III. DISEASES OF VEGETABLE AND FIELD CROPS

BEAN

GRAY MOLD (Botrytis cincrca) was tr, at Millville, N.B. (S.R. Colpitts). Trace infections were seen in canning crops in Kings Co. , N.S. but damage was negligible (K. A. Harrison). Similar trace infections were observed in Queen's Co., P.E.I. (J.E. Campbell).

ANTHRACNOSE (Colletotrichum lindemuthianum) was sev. on the variety Slicer at Tofield, Alta. (W. P. Skoropad). Damage was sl. at Millville, N.B. (S.R.C.). Infections were very light in P.E.I. crops (J.E.C.).

ROOT ROT (Fusarium solani f. phaseoli) was generally sl. in w. Ont. but, in a few sev. affected fields, losses were 15-20 bu./acre (G.H. Clark, R.N. Wensley (C.P.D.S. 41: 5, 363, 1961).

HALO BLIGHT (Pseudomonas phaseolicola) was tr. -mod. in the vicinity of Edmonton, Alta. (W. P. Campbell) and was widespread in beans for processing in the Lethbridge area (F.R. Harper). Halo blight and common blight were mod. on Seaway, Sanilac and Michelite in 23/30 fields examined in Kent Co., Ont. (M. D. Sutton). P. phaseolicola caused 25% leaf and 5% pod infection in 2 fields at Strathroy and 100% leaf and 25% pod infection in 2 at Brucefield, Ont. The organism was isolated and identified by phage typing (M.D.S.). Infection was 50% in a garden at Ste. Anne de la Pocatiere, Que. (R. O. Lachance). An early infection at Millville, N, B. threatened heavy losses (S.R.C.). Some sev. infections were seen in gardens in Kings Co., N. S., but canning crops were relatively free of infection (K.A. H.).

STEM ROT (Rhizoctonia solani). Specimens were receive'd from Ste. Anne de la Perade, Champlain Co., Que. (D. Leblond).

WILT AND ROT (Sclerotinia sclerotiorum) was more prevalent than usual in w. Ont. In sev. affected fields losses were estimated to be 5-10 bu./acre (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961). Tr. infections were noted in a market garden nr. Charlottetown, P.E.I. (J.E.C.).

RUST (Uromyces phaseoli) was rarely seen in w. Ont. and losses were slight (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961).

COMMON BLIGHT (Xanthomonas phaseoli) was identified in 2 fields at Brucefield, Ont. Leaf infection was heavy and pod infection was 25% (M. D.S.).

FUSCOUS BLIGHT (Xanthomonas phaseoli var. fuscans (Burkh.) Starr & Burkh.), One affected plant was found in a 40-acre field of Sanilac grown for registration at Blenheim, Ont. (M. D. S.). This disease has not been previously reported in Canada (D. W. C.).

MOSAIC (virus) was tr. in plots at Fort Vermilion, Alta. (D. W. C.). It was of rare occurrence in w. Ont. and, when seen, was mainly on Michelite (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961). A sev. infection occurred on Kentucky Wonder at Kentville, N.S. in a garden near infected gladiolus (K.A. H.).

CHEMICAL INJURY from fertilizer was sev. enough to cause the re-planting of a 10-acre field at Hillaton, N.S. (K.A.H.).

FROST INJURY. Frosts on 30-31 May caused sev. injury to beans and other crops at Ste. Clothilde, Que. (R. Crête).

SUNSCALD was general in July in the Chilliwack area, B. C. (H. N. W. Toms) and was the most important disorder of bean in w, Ont, in 1961. (G.H.C., R.N.W. (C.P.D.S. 41:5. 363. 1961).

WIND INJURY. Wind and drifting sand caused severe blasting in sandy fields at Cambridge, N.S. (K.A.H.).

BEET

SCAB (Streptomyces scabies) was sl. in several gardens nr. Edmonton, Alta. (W. P. Campbell); heavy on Detroit Red in a garden at Ste. Anne de la Pocatiere, Que. (R. O. Lachance), and sl. on Ruby Queen at Kentville, N. S. (K.A. Harrison).

BORON DEFICIENCY caused a trace of damage on Ruby Queen and Early Wonder at Kentville, N. S. (K.A. H.).

BROAD BEAN

FUSARIUM WILT (F. oxysporum f. fabae). An affected specimen was received from Chicoutimi, Que. (D. 'Leblond).

MOSAIC (Bean yellow mosaic virus). Infection was 10% in a 30-ft. row in a garden at Vancouver, B. G. (H. N. W. Toms).

BROCCOLI

SOFT ROT (Erwinia carotovora) caused about 2% damage in a crop in N. B. (S.R. Colpitts).

BRUSSELS SPROUTS

BLACKLEG (Phoma lingam). Two 60-acre fields north of Toronto had an average of 25% infection in early Aug. In both cases, brussels sprouts had been grown on the same land for three or more years. The plants were started in field seed-beds which had previously grown sprouts (L.V. Busch). This constitutes a first report to the Survey of P. lingam on this crop (D. W. C.).

BLACK ROT (Xanthomonas campestris) was sev. in a 4-acre field at St. Paul 1'Ermite, Que. (J. Simard, R. Crête, T. Simard).

WHIPTAIL (Molybdcnuin deficiency). Slight- mod. symptoms were seen at the Exp. Farm, Fort Vermilion, Alta. (D.W. Creelman, W.P. Campbell).

CABBAGE

BLACK LEAF SPOT (Alternaria brassicicola, A. brassicae) was sl. in a 2-acre field nr. Ste. Clothilde, Que. (R. Crête). Infection was general but light on basal leaves of cabbage in the Maugerville, N.B. district. A few heads were found with a black rot of the inner leaves (K.M. Graham).

GRAY MOLD (Botrytis cinerea). Trace infections were seen at Maugerville, N.B. causing a rot of the inner leaves. Sclerotia and conidia were present (K. M. G.).

CLUB ROOT (Plasmodiophora brassicae), Infection was mod. on specimens received from Robson, B. C. (G. E. Woolliams). A small garden at Ste. Anne de la Pocatiere was completely destroyed (R.O. Lachance). The disease is widespread in Kings, Hants and Halifax counties, N.S. Control is maintained by 5-7 year rotations (K.A. Harrison).

DAMPING-OFF (Rhizoctonia solani) was tr. in transplanted seedlings at Coldbrook, N, S. (K. A. H.).

WHIPTAIL (Molybdenum deficiency) caused mod. damage at Fort Vermilion, Alta. (D, W, Creelman, W, P. Campbell), It was sev. at St. David's is w. Nfld. (O.A. O.).

BLACK SPECK (non-parasitic). Severely affected specimens were received from a Quebec City, Que. market. The disorder was associated with improper storage conditions (D. Leblond),

OEDEMA (non-parasitic) was sev. on specimens from St. Lambert, Que. (D.L.).

CARROT

ALTERNARIA BLIGHT (Alternaria dauci). Infection was 3-tr. 5-sl. 3-mod. 3-sev./33 fields on muck soil south of Montreal (J. Simard, R. Crête, T. Sirnard (C.P.D.S. 41:5. 353. 1961), and was widely distributed, causing some damage, in Kings Co., N.S. (K.A. Harrison).

BLACK ROT (Alternaria radicina) affected about 50% of a lot of carrots stored in sand nr. Victoria, B.C. (R.G. Atkinson).

CERCOSPORA BLIGHT (Cercospora carotae) was 3-sev. 3-mod. 6-sl./33 muck soil fields south of Montreal (J.S., R.C., T.S. (C. P.D.S. 41:5. 353. 1961). Infection was 10% in a field at Sheffield, N.B. (K.M. Graham, C. Smith). It developed very rapidly in Sept. and Oct. in Kings Co., N. S. Growers who sprayed with zineb or maneb obtained good control. Late in the season, Alternaria blight was also present in many fields (K.A.H.).

SOOTY MOLD (Chalaropsis thielavioides Peyrone) caused considerable damage to bagged, washed carrots in cool storage in a warehouse at Vancouver, B.C. (H.N.W. Toms, **S.J.** Hughes).

