestern Ont. It was again found in Ont., but it is not prevalent; 4 fields were rejected on account of this disease as compared to 5 in 1939. Two fields were also rejected in N.B. Small amounts were present in P.E.I., but no fields were rejected.

STREAK (virus), possibly Leaf-drop Streak, affected a few plants of Irish Cobbler obtained from tubers showing symptoms of spindling sprout at Charlottetown, P.E.I. (R. R. Hurst)

WITCHES' BROOM (virus). A trace was present in a few fields inspected in Sask. A trace (2 plants) was found in a field of Chippewa at Upsala, Ont. and in another at Mattice. It had not been seen in Ont. for many years. (O. W. Lachaine)

YELLOW DWARF (virus) has not been observed as yet in Alta. (G. B. Sanford). Yellow dwarf was less prevalent in Ont. than formerly. In the Caradoc district, where the disease was most prevalent, more plants of Dooley went down than of any other variety in the test plots. With the replacement of Dooley by Katahdin, and to a lesser extent by Chippewa, both in the Caradoc district and elsewhere in Ont., yellow dwarf seems to be on the down grade.

DROUGHT NECROSIS was very common in fields throughout central and northern Alta. It was particularly noticeable in Netted Gem in unirrigated fields in southern Alta. (G. B. Sanford)

FAILURE OF TOP FORMATION. One field of Chippewa failed to form any tops at Garson, Man. Examination showed that the sets had produced tubers the size of marbles without sending up any shoots. These potatoes had been stored in a warm place and were badly wilted when planted. (J. W. Scannell)

FROST caused some injury in almost all districts of Que., but the damage was slight except in the Lake St. John district. Frost appeared there on Aug. 26 and some plantings were never dug on account of snow coming early. Considerable frost damage occurred in storage in P.E.I. because the tubers were not adequately protected from low temperature. (R. R. Hurst)

HOLLOW HEART was unusually common in the larger tubers of Irish Cobbler in a heavy crop running about 400 bu. per acre on Oct. 2 in P.E.I. It was observed later in several other lots.

INTERNAL BROWN SPOT (cause unknown) was seen in several lots of potatoes in P.E.I. in 1940.

NECROSIS. During a comparative histopathological examination of potato tubers showing several types of necrosis, data have already been accumulated that suggest that fungus pathogens are of greater importance in inducing vascular necrosis than has generally been realized. Specimens of a disease in Katahdin tubers from N.B., submitted as being induced by some cause other than parasitic activity showed a necrosis, with which was associated a Fusarium sp. (q.v.) as determined by cultural isolation and histological examination. A similar examination of specimens from Alberta of a necrosis reported to be common and widespread and submitted as a "drought necrosis" (q.v.) revealed the presence of a plentiful mycelium ramifying through the mature vessels inducing premature death of adjacent tracheids and occlusion of their lumina by colloidal and particulate de-

posits and by the excessive formation of tyloses, which in turn become necrotic. The resultant brown-stained matrix provides the macroscopically visible symptoms. Verticillium sp. (q.v.) has been isolated in culture from the affected tissues. From 13 samples of tubers showing phleom necrosis from B.C. sets were chosen from 5 tubers in each sample; all these sets developed plants showing leaf roll symptoms. (F. S. Thatcher)

A type of net necrosis said to be caused by the leaf roll virus is fairly common in certain potato stocks throughout Alta. and it develops in the absence of the tomato psyllid. (G. B. Sanford)

Net necrosis was severe in two fields planted with certified seed. One was near Calgary and the other near Edmonton. Fifteen vacant lots in Calgary were planted with certified seed from different sources. When the tubers were examined after harvest severe necrosis was present in those from half the lots, some showing 25% of the tubers affected. Necrosis caused by dry weather was prevalent in the Perryvale district. (J. W. Marritt)

Net necrosis was much more prevalent than usual in Que. It was particularly noticeable in several shipments of Green Mountain. (B. Baribeau)

Net necrosis was found chiefly in Green Mountain in N.B. and some lots were rather severely affected in the Centreville and Keswick areas.

PEPPER SPOT, which was first reported in 1939 (P.D.S. 19:56) appeared again in the same localities in Alta., but in general it was much less severe than in 1939, apparently due to different weather conditions. From further studies of the soil, it is concluded that this malady is caused by a too high concentration of black alkali in the soil.

STEM-END BROWNING is of increasing importance in N.B. It was the cause of 25 rejections in the spring of 1940. The discoloration does not penetrate more than $\frac{1}{4}$ of an inch in many cases. It has been found chiefly in Green Mountain. (C. H. Godwin)

PUMPKIN

POWDERY MILDEW (Erysiphe Cichoracearum) was severe on about 10% of the plants at Summerland, B.C.

RADISH

CLUB ROOT (Plasmodiophora Brassicae). A few plants were affected at St. Martin, Que., and at Charlottetown, P.E.I.

RHIZOCTONIA (R. Solani) was quite severe in a greenhouse at London, Ont. Isolations yielded Rhizoctonia Solani exclusively. (J. K. Richardson)

ROOT ROT (Sclerotinia sclerotiorum) affected about 10% of the plants in a garden at Portage la Prairie, Man. (J. E. Machacek)

BROWN HEART (boron deficiency) so affected the radishes in a garden at Charlottetown, P.E.I., that they were virtually useless. (R. R. Hurst)

RHUBARB

LEAF SPOT (Alternaria tenuis group) was observed at Macdonald College, Que. The Alternaria may be a saprophyte on spots caused by other fungi. (I. H. Crowell)

LEAF SPOT (Ascochyta Rhei) was found at Macdonald College, Que. (I. H. Crowell)

Phoma herbarum West. was found on a few cut flowering stalks, at Macdonald College, Que. It is probably a saprophyte. (I. H. Crowell)

LEAF SPOT (Phyllosticta straminella) was reported as follows: Slight infection on occasional plants at Brandon, Man.; general, but not severe at Norwich, Ont.; very severe in one small plot late in the season on Ile Bizard, Que.

RUST (Puccinia Phragmites) was heavy on the leaves at Clandeboye, Man. on July 7; telia were later found on Phragmites.

CROWN ROT (cause unknown) was noted at Macdonald College, Que. (I. H. Crowell)

SALSIFY

WHITE RUST (Cytopus cubicus). A moderate infection was observed in a field in the Montreal district, Que.

SPINACH

DOWNY MILDEW (Peronospora Spinaceae) moderately infected spinach at Morden, Man.

RUST (Puccinia subnitens) was reported from a private garden, at Saskatoon, Sask.

ROOT ROT (cause unknown). A destructive root rot was found in 10 seed plots of Long Standing Bloomsdale grown at various points in Man. The seed was all obtained from the same source. From 30 to 75% of the plants were destroyed. (J. E. Machacek)

SWEET CORN

BACTERIAL BLIGHT. A slight to moderate infection occurred in 2 plantings at Edmonton, Alta., and a trace was found at Lacombe.

RUST (Puccinia Sorghi). A trace was found at Brandon, Man.

SMUT (Ustilago Zeae) infection was moderate at Brandon and slight at Morden and Winnipeg, Man. Traces were common in the Montreal district, Que.

SWEET POTATO

ROT (Fusarium sp.). In sweet potatoes grown in Norfolk Co., Ont., a large number of tubers were badly blemished and unfit for sale on Dec. 4, 1939 though not severely rotted. (J. K. Richardson)

SWISS CHARD

LEAF SPOT (Septoria Betae) was general on the lower leaves of plants grown for seed at Sidney, B.C. (W. Jones)

TOBACCO

The tobacco disease report presented below was prepared by Dr. L. W. Koch. The records include information obtained from: Messrs. P. G. Newell, F. A. Stinson, and R. J. Stallwood in the New Tobacco Belt, from Messrs. H. F. Murwin and R. J. Haslam in the Old Belt of Ontario, and from Messrs. J. E. Montreuil and R. Bordeleau, L'Assomption, for the Quebec tobacco growing areas.

Diseases in the Seedbed

BLACK LEG (Erwinia aroideae?) was more prevalent than for several years, and caused the loss of large numbers of seedlings late in the transplanting season in Essex County, Ont. Infection was usually localized in seedbeds.

NEMATODES (Heterodera marioni). A single seedbed near Colchester, Essex Co., Ont. showed moderate infestation with nematodes. Plants were stunted and chlorotic.

BLUE MOULD or DOWNY MILDEW (Peronospora tabacina). A single case of this disease occurred in Kent Co., Ont. on a farm where the disease destroyed all the seedbeds in 1938. Although it did not appear on this farm in 1939, its re-occurrence in 1940 suggests that it may have passed the interval on hosts other than tobacco.