ROOT-KNOT NEMATODE (Meloidogyne hapla). Infestations of the northern root-knot nematode in the Thedford, Jeanette' s Creek and Bradford Marshes was much the same as in 1960. Sev. damage was encountered, however, on sandy soil at Alliston, Ont. (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961). Damage was 2-tr. 1-sl. 3-sl. - sev./33 muck soil fields south of Montreal, Que. (J.S., R. C., T. S.).

SCLEROTIMA ROT (S. sclerotiorum). Infected specimens were received from St. Damien, Bellechasse Co., Que. (D. Leblond). Trace infections were seen in Kings Co., N.S. (K.A.H.) and in a market garden and in storage at Charlottetown, P.E.I. (J.E. Campbell).

SCAB (Streptomyces scabies) was extremely sev. on a small percentage of carrots grown on peat soil at Caribou Bog, Kings Co., N.S. Potatoes grown on the same area the previous year were scabbed (K.A. H.).

BACTERIAL BLIGHT (Xanthomonas carotae) caused mod. damge in a field at Ste. Clothilde, Que. The organism, in this case, was obviously seed-borne (J.S., R.C., T.S.).

ASTER YELLOWS (Callistephus virus 1). Infections of 1-3% were observed in plots on the Exp. Farm, Fort Vermilion, (D. W. Creelman), and was prevalent in gardens in the Edmonton, Alta. area (W.P. Campbell), Foliage symptoms were sl. and hairy root tr. in a home garden in Ottawa, Ont. (D. W. C.). Infection was 1-5% and the average damage sl. in the Ste. Clothilde and Sherrington areas (J.S., R. C., T.S.); specimens were received from Beauport and Ange Gardien (D. L.); and ratings were 2% in the Lake St. John and Quebec areas, 4% at Ste. Anne de la Pocatiere, and 11% in the Gaspé region, Que. (R.O. Lachance). Infection was tr. at Oromocto, N.B. (S.R. Colpitts). Its incidence in Kings Co., N. S. returned to normal after the sev. outbreak in 1960. Damage ranged up to 5% in fields visited. Vectors were abundant by mid-June (K.A.H.). The disease was not as serious in P.E.I. as in 1960, although some fields showed 10-30% infection (J.E.C.). A fairly heavy infestation of leafhoppers developed in e. Nfld. in 1961 and mod. infections occurred at St. John' s, Brigus and Eastport (O.A. Olsen).

CAULIFLOWER

CLUB ROOT (Plasmodiophora brassicae). A light infection was present on all the plants in a field at Cole Harbor, N. S. but damage was slight (K. A. Harrison),

DROP (Sclerotinia sclerotiorum) caused mod. losses in 4/6 fields examined in the St. Remi - St. Eustache regions, Que. (J. Simard, R. Crête, T. Simard).

BORON DEFICIENCY affected 10% of a crop at Sussex, N, B. (S.R. Colpitts) and was more sev. than usual in Kings and Halifax counties, N.S. Numerous cases of brown curds were reported (K.A.H.).

CHEMICAL INJURY. Drift of 2, 4-D from a sprayed grain field injured all plants, about one-half of them severely, in a field at East Hall's Harbor, N.S. (K.A.H.).

WHIPTAIL (Molybdenum deficiency), Damage was sev. at Hay River, N. W. T. and at the Exp. Farm at Fort Vermilion, Alta, in July. Curds were not forming and leaves were badly cupped and wrinkled. There appeared to be distinct varietal differences in the degree of symptom expression (D. W. Creelman, W. P. Campbell), Trace - sl. symptoms were seen at Cole Harbor, N.S. (K.A.H.). Interveinal chlorosis was sev. in young plants grown for transplants nr. Kensington, P.E.I. The condition was corrected with a spray application of sodium molybdate (J.E. Campbell). It was sev. at St. David's in w. Nfld. (O.A. Olsen).

CELERY

EARLY BLIGHT (Cercospora apii). Infections were rated as 3-tr. -sl. 3-mod./13 fields examined in the Ste. Clothilde - Sherrington - St. Remi, Que. districts. Average damage was slight (J. Simard, R. Crête, T. Simard).

DAMPING OFF (Rhizoctonia solani and Pythium spp.) caused an average loss of 20% in 20 cold frames inspected at Sherrington, Que. (R.C.).

LATE BLIGHT (Septoria apii). Infection ranged from 10-30% and damage was sl. in fields at Ste. Clothilde and St. Remi, Que. (J.S., R. C., T. S.).

BACTERIAL BLIGHT (Pseudomonas apii). Three fields of the variety Utah B-10, planted with plants from the same seed source, suffered mod, damage at Ste. Clothilde and Sherrington, Que. Field infections were 30-60% (J.S., R.C., T.S.).

PINK ROT (Sclerotinia sclerotiorum) caused slight damage in a field at St. Remi, Que. (J.S., R.C., T.S.)

ASTER YELLOWS (Callistephus virus 1) was tr. in 2/8 fields at Sherrington, Que, (J.S., R.C., T.S.).

CHEMICAL INJURY. The herbicide MCPB (4-(2-methyl, 4-chlorophenoxy) butyric acid) applied at an advanced stage of growth and at too high a concentration caused mod. damage in a field at Sherrington, Que. (J.S., H.C., T. S.).

CUCUMBER

LEAF SPOT (Alternaria spp.). Several specimens were received at Vancouver, B. C. in July and Aug. A. tenuis was associated with the spotting (H.N. W. Toms). Leaf blight, caused by A. cucumerina became prevalent at Harrow, Ont. toward the end of harvest (C. D. McKeen). Alternaria sp. was present on a specimen received from Lunenburg, N.S. (K.A. Harrison).

SCAB (Cladosporium cucumerinum). Incidence was high on the Burpee hybrid variety in several fields in the Harrow, Ont. area. As in 1959, low night temperatures predisposed the crop to scab. There is evidence that a longer crop rotation is required to reduce losses in this district (C.D. McK.). Many lots of slicing varieties offered for sale in the markets and retail stores at Ottawa, Ont. were affected (D. W. Creelman), and specimens were received at Ottawa for identification (P.K. Basu). Slight infection was seen in a plastic greenhouse at Iberville (R. Crête); it was common in the Quebec district and specimens were received from Thetford Mines and Asbestos, Que. (D. Leblond). Serious losses were reported in Rimouski Co., Que. whereas in the vicinity of Ste. Anne de la Pocatiere, where the variety Wisconsin SR-6 was grown, no disease was observed. The previous crop had been a total loss (R.O. Lachance). Crops in York, Sunhury and Queen's counties in N.B. were heavily infected and some were a complete loss (S.R. Colpitts). A crop at Bridgewater, N.S. was a complete loss. The disease destroyed young fruits as they set and caused cankers on the vines (K.A.H.). Light infections were seen on the scab-resistant slicing variety Highmoor at the Exp. Farm and in a market garden at Charlottetown, P.E.I. (J.E. Campbell).

BACTERIAL WILT (Erwinia tracheiphila) caused the loss of 15-20% of the plants in a 2-acre field nr. St. Catharines, Ont. (J.F. Bradbury).

POWDERY MILDEW (Erysiphe communis) appeared in June and July in a few greenhouse crops and was prevalent on several field crops in the Harrow-Leamington area in Ont. Effective control was obtained where crops were sprayed with maneb (C.D. McK.). It was frequently seen as trace infections in Kings Co., N.S. but rarely caused trouble, (K.A.H.).

ROOT ROT (Fusarium sp.) killed plants in July and Aug. in market gardens in the Lulu Island and Vancouver, B.C. districts (H.N.W.T.).

ANGULAR LEAF SPOT (Pseudomonas lachrymans) was sl.-mod. in a market garden at Peace River, Alta. (D. W. C., W. P. Campbell) and was mod. in one field examined in s. Alta. (P.E. Blakeley). It was sl. in a plastic greenhouse in mid-June at Iberville, Que. The seed had not been treatedwith mercuric chloride (R. C.). Several infected garden crops were reported in Kings Co., N.S. (K.A.H.).