DAMPING-OFF (Rhizoctonia sp. and Pythium sp.) caused considerable damage throughout Ont. and Que., and by the end of the transplanting season was present to some extent in nearly all seedbeds. Damage to seedlings by this disease at the time of germination resulted in considerable reseeding in cotton-covered beds. Again at transplanting time the disease caused considerable loss of plants during a wet period.

BLACK ROOT ROT (Thielaviopsis basicola). In both the old and new tobacco belts of Ontario the disease was less prevalent in seedbeds than for several years. Though the soil of most tobacco seedbeds in Ont. is steamed, there have been indications that the fungus spreads from contaminated walks and walls in the greenhouses. Their disinfection with 5% formaldehyde has reduced infection.

Most cases developed late in the seedbed after pulling of the plants was begun. Three seedbeds in the old belt were diagnosed as too severely diseased for transplanting. As a result of lower than average temperatures, black root rot caused considerable damage throughout Quebec, particularly on susceptible varieties.

YELLOW PATCH (cause undetermined) was less prevalent in the old tobacco belt of Ontario than in 1939. Its presence was observed in sixteen seedbeds of Essex and Kent Counties, Ont. though damage was light. In the new tobacco belt the disease caused considerable damage. Careful chemical analysis of ten soils where yellow patch was severe and comparisons with as many more similar nearby areas where no disease developed indicated high nitrite concentration in all soil areas where the disease was severe.

Diseases in the Field

HOLLOW-STALK (Erwinia aroideae?). Two cases were observed on Harrow Velvet variety in Essex Co., Ont.; damage was mild.

NEMATODES (Heterodera marioni) were present in numerous fields of flue tobacco in the new belt of Ont. Damage was difficult to estimate.

SORE-SHIN (Rhizoctonia Solani) caused some damage soon after transplanting in both the old and new belts. Mildly-affected plants soon recovered.

BLACK ROOT ROT (Thielaviopsis basicola). Due to an unusually wet season, damage from black root rot was well above average. All burley varieties with the exception of Harrow Velvet sustained some damage. On quite a number of plantations in Essex Co., Ont., chiefly on heavier soils, the varieties Green Briar and Halley's Special became so severely infected early in the season that they were ploughed up.

All flue varieties showed damage, though in a plot containing numerous flue varieties at Harrow, Ont., on infested soil, one strain of Gold Dollar indicated a measure of resistance. In the new belt, black root rot could be found early in the season on nearly all plantations. The effect of the disease here was to delay growth, and this resulted in a greater loss of tobacco in August when frost destroyed all tobacco in certain areas.

MOSAIC (virus). In both the old and new tobacco belts of Ont., mosaic was less prevalent than in 1939. A small percentage was present in all fields, and in several cases where infection ran as high as 40% tobacco followed tobacco in the rotation. Considerable damage was reported from Que.

RING SPOT (virus). In the old belt, ring spot caused considerable damage on burley tobacco in localized areas. In one field, about 1,000 plants were severely affected; infection appeared to have started at the edge of the field, adjacent to which was a pasture with an abundance of weeds. A few cases of ring spot were also observed on flue tobacco in the new belt.

STREAK (virus) was less severe than in 1939. Only isolated cases of infection were observed in Ont., and not many infected plants in a group. Quite frequently, affected plants were located at the edge of fields.

BROWN ROOT ROT (cause undetermined) was more severe though less prevalent than in 1939. Of 24 cases of brown root rot observed in Essex Co., Ont., 16 were definitely traced to crops of corn immediately preceding tobacco in the rotation. Of these 16 cases, the variety was Harrow Velvet in 12 and Halley's Special in 2. On the Harrow Station, the disease was consistently severe following a crop of corn. In carefully prepared plots, Green Briar, a variety not previously tested, appeared to have a high measure of resistance. The varieties Kelley and one strain of Judy's Pride also showed some resistance. In the new tobacco belt, brown root rot was not as prevalent as in 1939 and caused little damage.

FRENCHING (non-parasitic) caused localized losses in both the new and old tobacco belts of Ont.

FROST INJURY. In the new tobacco belt of Ont., 45-60% of the flue-cured crop was destroyed by frost on the night of August 23. Local

areas close to the lake escaped injury.

LIGHTNING INJURY was observed in 3 fields in the old tobacco belt. In one case, all plants in a circular area, 75 feet in diameter, were either killed or injured.

MAGNESIUM DEFICIENCY was present in localized areas of the new tobacco belt. Damage was mild.

POTASH DEFICIENCY caused some damage on flue tobacco throughout the old and new tobacco belts.

UNEVEN RIPENING was less prevalent in the new tobacco belt than in 1939, and caused little damage.

WILT (cause undetermined). Symptoms of the disease consist of wilting, followed by necrosis of single leaves or leaves on one side of the plant. It was again prevalent in the North Leamington area of the old belt, and affected severely a field adjacent to one similarly affected in 1939 near Waterford, Ont., in the new belt. This disease did not become apparent until late in the season. Damage in general was not as great as in 1939.

In the Sumas district, B.C., 60% of the plants were affected by MOSAIC (virus) in one field, where tobacco followed tobacco, and affected volunteer plants were general. In 6 other fields, 64 acres in extent, the average number of plants affected was 2%. In these fields, an additional 1.5% of the plants were stunted and dwarfed, probably by a virus disease; the leaves were also lighter than normal. (W. Jones)

TOMATO

EARLY BLIGHT (Alternaria Solani). A trace was present on the older leaves at Winnipeg, Man. and a slight infection at Morden. It was observed in many fields in Laval and Jacques Cartier Counties, Que.; it caused more or less defoliation. It was also noticed at the Station, Ste. Clothilde de Chateauguay (E. Lavallee). The disease was moderate in a field at Charlottetown, P.E.I.

GREY MOULD (Botrytis cinerea). This fungus caused a ring spot of the fruit in a greenhouse at St. Catharines, Ont. In addition, it also caused a soft rot of a considerable number of fruit as well as the lower leaves and a few stems. Ring spot was also present on staked tomatoes in a field near Virgil. Almost all the fruit were infected in a row of tomatoes adjacent to a strawberry planting, where over-ripe strawberries were heavily infected by Botrytis. Some distance away there were several rows of tomatoes free from infection. It would, therefore, appear that the strawberries were the source of inoculum; G. C. Ainsworth, Enid Oyler and W. H. Read (Ann. Appl. Biol. 25:308-321. 1938) have given an account of the trouble. (G. H. Berkeley and G. C. Chamberlain)

LEAF MOULD (Cladosporium fulvum) was general in all of the 30 greenhouses inspected in the Victoria district, B.C., and the damage was severe. Vetomold was tested in 12 greenhouses and proved to be resistant in every one. It is rapidly replacing Best of All, the common commercial variety. Leaf mould was also found in the field at the Sidney Station this fall (W. R. Foster and W. Jones). All greenhouse crops were affected by leaf mould in Essex Co., Ont., in the fall of 1940; even the variety Vetomold showed 100% infection, thus indicating the widespread occurrence of strain 5 of the fungus (L. W. Koch). The disease was severe in a crop of Vetomold in a greenhouse at London, Ont. on July 10, when most of the crop was already harvested. (J. K. Richardson)

A high percentage of the tomatoes in a car lot from California developed spots after being placed in ripening rooms at Toronto in Nov. (J. K. Richardson)

Since Vetomold has only recently been introduced into the trade in Canada, it appeared desirable to include a brief history of its origin, which has been kindly supplied by Dr. Bailey.

The greenhouse tomato variety Vetomold was released from the Vineland Horticultural Experiment Station in the Fall of 1939, after having been developed as a result of a cooperative project between that Station and the University of Toronto. Of the three factors for resistance to Cladosporium fulvum investigated by Langford (See: Can. Jour. Res. 15, Sec. C:108-128. 1937), Vetomold incorporated only Cfp_1 or the factor from Lycopersicum pimpinellifolium conferring immunity from C. fulvum strains 1-4 inclusive. Although previous to its release it had been consistently immune, not only at Vineland but in various commercial houses as well, Vetomold proved completely susceptible in a number of greenhouses in several localities in Central and Western Ontario, after it was introduced commercially. Investigation indicated that it was infected by a hitherto unencountered strain of C. fulvum. This has been designated Strain 5 and is characterized by the following reactions: Potentate and Vetomold, susceptible; Stirling Castle, resistant; L. pimpinellifolium (Red Currant), resistant (but not immune). Since Vetomold is susceptible, the resistance of Red Currant to Strain 5 must be due to the second resistance factor (Cfp_2) which Langford discovered. Since esculentum varieties incorporating this type of resistance are almost ready for introduction, it has not seemed worth while to attempt the elimination or localization of Strain 5.