DOWNY MILDEW (Pseudoperonospora cubensis). Infection was sl. in 1 field in s. Alta. (P.E.B.). This disease has been previously reported in Canada only from Ont. and Que. (D.W.C.).

DAMPING-OFF (Rhizoctonia solani) affected 20% of approx. 2000 plants in a greenhouse in the Fraser Valley, B.C. (R.G. Atkineon).

WILT (Sclerotinia sclerotiorum). Losses of 50% occurred in 2 large commercial greenhouses at Summerland, B. C. in May. Infection was seen on both fruit and sterns and sclerotial development was abundant (G.E. Woolliams).

MOSAIC (virus). Trace infection was seen in plots at the Exp. Farm, Fort Vermilion, Alta. (D. W, C., W. P, C.). Mosaic was light in a plastic greenhouse at Iberville, Que. (R. C.). In N.S., little mosaic was seen in commercial fields but on the Exp. Farm, Kentville, it was sev. and by Sept. most varieties were dead, although several mosaic-resistant varieties such as Ashe and Jet were still green. Apparently there is an infected perennial host nearby as a similar situation occurred there in 1959 (K.A.H.).

NECROSIS VIRUS was found in s.-w. Ont. in 2 greenhouses where it had been found in previous years. Damage was slight (C.D. McK.).

CHEMICAL INJURY, caused by an excess of the nematicide, D-D, resulted in sev. stunting of plants at Kingston, N.S. (K.A.H.).

HEAT CANKER, Wilting, and constriction of stems at ground level, occurred during periods of high soil temperatures at Saskatoon, Sask, (T.C. Vanterpool),

LOW TEMPERATURE INJURY caused mod, damage to foliage in a market garden at Peace River, Alta, (D. W. C,, W. P. C.).

EGGPLANT

ROOT-KNOT NEMATODE (Meloidogyne hapla) was responsible for sl.-sev. injury to 17 samples received from the Harrow-Leamington area of Ont. (W.B. Mountain, R.M. Sayre (C.P.D.S. 41:5. 376. 1961).

ROOT-LESION NEMATODE (Pratylenchus. penetrans) was present in 65/65 fields sampled in the Harrow-Learnington area of Ont. (W.B. M., R. M.S. (C.P.D.S. 41:5. 376. 1961).

WILT (Verticillium dahliae) reduced yields in a number of crops in s.-w. Ont, (C.D. McKeen).

LETTUCE

GRAY MOLD (Botrytis cinerea) was much less troublesome than usual in Kings Co., N.S. Trace - 1% infections were seen at Grand Pré in July (K. A. Harrison).

DOWNY MILDEW (Uremia lactucae). Infection was rated 1-tr. 2-sl. -mod./17 muck soil fields south of Montreal (J. Simard, R. Crête, T. Simard (C.P.D.S. 41:5. 353. 1961). Several fields at Cole Harbor, N.S. were 100% infected in Sept. but plants' were heading and would produce an acceptable yield (K. A. H.).

BIG VEIN (Olpidium sp. and tobacco necrosis virus associated). Three fields of early summer lettuce at Leamington, Ont. failed to head properly where infection was 50% or higher (C.D. McKeen).

BOTTOM ROT (Rhizoctonia solani) was 1-tr./11 fields examined at Sherrington, Que. (J.S., R.C., T.S. (C.P.D.S. 41:5, 353. 1961). A light infection was present in a transplanted crop of 10,000 heads at Grand Pré, N.S. (K.A.H.).

DROP (Sclerotinia sclerotiorum). Trace infections were seen in head lettuce in plots on the Exp. Farm, Fort Vermilion, Alta. (D. W. Creelman). It was 1-tr, 2-sl.-mod./17 fields examined nr. Montreal (J.S., R. C., T.S. (C. P.D, S. 41:5. 353. 1961). Commercial plantings in Kings Co,, N. S. were comparatively free of drop and none was seen in the extensive plantings at Cole Harbor, Halifax Co. (K.A.H.).

ASTER YELLOWS (Callistephus virus 1). Trace - al. infections were seen in head lettuce at the Exp. Farm, Fort Vermilion, Alta. (D. W. C.). It was 3-tr./14 muck soil fields in the Sherrington - Farnham area (J.S., R.C., T.S.), and ranged from 12-14% in aster yellows gardens at Caplan and St. Joachim, Que. (R.O. Lachance). Infection was tr. in a garden at Oromocto, N.B. (S.R. Colpitts). A late, field-sown planting at Grand Pré, N.S. was mod. infected. No leafhopper control had been applied. At Cole Harbor, where the lettuce crop was a complete loss in 1960, most growers made weekly applications of 5% malathion dust and obtained good control. One unprotected field showed 60% infection and a few, where control measures were not carefully applied, showed 5-20% yellows (K.A.H.). Unsprayed fields in P.E.I. showed 15-40% infection but losses were generally lighter than in 1960 (J.E. Campbell).

MOSAIC (virus) was 1-tr./11 fields at Sherrington, Que. (J.S., R.C., T.S.). Infection of 3-5% in a market garden at Cornwall, P.E.I. was unusually high for the province (J.E. C.).

CALCIUM DEFIENCY was rated as 1-tr. 3-sev./14 fields at Sherrington and Farnham, Que. Some recovery of plants followed a spray application of calcium carbonate (J.S., R. C., T. S.).

TIP-BURN (physiological) was 2-mod./11 early-seeded fields at Sherrington, Que. (J.S., R. C., T. S.).

MELON

LEAF SPOT (Alternaria cucumerina) caused early defoliation of a few unsprayed crops in s.-w. Ont. Adequate control was obtained with zineb or maneb sprays (C. D. McKeen).

ANTHRACNOSE (Colletotrichum lagenarium) was sev. on a few unsprayed crops in s.-w. Ont. Foliage, stem and fruit infections were observed (C.D. McK.).

MUSKMELON

WILT (Fusarium oxysporum f. melonis). Variable losses were found in a few fields where resistant varieties were not being grown. Such highly-resistant varieties as Iroquois, Harvest Queen and Harper hybrid were unaffected (C. D. McKeen).

ONION

PURPLE BLOTCH (Alternaria porri) was much more sev. than usual in most sweet Spanish onion crops in Essex Co., Ont. Regular spray applications with maneb reduced damage appreciably (C. D. McKeen).

NECK ROT (Botrytis allii). Losses were comparatively light in the Okanagan Valley, B. C. due to excellent weather conditions before and during harvest (G.E. Woolliams). Infected specimens were received from Levis, Que. (D. Leblond). Traces only were seen in Kings Co., N.S. Its incidence in the area has been very low in the past two hot, dry growing seasons (K.A. Harrison).

GRAY MOLD (Botrytis cinerea) was present, causing mod. damage in most unsprayed onion fields south of Montreal, Que. (J. Simard, R. Crête, T. Simard (C. P. D. S. 41:5. 353. 1961). The dried tops of mature onions on the Caribou Bog, Kings Co., N.S. were full of sclerotia of B. cinerea. No bulb rot was evident (K.A.H.).

BULB AND STEM NEMATODE (Ditylenchus dipsaci). Nine acres on 3 farms in the Leamington, Ont. area were infested (W.B., Mountain, R.M. Sayre (C. P. D. S. 41:5. 376. 1961).

BULB ROT (Fuaarium oxysporum f. cepae), Infection ranged from 1-10% in fields in the Kelowna, B.C. district (G.E.W.) and was 2% in a field of several acres nr. Winnipeg, Man. (B. Peturson). It was tr. on Autumn Spice at Aylesford, N.S. (K.A.H.).

ROOT-KNOT NEMATODE (Meloidogyne hapla). Two acres of onions on the Thedford Marsh, Ont. were badly stunted (W. B. Mountain, R. M. Sayre (C.P.D.S. 41:5. 376. 1961).

DOWNY MILDEW (Peronospora destructor) was present in most onion fields in the muck soil area south of Montreal, Que. and the average damage was rated as moderate. It was sev. in several unsprayed fields (J.S., R. C., T.S.). Trace infections were seen in most gardens at Ste. Anne de la Pocatiere, Que. Premature death of tops was prevalent but proper curing could save the crops. Some gardens were 60% infected (R.O. Lachance).

ROOT-LESION NEMATODES (Pratylenchus spp.) were recovered from onions from the Okanagan Valley, B.C. (R.H. Mulvey (C. P. D. S. 41:5. 357. 1961).

DAMPING-OFF (Pythium sp.) occurred in thickly-planted fields of Silverskin at Kelowna, B.C. following unusually heavy rains in May. As high as 50% of the plants were killed in some fields. Damping-off of onions has not been previously observed in the Okanagan Valley (G. E. W.).

SMUT (Urocystis cepulae) was more widespread in the Kelowna, B.C. district than in 1960 but the rate of infection was generally lower. Some untreated plantings, however, had as high as 60% infection (G. E. W.).

YELLOW DWARF (virus). Up to 50% of the early bunching onions in several fields at La Salle, Ont. were affected and rendered unfit for sale. The virus overwintered in the bulbs which had been purchased from growers in the Leamington and Jeanette's Creek marshes (C. D. McK.).

PARSNIP

CANKER (Itersonilia perplexans). A serious outbreak of canker was observed in parsnips from a 20-acre field in Kings Co., N.S. Some barrels in storage had 30% of the roots rendered unfit for sale and it is feared that losses in the crop will probably reach 4000 bushels. The source of infection has not been determined. No wild parsnips grow in the area and the field was exceptionally free of weeds (K.A. Harrison).

ASTER YELLOWS (Callistephus virus 1). Several diseased plants were noted in a garden nr. Edmonton, Alta. (W.P. Campbell).

PEA

FOOT ROT (Ascochyta pinodella) was tr. -mod. in several fields in the Ottawa Valley, Ont. One field showed 25% damage (V. R. Wallen (C. P. D.S. 41:5. 365. 1961).

LEAF AND POD SPOT (Ascochyta ~~pisi~~) was tr. in 1 small field of Arthur peas at Ottawa, Ont. (V. R. W. (C. P. D. S. 41:5. 365. ,1961). It was observed in 2 gardens at Moncton, N.B. (S.R. Colpitts). A specimen was seen at Kentville, N. S. but none was observed in, commercial fields (K. A. Harrison). It was lighter than usual in P.E.I. , no doubt due to unusually dry conditions in midsummer (J.E. Campbell).

GRAY MOLD (Botrytis cinerea) occurred at Berwick, N.S. in a field with very heavy growth. Infection started in senescent leaves and spread to stems. The overall damage was light (K.A.H.).

ANTHRACNOSE (Colletotrichum ~~pisi~~) Trace infections were seen in several fields in the Ottawa Valley, Ont. (V.R. W. (C.P.D.S. 41:5, 365. 1961).

POWDERY MILDEW (Erysiphe polygoni) was sev. on late peas and general on all peas late in the season in the Edmonton, Alta. region (W. P. Campbell). Most garden peas showed mod. -sev. infections in the latter part of the season in the region of Saslcatoon (R. J. Ledingham), and specimens were received from St. Front, Sask. (T. C. Vanterpool). Infection was heavy on Little Marvel in a garden at Winnipeg, Man, (H.A.H. Wallace). It was general in garden plantings in N.B. (S.R. C.).

MYCOSPHAERELLA BLIGHT (M. pinodes) was tr. -mod. in several fields in the Ottawa Valley, Ont. (V. R. W. (C.P.D.S. 41:5. 365. 1961).

DOWNY MILDEW (Peronospora pisi) was 2-tr./11 canning crop fields at Taber and tr. in 2 garden plots at Lethbridge, Alta. (F.R. Harper). A light, general infection occurred in the Berwick, N.S. area following a period of cool, damp weather in July. A late planting of Sweet Sixteen was heavily infected in Sept. Crop was reduced and quality was lowered (K.A.H.).

SCLEROTINIA BLIGHT AND ROT (S. sclerotiorum) was seen in 2 fields in the Ottawa Valley, Ont. It had not been previously recorded in Ont, (V. R. W. (C.P.D.S. 41:5. 365. 1961).

RUST (Uromyces fabae). Crops in several fields in the Ottawa Valley, Ont, had tr. -mod. infections on leaves and stems (V.R. W. (C. P. D. S. 41:5. 365. 1961). It was tr. on most varieties in the Berwick, N.S. area. It appears each season but does little damage (K.A.H.).

ROOT ROT (various pathogens). Slight damage was seen at Hay River, N. W.T. and in plots at the Exp. Farm, Fort Vermilion, Alta. (D.W. Creelman, W. P. C.). Root rot was the cause of the complete loss of over 100 acres of canning peas in 11 fields at Taber, Alta. Isolations from roots collected in the 11 Taber fields yielded a high frequency of Fusarium spp. from all fields, Rhizoctonia solani and Pythium spp. were recovered in low frequency from 7 of the fields. Infection at Lethbridge was tr. -sl. (F. R.H.), R. solani caused slight damage in a garden at Moose Jaw, Sask. (R. J. L.). Fusarium spp. caused tr. -25% damage in gardens in N. B. (S.R. C.) and a light infection of Fusarium occurred in a garden plot at Kentville, N.S. (K. A. H.).

MOSAIC (virus). Trace amounts were seen in a market garden at Hay River, N. W. T, (D. W. C., W. P. C.), and in Creamette in a field on the C. E. F., Ottawa, Ont. (V.R. W.). Sweet Sixteen was infected in late plantings in a garden at Kentville, N. S. (K.A. H.).

STREAK (virus) was sev. in a field of Arthur at the C.E. F., Ottawa, Ont. Half the plants failed to set seed, A field of Creamette at the same location had tr. infection (V.R.W. (C.P.D.S. 41:5. 365. 1961). The variety Peter Pan was 50% infected in 2 fields at Berwick, N.S. Both were from the same seed source. The variety Alderman was sev. affected in a 5-acre field in Pictou Co., N.S. (K.A.H.),

CHEMICAL INJURY. Injury from the herbicide Avadex (2, 3, dichloroallyl diisopropylthiocarbamate), carried over in the soil from a spring application in **1960,** occurred in 1 field of peas planted in **1961.** Symptoms included decreased germination, stunting, and thick, distorted leaves (W. C. McDonald).

PEPPER

ANTHRACNOSE (Colletotrichum coccodes). Infected fruits were found, late in Sept., in several fields nr. Harrow, Ont. (C.D. McKeen).

DAMPING-OFF (Rhizoctonia solani) caused the **loss** of a few seedling plants in May at Fonthill, Ont. (G.C. Chamberlain).

WILT (Verticillium dahliae). Scattered infections occurred in several fields in the Harrow - Leamington area in s.-w. Ont. (C.D. McK.).

BACTERIAL SPOT (Xanthomonas vesicatoria). Seed-borne infection gave rise to a few infected plants in propagation beds in s.-w. Ont. Field-setting of such plants resulted in some field infections (C.D. McK.).

ALFALFA MOSAIC VIRUS was found as tr.-1% infections in several fields in Essex and Norfolk counties, Ont. (C.D. McK.).

CUCUMBER MOSAIC VIRUS. A few infected plants were observed in each of **4** fields in Essex Co., Ont. (C.D. McK.).

TOBACCO ETCH caused 100% infection in late summer in a few fields in the Harrow - Leamington, Ont. district (C.D. McK.).