While Strain 5 is now encountered commonly on the Niagara Peninsula and in Central and Western Ontario (Hamilton, London, Windsor), we have no cultures of it as yet from elsewhere in Canada. From England and New Zealand too the word is that Vetomold has proven immune for one or two crops. We would greatly appreciate receiving from colleagues, samples of infected Vetomold for infection purposes. These should be directed to Vineland Station during the Summer or to the Department of Botany, University of Toronto, during the Fall or Winter. (D. L. Bailey and A. N. Langford)

The new variety, Globelle, produced at the Ohio Exp. Station, has also proved susceptible to a new strain of Cladosporium fulvum, although at first it was highly resistant (L. J. Alexander, Phytopath. 30:1. 1940). Whether this new strain is identical with strain 5 above, has not been reported.

ANTHRACNOSE (Colletotrichum phomoides) affected 9% of the fruit held in storage for 3 weeks at Macdonald College, Que. (I. H. Crowell and G. J. Heatherington)

SOFT ROT (Erwinia aroideae) was present in a field at Macdonald College, Que., and developed in tomatoes held in the laboratory. About 20% of the decay was due to this organism. (I. H. Crowell)

FUSARIUM ROT (F. sp.) was fairly common on fruit in the field and the laboratory at Macdonald College, Que. (I. H. Crowell)

NAILHEAD SPOT (Macrosporium tomato) caused damage which was mild and localized in Essex and Kent Counties, Ont. Late infection on 40% of the fruits was seen in several fields near Harrow (L. W. Koch). Three neighboring fields were badly affected on Ile Bizard, Que. Over 60% of the fruits were spotted and unmarketable. It is the first time I have observed the disease in the Montreal district (E. Lavallee). It was also recorded at Macdonald College. (I. H. Crowell)

WATERY ROT (Oospora lactis var. parasitica) was responsible for 30% of the decay in tomatoes held in storage at Macdonald College, Que. (I. H. Crowell)

BACTERIAL CANKER (Phytomonas michiganensis) was seen in both fields of commercial and seed crops in the Okanagan Valley, B.C.; usually only a trace to 5% of crops were affected, but in an occasional field it was destructive (G. E. Woolliams). The disease was found in material received from Aldershot, Ont. Smears disclosed a Gram positive organism, typical of P. michiganensis (H. N. Racicot and D. B. O. Savile). A few diseased plants were seen in one field at Longueuil, Que. (E. Lavallee)

BACTERIAL SPOT (Phytomonas vesicatoria). A slight to moderate infection of what was tentatively identified as this disease, was found in the plots at Lacombe, Alta. Bacterial spot was found on green fruit in the field at Macdonald College, Que.

BLACK SCAB (bacterial). A small black scab was found on green and ripening fruits of Fargo and Oklahoma varieties at Morden, Man. At first it was thought to be P. vesicatoria, but the organism that was common in the scab was definitely another. The leaves of tomato have been infected experimentally, but the fruits have not yet been tested. (W. A. F. Hagborg)

LATE BLIGHT (Phytophthora infestans) was found in a sample of diseased fruit from the west coast of Vancouver Island, B.C. (W. Jones). Tomato fields were observed this year in Ont., in which 30 to 40% of the fruit showed a peculiar brown rot. When these fruits were placed in a moist chamber a profuse white growth appeared on them. This growth proved to be the sporangiophores of a Phytophthora. The same species was present also in specimens received from various parts of the province this year. This is the first time I have observed P. infestans causing a serious rot on tomato fruits in Ont. It may be observed that in some cases where tomatoes were growing near potatoes, the fungus appeared to have attacked the potatoes first and had then spread to the tomatoes (J. E. Howitt). Damage to both foliage and fruit was severe in Kent and Essex Counties to the late tomato crop during the early part of the canning season. During the first week, loads of tomatoes at one canning company showed up to 25% of the fruit affected. The amount of damage then fell off sharply until by the end of the season damage was slight. (L. W. Koch)

Late blight infection was general late in the season in Kent and York Counties, N.B. The damage was usually slight, but in some fields 10-15% of the fruits were affected. (D. D. Dolan)