BLOSSOM-END ROT (physiological) affected about **5%** of the plants in a garden at New Minas, N. S. (K.A. Harrison),

POTATO

The data presented in Tables **1-3,** pertaining to Seed Potato Certification in Canada were supplied by the Plant Protection Division, Production and Marketing Branch, Canada Department of Agriculture. As in 1960, the principal causes of rejection of seed fields were the bacterial diseases, **ring** rot and blackleg, and the virus diseases,, mosaic and leaf **roll.** It must be pointed out that the majority of the reports of diseases presented in this section refer to and reflect accurately the disease situation in the seed potato industry. Similar reports on the large table stock acreage are not readily available and it must be assumed that the disease picture in that crop would be more serious than in the seed crop where more stringent control measures are practiced (D. W. Creelman)

Table 1. Seed Potato Certification
Acreage Passed by Variety and Province - 1961

Variety	P.E.I.	N. S	N.B.	Que	Ont	Man.. Alta.	B. C.	Totals
Sebago	22,049	32	467	49	298	12	27	22,934
Kennebec	1,424	192	4, 729	683	150	197	113	7,488
Katahdin	620	8	4,799	217	158		4	5,806
Netted Gem	19	37	1,169		4	1,448	1, 656	4,333
Red Pontiac	144	24	2, 174			417	32	2, 791
Irish Cobbler	2,259	31	63	48	38	281		2, 720
Green Mountain	430	26	96	1,435	6		45	2,038
Fundy	576	23	138		5	15	2	759
Keswick	48	17	351	179	118		3	716
Norland			1		14	585	13	613
Cherokee	208	19	70	43	36	11		387
Warba	55	11	4	1	9	192	95	367
Waseca						153	14	167
Chippewa	3	1	39		90	2		135
Avon	36	13	40		2			91
Huron		6	27		24		20	77
Canso	54			1				55
Early Ohio						54		54
Others	19	20	27	10	1	129	74	280
Total	27, 944	460	14, 194	2, 666	953	3,496	2, 098	51,811
1960 Crop	26, 375	529	13, 734	4, 819	,078	3,383	1,021	52,939

Table 2. Seed Potato Certification
Summary of Fields and Acres Entered and Passed - 1961

	FIELDS			ACRES		
Province	Entered	Passed	Percent Passed	Entered	Passed	Percent Passed
P.E.I.	5, 518	4,857	88.0	31,626	27,944	88.3
N. S.	295	262	88.8	541	460	86.0
N.B.	2,008	1,827	90.9	16,074	14, 194	88.3
Que.	1,082	663	61.2	4,849	2,666	54.9
Ont.	471	354	75.1	1,451	953	65.6
Man,	147	131	89.1	1, 8.76	1,723	91.7
Sask.	84	76	90.4	409	333	81.4
Alta.	249	158	63.4	2,179	1,440	66.1
B. C.	567	381	67. 1	2, 870	2, 098	73.1
Totals	10,421	8,709	83.6	61,875	51,811	83.7

Table 3. Seed Potato Certification Fields rejected on Field Inspection - 1962

Prov.	Leaf Roll	Leaf Mosaic	Bacterial Ring Rot	Black-leg	Wilts	Adjacent Diseased Fields	Misc.	Total
P.E.I.	19	56	57	123	27	18	233	533
N. S.	13	3			1	5	3	25
N. B.	2	57	51	8			22	140
Que.	14	135	141	52	2	15	12	371
Ont.	53	16	4	17	12	10	8	120
Man.	2		6		2		6	16
Sask.			1	1			3	5
Alta.			11			1		12
B. C.	102	1	5	10	1	13	45	177
Total	205	268	276	211	45	62	332	1,342

EARLY BLIGHT (Alternaria solani) was generally sl. -mod. in B. C. with a few sev. infections in the Kootenaye and Okanagan districts (N. Mayers). Some late infections were seen in n. Alta. (E.C. Reid) while 47/178 fields in s. Alta. showed sl. -mod. infections (R. P. Stogryn). Tr. infections were recorded in n. Sask. (A. Charlebois) and it was sl. -mod. in a few fields in n. -w. Ont. (D. J. Petty). Early crops in Essex Co., Ont. suffered considerable foliage injury where top growth was heavy (C.D. McKeen). Infection was 49-sl. 2-mod./75 fields in e. Ont. (E.H. Peters), Its incidence in Que. was much greater than in 1960, especially in the Chicoutimi and Lake St. John regions. Ratings were 202-nl, 30-mod. 5-sev./1, 119 fields (G. Ethier). It was sev. on Green Mountain and Keswick in St. Andre sandy soil; sl. -mod. on many seedlings at Ste. Foy and sev. on F5552 at L'Assomption, Que. (H. Genereux). Incidence in N.B. was less than in recent years (C.E. Robinson). In N.S., it was mod. on Keswick in Antigonish Co, and in all fields of Hunter in Colchester Co. (R. C. Layton). Infection was heavy on several varieties at Bay Roberts, Nfld. (O.A.O.).

GRAY MOLD (Botrytis cinerea) affected the foliage of Keswick in 1 field in the Barrie, Ont. district (H. W. Whiteside).

BLACK DOT (Colletotrichum coccodes). The pathogen was isolated from many discolored stems in the Guelph, Ont. district by L.V. Busch (G.B. Scott). Twelve % of 172 sampled Green Mountain tubers bore sclerotia at Ste. Anne de la Pocatiere (J. Santerre). Trace infections developed on potato haulms in a greenhouse at Kentville, N. S. (C. O. Gourley).

BACTERIAL RING ROT (Corynebacterium sepedonicum) was the greatest single cause of rejection of certified seed potato fields in Canada in 1961 (D. W. Creelman). It was found in 5 seed fields in B.C. and 35 others were rejected on suspicion of infection. Twenty-six farms growing table stock were found infected (N.M.). In s. Alta., 11/178 fields were rejected (R.P.S.) and in Sask., 1/84 seed fields were affected although ring rot was sev. in a number

of table stock fields (A. C.). It caused the rejection of 6/147 fields in Man, (D. J.P.) and of 2/64 fields in w. Ont. (G.B.S.). In Que., 141/1, 119 fields were infected. This marked decrease, from 222/1,039 fields in 1959 is largely attributed to the greater use of quaternary ammonium disinfectants and to provincial aid with equipment for sterilization (G.E.). Ste. Anne de la Pocatiere, Que., all seedlings from Fredericton and many varieties, when knife-inoculated, showed wilt symptoms and striking tuber symptoms. Weather conditions were highly favorable for symptom expression. Teton showed 10% tuber infection while Saranac was practically free of symptoms (H.G.). Ring rot incidence in N.B. was less than in 1960; 51/2,008 fields were rejected (C.E.R.) while a decided increase was recorded in P.E.I. where 57/5,518 fields were rejected. Sixty-two other fields were turned down as contact cases. The increase is believed due to the increased use of mechanical seed-cutting and planting machinery (G. C. Ramsay). It was found in only 1 field in N. S. (R. C. L.). Ring rot was widespread in Nfld. and was found in many localities where it had not been previously known, including the Codroy Valley, Eastport, St. John' s, Bay Roberts, Musgrave-town, Lewisport and Brigus. Vine symptoms were quite evident but tuber rot was not heavy (O.A.O.).

POTATO ROT NEMATODE (Ditylenchus destructor) was identified in tubers from Ellerslie, **P.E.I.** This does not represent an extension of its known distribution in the province (R.H. Mulvey (C. **P.** D. S. 41:5. 357. 1961).

BLACKLEG (Erwinia atroseptica). Incidence in the coastal areas of B.C. increased over 1960 levels. Six seed fields in the province were. rejected (N.M.). A tr. infection was seen in Warba at Hay River, N.W.T. and it was tr.-sl. at Peace River, Alta. (D. W. C., W. P. Campbell). Although occurring in tr. amounts only in n. Alta. (E.C.R.), it was rated tr, -sl in 137/178 s. Alta. fields (R. P. S.). It was found in 22% of Sask. seed fields (A. C.); was tr. in some Man. fields, and was found in 20% of inspected fields in n.-w. Ont. (D. **J.P.**). Eleven/312 fields in the Barrie, Ont. district were rejected; it was seen in most fields in the London, Ont. district (F,J.H.), and in most Sebago fields in the Guelph district (G.B.S.). It was generally tr. in e. Ont. with 3/71 fields rejected (E.H. P.). A survey of approximately 1,000 acres ,of potatoes in the Alliston, Ont. area, during the month of August, re-vealeda high incidence of bacterial blackleg, the amount varying from a trace to over 50% in some fields. Plants in advanced stages of infection were black to their stem tips and many of the tubers were rotting in the hills. (L. V. Busch). In Que., 660/1,119 fields had some infection with 52 fields rejected (G.E.). Eight fields were rejected in N.B. Tuber rot was prevalent in Red Pontiac (C.E.R.). It was most prevalent in Sebago in N.S. where 68/295 seed fields were affected (R. C. L.), and, in P.E.I., blackleg was the principal cause of rejection of seed fields. There was an increased incidence over 1960 (G. C.R.). At Charlottetown, Norgleam was found to be highly susceptible to blackleg, Tuber rot was prominent (J. E. Campbell), Infection was 1-10% in the Codroy Valley, at Terra Nova, Lethbridge and St. John's, Nfld. (O.A.O.).

SOFT ROT (Erwinia carotovora). The amount of bacterial soft rot seen in the Barrie, Ont. district was somewhat less than usual (H. W. W.). A 5,000 bbl. storage house of Kennebec at Sheffield Mills, N.S. had scattered pockets of breakdown. Damp potatoes with a trace of late blight were stored in large bins. Kennebec is subject to soft rot when not properly dried before storage (K. A. Harrison).

DRY ROT (Fusarium spp.). Ten % of the tubers of a planting of Warba at Saanichton, B.C. rotted in the rows, F. caeruleum was isolated from the affected tubers (R. G. Atkinson). Badly rotted specimens of Irish Cobbler were received from a chip manufacturer in s. Man. The accompanying letter indicated considerable losses (D. W. C., J. W. Scannell). The incidence of F. sambucinum f. 6 was high, up to 44%, in seed brought to w. Ont. from P.E.I. (G. B. S.). Inspectors in e. Ont. reported appreciable losses in imported **P.E.I.** table stock potatoes (D. W.C.). Losses in the 1960 Que. crop ranged from 2-7% in storage. Keswick was the most susceptible variety, especially when bruised (B. Baribeau) It was sl. in 4 bin lots of Keswick from the 1961 Que. crop. (G.E.). In N.B. a few lots of Sebago and Keswick from the 1960 crop showed small percentages of dry rot (C.E.R.). Storages losses caused by F. sambucinum f. 6 were sev. in Prince Co., mod, in Queens Co. and sl. in Kings Co. in the 1960 P.E.I. crop, It appears not to be serious in the 1961 crop (G. W. Ayers).

ROOT ROT (Fusarium sambucinum f. 6). The variety Fundy, in a planting nr. Saskatoon, Sask., had a considerable number of wilted plants with the roots and stem-bases rotted, Numerous isolations showed F. sambucinum to be dominant (R. J. Ledingham, W. L, Gordon).

STEM-END BROWNING AND VASCULAR DISCOLORATION (Fusarium and Colletotrichum spp. associated). Two carloads of Netted Gem table stock from N.B. showed 15% of this disorder three days after arrival in Toronto, It resembled net necrosis but Fusarium and Colletotrichum were isolated (K. M. Graham),

SILVER SCURF (Helminthosporium atrovirens) was found, especially on smooth-skinned varieties, in the Barrie, Ont. district (H. W. W.). It was sl. in a few Green Mountain seed lots in Que. (G. E.), and a random sample of Irish Cobbler tubers from St. Joachim de Tourelle in the Gaspe were 100% infected (J. S.).

RHIZOCTOMA (Pellicularia filamentosa). In B. C., 88% of the seed fields were infected, with some sev. infections in the Interior and on Vancouver Island (N. M.). Sl. infection was seen on Warba at Hay River, N. W. T. (D. W. C., W. P. C.). It was tr. at Fort Vermilion and sl. in 3 fields at Peace River, Alta. (D. W. C.); sl. -mod. in all certified fields in n. Alta. (E. C.R.) and in 95% of s. Alta. fields (R. P. S.). In Sask., it was mod. in some irrigated fields (A. C.). In Ont., it was present in all varieties in the Barrie area (H. W. W.); occurred in most fields in the London district (F. J. H.) caused about 5% damage in the Guelph district (G. B. S.), and was rated 56-sl. 14-mod./75 e. Ont. fields (E. H. P.). In Que., 184/1, 119 inspected fields were affected. In bin inspections, it was rated 208-sl. 35-mod. 5-sev. (G.E.). Infection was sl. -25% on many Fredericton

seedlings grown at Stc. Anne de la Pocatierc and L'Assomption, Que. (H. G.). Losses were negligible in N.B. (C.E.R.) and in N.S. it was sev. in only 1 seed field of Bliss Triumph although it was reported to be sev. in many table-stock fields, causing stand reductions of 5-10% in many early-planted crops (R. C. L.). Rhizoctonia stem canker caused considerable damage and reduced yields in e. Nfld. (O.A.O.).

POCKET ROT (Phoma sp.). One tuber from an unnamed potato seedling at Fredericton, N.B. developed a depressed area about the size of a thumb nail in which a flaky, black rot developed. A Phona-like fungus was isolated (K. M. G.). The fungus was examined at Ottawa but specific determination could not be made. Phoma tuberosa Melhus, Rosenbaum and Schultz has been described (Jour. Agr. Res, 7:213-254. 1916) as causing a rot with similar symptoms in Maine. It is considered to be of little economic importance (D. W. C.).

LATE BLIGHT (Phytophthora infestans). One mod, infection in the Interior and 2 mod, cases on the Lower Mainland were seen in B.C. (N.M.). A few sl.-sev. infections occurred in n.-w. Ont. (D. J. P.); it was widespread in the Barrie district (H. W. W.); sl. in a few fields in London area (F.J.H.); general, though not serious, with some tuber rot, in w.-Ont. (G. B.S.); and 10-sl. 4-mod. /75 seed fields and widespread on table stock in e, Ont. (E.H. P.). It was first observed in the Mont Laurier district of Que. on 18 July, about 2 weeks earlier than in 1960. Spread was general and steady through late July and Aug. and by late Aug, it was epidemic throughout the province. Tuber infection was seen in all varieties, including the blight-resistant Kennebec and Keswick. Foliage infection in unsprayed fields was 15-100% and losses 15-30% of the crops. Tuber rot was reported in 62% of the bin lots inspected in the fall (G.E.). In N.B., late blight was first observed on 12 July in Victoria Co. Some spread occurred in July and early Aug. and top-killing began by mid-Aug. Little, if any, tuber rot occurred in lots top-killed by the first week in Sept., but in lots top-killed later, rot ranged from 0-50%. Katahdin was the most seriously affected variety followed by Kennebec. Losses' were considerable (C.E.R.). Late blight was first reported in N.S. in the Scott's Bay area on 20 July. By 17 Aug. it was general in that district and, by Sept., throughout the province. Tuber rot reached serious proportions with some bin lots 100% infected, Total losses may range from 15-25% of the seed crop (R. C. L.). The first infections were observed about a month later than normal in P.E.I. Total infection was negligible until mid-Sept. Tuber losses in the province were sl. (L. C. C.). A mod.-sev. infection was seen in 1 field at Manuels, Nfld. (O.A.O.).

LEAK (Pythium ultimum). Considerable losses were sustained in crops harvested in hot weather in the Fraser Valley, B. C. (N. M.). Four badly infected tubers were received from Levis, Que. (D, L.). Infections was sl. in a 10-acre field of Green Mountain and in some Maine seedlings at Ste. Anne de la Pocatiere, Que. (H.G.). Some leak developed in a lot of Fundy, harvested during warm weather, at Bedford, P.E.I. (J.E. C.).

STEM ROT (Sclerotinia sclerotiorum) was tr, on Sebago at the Exp. Farm, St. John's West, Nfld. (O.A.O.).

POWDERY SCAB (Spongospora subterranea) was generally sl. in the 1960 Que. crop in storage but 4 bin lots in the Lake St. John area showed mod, amounts (B.B.), It was sl. -mod. in a few bins from the 1961 Que. crop (G.E.). It was tr. on Green Mountain in wet soil at Ste, Anne de la Pocatiere, Que. (H. G.), and sev. in 2 plots at Scott' s Bay, N.S. (R. C. L.).