BUCKEYE ROT (Phytophthora palmivora or P. terrestris). Diseased material received at Ottawa was cultured and an organism tentatively identified as P. palmivora was isolated. The affected spots were brown, firm to leathery, but lacked the concentric zoning usually associated with buckeye rot. The trouble appeared to be causing extensive losses in Ontario (F. S. Thatcher). The disease was general in Lincoln Co., and in many fields caused severe losses. The rot was mostly of the leathery type (J. K. Richardson). About 5% of the fruits were affected in a 5-acre field at Berthier. Sporangia and sporangiophores developed abundantly in a damp chamber (E. Lavallee). Buckeye rot (P. parasitica) was observed at Macdonald College, Que. (I. H. Crowell)

SOIL ROT (Rhizoctonia Solani) caused a rot in the field during wet days in August at Macdonald College, Que., and in fruit held in a damp chamber in the laboratory. (I. H. Crowell)

RHIZOPUS ROT (R. sp.) caused 20% of the decay of tomato fruits in hot weather at Macdonald College, Que.; it was less prevalent when the weather was cool. (I. H. Crowell)

STEM ROT (Sclerotinia sclerotiorum). A small number of plants showed stem lesions in one greenhouse out of several examined in Middlesex Co., Ont. (J. K. Richardson)

LEAF SPOT (Septoria Lycopersici) moderately infected the plots at Brooks, Alta. (G. B. Sanford). It caused less damage to the early tomato crop in Essex and Kent Counties, Ont., than in 1939. In a few fields near Leamington, however, the disease was severe and the loss of crop was estimated at 40% (L. W. Koch). It was rather severe in a greenhouse at

London, and a light to moderate infection was noted in Lincoln Co. Leaf spot was observed at Macdonald College, Que.

WILT (Verticillium albo-atrum) was found in a third of the greenhouses in the Victoria district, causing a loss of 5-10% of the crop on both unsterilized and steam sterilized soils. (W. R. Foster)

MOSAIC (virus) affected 3% of the plants in a ¾-acre planting and 1% in a second in Lincoln Co., Ont. Mosaic caused by strain L. of Solanum virus 1 affected 5% of the plants in a field in Sunbury Co., N.B. (D. J. MacLeod). Mosaic affected 90% of the plants in greenhouses at Falmouth, N.S. in April; the fruit were small, but marketable. (J. F. Hockey)

SPOTTED WILT (virus). A few plants were slightly affected in a greenhouse at Edmonton, Alta. The virus was transmitted to Nicotiana Tabacum and potato by grafting. The tobacco became necrotic and stunted, and in the potato, the stem became necrotic near the scion (S. B. Clay). Spotted wilt was present on field tomatoes at Vineland, Ont. Spotted wilt was also present on tomatoes, gloxinia, African violet, calla lily, cinneraria, and begonia in a greenhouse at Paris. The tomatoes showed typical symptoms of spotted wilt (J. E. Howitt). About 5% of the tomato plants were affected. The virus was transferred by juice transfer from each of the above plants except the African violet. (G. H. Berkeley)

STREAK, MOSAIC, and FERN LEAF (virus) were general in greenhouses of oriental growers, who operate 60% of the greenhouses in the Victoria district, B.C. In nearly every greenhouse all plants were affected, with a 50% crop loss. The most virulent disease was streak (W. R. Foster). A few plants were affected by streak in a section of an 8-acre field at Westbank, B.C. A trace of streak appeared late in the season in the gardens at the University, Saskatoon, Sask.

STREAK and CUCUMBER MOSAIC (virus). An uncommon virus combination was encountered in an establishment near Aldershot, Ont. The plants were severely stunted, light yellow with or without necrosis of the leaves. Filiform leaves were abundant on many plants, especially in the top growth. Investigation indicated that these plants were infected with a combination of tobacco streak and cucumber mosaic viruses, both of which have been recovered from affected plants. In one greenhouse the infection was so severe that the plants were destroyed. It may be noted that the grower had plowed under the previous crop of tomatoes, which had shown some streak, and grew the plants for the present crop out doors near a melon patch, which had plenty of mosaic, thus accounting for the mixture of viruses. (G. H. Berkeley)

YELLOWS (virus). Traces were present in both seed and commercial crops in the Okanagan valley, B.C.; there wereat least some affected plants in every field. (G. E. Woolliams)

BLOSSOM-END ROT (non-parasitic) was common in gardens at Saskatoon, Sask. One grower at Aberdeen reported a loss of 50% of his crop. The trouble was common in the Brighton district, Ont., causing heavy losses which reduced the crop at least 40% according to the field manager for the local canning factories. From 30-75% of the fruits were affected in the fields of John Baere examined. High percentages were also noted in Chalk's Jewel and Bonney Best, while New York State was less affected (G. C. Chamberlain). Blossom-end rot was observed many times in the Montreal district, Que., but no severely affected fields were reported. (E. Lavallee)

BLOTCHY RIPENING (non-parasitic) caused slight damage in 4 greenhouses in the Victoria district, B.C. (W. R. Foster).