COMMON SCAB (Streptomyces scabies) was mod. on specimens of Pontiac from Nakusp, B. C. (G. E. Woolliams) and some sev. infections were seen in the Cariboo and c. B. C. (N. M.). It was tr, in plots at Fort Vermilion, Alta. (D. W. C.). Some scab was present in all crops of Warba and some sl. infections were seen in Netted Gem fields in n. Alta. (E. C.R.), while it was rated 18-tr. -sl./178 s. Alta. fields (R.P.S.). Some lots were sev. affected in Sask. (A, C.) and it was sl. -mod. in a few fields in Man. (D. J. P.). It was found in many seed lots in Ont, (H.W, W., F. J.H., E.H. P.). Scab was generally sl. in the stored 1960 crop in Que. though a few infections of 30-70% were found (B.B.). It was less prevalent in the 1961 crop, although a few serious infections ranging up to 60% were s'een (G.E.). In N, B. its incidence was somewhat lower than in recent years (C.E.R.) and it was generally mod. in P.E.I. (G.C.R.). Infection was variable in Nfld., ranging from light to heavy (O. A. O,).

WART (Synchytrium endobioticurn). Disease development was light in e. Nfld. in 1961 due to the dry summer, Rainfall was more abundant in w. Nfld. but infections were scattered (O.A. O.).

WILTS (Verticillium albo-atrum, Fusarium spp.). In B. C., 2 fields were rejected in the coastal area (N.M.). It was present in 32% of the fields inspected in n. Alta., mostly on Netted Gem (E. C. R.) and in 46/178 s. Alta, fields (R. P.S.). In Sask., it was tr. -1% in 31% of the seed fields (A.C.) and in Man. it was tr. in 13% of the fields inspected, causing the rejection of two (D. J.P.). Wilts are increasing in the Barrie, Ont. area, especially in Kennebec and Keswick (H. W. W.). In e. Ont., 9/71 fields were rejected (E.H. P.). A considerable increase in the incidence of wilts over 1960, especially in Kennebec and Keswick, was noted in Que. (G.E.). A 10-acre field of Kennebec at Ste. Catherine, Portneuf Co., Que. was 5% infected (H.G.). Sixty-two/2,008 fields in N. B. had some infection (C.E.R.) while in N, S. 88/295 fields were affected (R. C, L.). A table stock field of Netted Gem at Coldbrook, N.S. had 50% of the plants affected (C.L, L.). There was a decrease in the overall incidence of wilts in P.E.I. in 1961 although more fields were rejected (G. C.R.). A 30% infection was seen in Kennebec at Freetown, P.E.I. (G. W.A.). Wilt was tr. on Fundy at the Exp. Farm, St. John' s West, Nfld. (O.A. O.).

LEAF ROLL (virus) was again a problem in the Fraser Valley, B.C. and there was a considerable increase in the Okanagan Valley (N. M.). Sl. amounts were seen in plots at Fort Vermilion, Alta. (D. W. C.); it was tr. in 45% of the fields inspected in n. Alta. (E. C. R.) and tr. -sl. in 85/178 s. Alta. fields (R, P. S.). It was tr. -sl. in 55% of Sask. fields (A, C.) and tr. in 17% of inspected fields in Man. (D. J. P.). It was the most serious disease encountered in the Barrie, Ont,, district, causing the rejection of 29/312 fields (H. W. W.) and it also caused the rejection of 22 fields in w. Ont. (G.B.S.). In e. Ont.

2/71 fields were rejected (E.H.P.). In Que., leaf roll increased slightly over 1960 (G.E.). Seedlings F 5649 and F 5663 were sev. affected in regional trials at a number of Que. stations (H.G.). It was tr. in 107/2,008 N.B. fields (C.E.R.); it showed a definite increase over 1960 in N.S. (R.C.L.), and increased slightly in P.E.I. (G.C.R.).

MOSAIC (virus) was not a problem in B.C. in 1961 (N.M.). It war tr. at Hay River, N.W.T. and sl. at the Exp. Farm, Fort Vermilion, Alta, (U.W.C., W.P.C.). Tr. infections occurred in seed fields in both n. and s. Alta. (E.C.R., R.P.S.) and in 12% of Sask. fields (A.C.). In Ont., it caused the rejection of 6/312 fields in the Barrie district (H.W, W.); 5 fields in w. Ont. (G.B.S.), and 5/71 fields in e. Ont. (E.H.P.). There was a slight increase over the 1960 level and a marked increase over 1959 in Que. where 135/1,119 fields were rejected (G.E.). Incidence in N.B. was about the same as in 1960 (C.E.R.) and, mosaic was recorded in 148/295 fields in N.S. (R.C.L.). There was less mosaic in P.E.I. than in 1960 (G.C.R.). Rugose mosaic was heavy in Green Mountain at Cormack and Winterbrook, and on Irish Cobbler at Brigus South, Nfld. Mild mosaic was seen in most areas in the province (O.A.O.).

PURPLE TOP (virus). Low percentages were found in 11% of the fields inspected in n. Alta (E.C.R.) and it was 4-tr./178 s. Alta. fields (R.P.S.). Its incidence was less in the Barrie, Ont, district than in 1960 (H.W.W.). Sl. infections were seen on Huron, Norgleam and a number of Fredericton seedlings at Ste. Anne de la Pocatiere and on several seedlings at Ste. Foy, Que. (H.G.). It was tr. in a few fields in N.B. (C.E.R.) and N.S. (R.C.L.) while in P.E.I. it was about 5% in Sebago with negligible amounts in other varieties (G.C.R.).

SPINDLE TUBER (virus) was found in tuber index plots at Brooks and a 50% infection was found in 1 field in s. Alta. (R.P.S.). In Sask., it was seen in 9/84 fields, causing 1 to be rejected and 2 reduced to certified grade (A.C.). This disease may become a problem in Sask. although to date it appears to be confined to a few localities (R.J. Ledingham). It was observed as tr. infections in Ont. fields (H.W.W., G.B.S., F.J.H.), and was found in 10/480 bin lots in Que. (G.E.). Seventeen fields were rejected in N.B. compared to 6 in 1960 (C.E.R.); it caused 2 rejections in N.S. (R.C.L.) and was less evident in P.E.I. than in 1960 (G,C.R.).

STREAK (virus) A very severe type of streak necrosis, involving the whole plant, affected a planting of Huron at Canning, N.S. (K.A.H.).

WITCHES BROOM (virus) Trace amounts occurred in 5% of B.C. seed fields (N.M.). It was sl. in about 40 acres of table stock at Peace River, Alta. (D.W.C.) and tr. in 23% of the seed fields in n. Alta. (E.C.R.).

YELLOW DWARF (virus) was observed in 1 field at Temiskaming, Ont. (H.W.W.).

GIANT HILL, Trace amounts were seen in 6/178 fields in s. Alta, (R.P.S.), in the northerly part of the Barrie, Ont. district (H.W.W.) and in most Green Mountain fields in N.S. (R.C.L.).

BLACK SPOT, thought to be caused by pressure bruising caused the rejection of several lots of Kennebec seed potatoes in N.B. during the spring shipping season (C.E.R.). Several varieties were affected at East Florenceville, Grand Falls and Hartland, N.B. (K.M.G.).

ENLARGED LENTICELS (? excess soil moisture) was observed on specimens received from St. Amable, Vercheres Co., Que. (D. L.).

FROST. Early frosts were thought to be responsible for stem-end discoloration in 33 crops in the Cariboo and c. €3. C. (N. M.). Heavy damage occurred in May at Sherrington, Que. when temperatures fell to 21" F. (R. Crête). Oct. frosts also caused 5-10% losses in 125/480 bins examined in Que. (G.E.). Certified seed trucked into N.S. from P.E.I. in May showed discoloration in 10% of the tubers (K.A.H.). A carload of P.E.I. potatoes at Cornwall, Ont. was badly damaged in Jan. Tubers were broken down and Sclerotinia sclerotiorum had invaded them (D. W, C.).

HOLLOW HEART was found in a number of Kerinebec and Netted Gem crops in B, C. (N. W.). It was sev. on Fredericton seedling F 4519 at a number of stations in Que. (H.G.).

INTERNAL SPROUTING, following the use of sprout inhibitors, was seen in stored potatoes in Ont, (L. V. Busch) and caused losses of up to 40% in a few lots in Que. (B.B.).