FRUIT POX (cause undetermined). A disease identical with the illustration and description of tomato fruit pox (see S. S. Ivanoff and P. A. Young, Phytopathology 30:343-345. 1940) was observed in one greenhouse near Victoria, B.C., on a variety being grown under the name One Hundred Fold. About 35% of the crop developed the symptoms. (W. R. Foster)

TURNIP

SCAB (Actinomyces scabies) was present in almost every field of turnips examined in L'Islet Co., Que., and caused considerable damage on turnips grown for the market. The Actinomyces isolated from the turnips differed considerably from A. scabies from potato (C. Perrault). Scab affected 5% of the roots in a small plot at the Station, Fredericton, N.B. (D. J. MacLeod). Traces were observed in 6 fields of Laurentian in the Freetown area, P.E.I. (R. R. Hurst)

POWDERY MILDEW (Erysiphe Polygoni) caused slight damage to the foliage of Laurentian stecklings in a field in Kings Co., N.S. (J. F. Hockey)

DOWNY MILDEW (Peronospora Brassicae) was general on a seed crop of Laurentian at Milner, B.C., but damage was a trace; a slight infection was also seen at Keating (W. Newton and W. R. Foster). Downy mildew was general in a field of Ditmar at Deep Brook and caused some dwarfing of the seed pods. (J. F. Hockey)

DRY ROT (Phoma lingam) was prevalent in one field in P.E.I.; otherwise only traces were observed. (R. R. Hurst)

BLACK ROT (Phytomonas campestris) was again prevalent on turnips in many parts of Ont. during the winter of 1939-40. (J. E. Howitt)

CLUB ROOT (Plasmodiophora Brassicae) caused at least 10% damage in a field in Colchester Co., N.S. (W. K. McCulloch). Some fields were severely attacked in P.E.I. (R. R. Hurst)

RHIZOCTONIA (R. Solani) affected the roots of 30% of the plants in a field at Deep Brook, N.S. It also caused a dry rot of 10% of the roots in storage at Sheffield Mills. (K. A. Harrison)

SCLEROTINIA ROT (S. sclerotiorum) was found affecting one plant in a field at Deep Brook, N.S.

MOSAIC (virus). In a plot of Wilhelmsburger, 0.5% of the plants were affected.

BROWN HEART (non-parasitic) slightly affected Swede turnips in a field at Saake, B.C. (W. Jones). A survey of table turnips made on 60 farms in L'Islet Co., Que., revealed brown heart to be prevalent on the majority of the farms. Where borax was applied to the soil the trouble did not cause any damage except on a few farms where the quantity applied was insufficient (C. Perrault). Brown heart showed a decided decrease in 1940, although many farmers do not yet use borax. (R. R. Hurst)

STERILITY (cause unknown) affected a trace to 1% of the plants in Laurentian and Wilhelmsburger varieties of Swede turnips for seed at Keswick, N.B. The affected plants had a staring, upright appearance. The pods were pale green, reduced in size and extremely flattened and contained no seeds. The floral parts were also severely distorted and lacked the normal colour. The condition resembles that produced by Callistephus virus 1 in other plants. (D. J. MacLeod)

SUN BURN (non-parasitic). Nearly all turnips in certain trials at Macdonald College, Que., that were dug and left on the ground for a few days, were sunburned on the exposed surface. Most of these "burned" lesions become infected with a species of Heterosporium. (I. H. Crowell)

WATERY BULB (frost) affected a trace to 2% of the turnips in some lots at Charlottetown, P.E.I. The condition was duplicated by freezing the roots solid for long periods in our freezing chambers. (R. R. Hurst)

VEGETABLE MARROW

CURLY TOP (virus) affected nearly every plant in a field of the Green Trailing variety in the Grand Forks district, B.C.; affected plants produced no crop. (H. R. McLarty)