LIGHTNING INJURY was sev. in a 30-ft. circle in a field at Waterville, N. S. (K.A.H.).

MAGNESIUM DEFICIENCY was diagnosed as the cause of intervenal necrosis in samples received from Ste. Sabine, Bellechasse Co., Que. (D. L.). Sl. injury was observed at Ste. Anne de la Pocatiere and in Portneuf Co., Que. (H.G.). It was evident in many localities in e. Nfld, (O.A.O.).

MANGANESE TOXICITY was sl.-mod. on a number of varieties on St. Andre sandy loam in L'Islet Co., Que. Symptoms were most sev. on Keswick and Norgleam (H.G.).

PUMPKIN

POWDERY MILDEW (Erysiphe communis) was commonly found on senescent leaves late in the season in the Okanagan Valley, B. C. (G,E. Woolliams).

ROOT ROT (Fusarium solani f. cucurbitae Snyd. & Hans.). In the Whitby, Ont. district, numerous reports of a sev. root rot condition in processing pumpkin were investigated in 1960-61. Several growers lost 50% or more of their plants before marketable fruits were produced. The pathogen has been isolated and identified (B.H. McNeill).

RADISH

BLACK ROOT (Aphanomyces raphani) caused losses ranging from 10-50% in some 2-3 acres on muck soils at Cloverdale and Vancouver, B.C. The damage occurred during a cool, wet period (H.N.W. Toms, H.S. Pepin).

COMMON SCAB (Streptomyccs scabies). Heavily infected specimens were received from Rosthern, Sask. (R. J. Ledingham).

RHUBARB

CROWN GALL (Agrobacterium tumefaciens) was found on a single plant at Burlington, Ont. when plants were dug in Nov. (J.F. Bradbury).

SOFT ROT (Pseudomonas sp.). A species of Pseudomonas was consistently isolated from affected tissues of crowns of plants dug earlier than normal nr. Burlington, Ont. It is thought that warm weather may have been a contributing factor (J.F.B.).

FROST caused mod. damage to a planting at West Brome, Que. Affected tissues were later invaded by soft-rot bacteria and molds such as Botrytis cinerea (J. Simard, R. Crête, T. Simard).

SQUASH

STORAGE ROT (Alternaria? tends). Chilling to 36°F caused by the failure of a heating unit, predisposed 2, 500 crates, of Golden Delicious and Royal Acorn squash to Alternaria rot at Berwick, N. S. Loss was complete. The variety Butternut, which had been frosted in the field and stored in the same room, showed about 2% infection (C. L. Lockhart).

STORAGE ROT (Colletotrichum coccodes). Several squash were affected at Kentville, N.S. They were from a garden with a history of C. coccodes on potatoes and tomatoes (K. A. Harrison).

STORAGE ROT (Colletotrichum lagenarium) was tr. on Golden Delicious in storage at Berwick, N.S. (C. L. L.).

POWDERY MILDEW (Erysiphe communis) was commonly found, late in the season, in the Okanagan Valley, B, C. (G. E. Woolliams). Heavy infections were present on breeding lines in a greenhouse at Kentville, N. S. (K.A.H.).

STORAGE ROT (Mycosphaerella melonis) caused discrete, sunken, circular lesions up to 1 inch in diameter, frequently coalescing to larger lesions and penetrating approx. 1/2 in. below the epidermis on Sweetmeat squash in storage at Sidney, B.C. Surface fruiting was abundant. Three-470 of the stored squash were affected (R. G. Atkinson). Considerable losses from Mycosphaerella rot in storage were reported from the Lower Fraser Valley, B. C. (H.N.W. Toms).

LEAF SPOT (Septoria cucurbitaccarum). In July, the cotyledons of every plant in a planting at Kentville, **N.S.** carried 1-10 lesions and a few primary leaves were infected. The disease spread slowly, and by mid-Oct. many leaves were heavily infected and dying prematurely (K.A.H.).

SWEDE TURNIP

SURFACE ROT (Fusarium avenaceum) affected 200 bu. of swedes in storage in Kings ***Co.,*** N. S. The roots were rendered unsaleable (C. L. Lockhart, W. L. Gordon).

WILT (Fusarium sp.). One area in a field of Laurentian at St. John's, Nfld. was heavily infected (O.A. Olsen).

DOWNY MILDEW (Peronospora parasitica) was sl. in a field at Napierville, Que. (J. Simard, R. Crête, T. Simard).

BLACK LEG (Phoma lingam) was sev. on roots from storage in March at St. Laurent, Ile Orleans, Que. (D. Leblond) and tr. on Laurentian in Nov. at Eastport, Nfld. (O.A.O.).

CLUB ROOT (Plasmodiophora brassicae). A specimen was received from St. Evariste, Que. (D. L.). Infection was heavy and necessitated the replanting of a field at Bathurst, N.B. (S.R. Colpittc). It was light on most roots in a field at Cole Harbor, **N.S.** (K.A. Harrison). Infection was sev. in 3 fields, planted in May or early June, in Queen' s and Kings counties, **P.E.I.** Fields planted later in June escaped infection due, no doubt, to drought conditions that prevailed until late Aug. (G. W. Ayers). Club root was generally light in e. Nfld. but heavy in some low areas where moisture was in good supply (O.A.O.).

SKIN SPOT (Rhizoctonia solani). Eighty barrels of early-harvested Laurentian at Grand Pre, N.S. were so badly infected that they were fit only for fodder (K.A.H.),

SCLEROTINIA ROT (S. sclerotiorum). An infected specimen was received from a market in Quebec City, Que. (D. L.).

SCAB (Streptomyces scabies) was tr. in a crop at Plaster Rock, N. B, (S.R. C.).

STORAGE ROT (various organisms). Roots removed from storage at St. Laurent, Ile Orleans, Que. were more than half affected by one or more of the following organisms: Phoma lingam, Rhozoctonia solani, Cylindrocarpon sp., Fusarium spp. Oospora sp., Penicillium spp., Rhizopus nigricans, Verticillium sp., Erwinia carotovora and Xanthomonas campestris (D. L.).

MOSAIC (virus) was tr. -sl. at the Exp. Farm, Fort Vermilion, Alta. (D. W. Creelman).

BROWN HEART (boron deficiency). Specimens were received from New Richmond and Douglastown, Que. (D.L.). One field of Laurentian at Cole Harbor, N.S. was 75% affected (K.A.H.). Rrown heart was sev. in plots receiving no boron at Charlottetown, P.E.I. Ten lb./acre of borax gave complete control (J.E. Campbell). Swedes grown on newly-cleared land at Marystown, Nfld. were 90-95% affected. No boron had been applied (O.A. O.).

CALCIUM-MAGNESIUM DEFICIENCY. A cupping and marginal burn of leaves of seedlings at East Gore, N.S. was diagnosed as calcium-magnesium deficiency, The soil pH in the 3-acre field was 4.2 (K.A.H.).

MOLYBDENUM DEFICIENCY was sev. on swedes and other cruciferous crops at St. David's, Nfld. (O.A. O.).

SWEET CORN

STEWART'S DISEASE (Bacterium stewartii). One variety, in a replicated test at the Exp. Farm, Beaverlodge, Alta., was 100% infected, The corn was grown under a plastic mulch and soil temperatures in May and June were over 100°F. The symptoms were typical. Its appearance in the single variety suggests seed-borne infection (D.W. Creelman, W. P. Campbell),

LEAF BLIGHT (Bipolaris turcicum) caused extensive leaf necrosis in many late plantings of sweet corn in Essex Co., Ont. Infection was widespread by late Sept. and yield was much reduced in affected fields (C.D. McKeen).

SMUT (Ustilago maydis) was seen in a garden nr. Edmonton, Alta. (W. P. Skoropad) and 1 specimen was received at Saskatoon, Sask. (R. J. Ledingham),

TOMATO

EARLY BLIGHT (Alternaria solani) was mod.-sev. in a market garden at Peace River, Alta. (D.W, Creelman). It was sev. in several fields in Sunbury and Queens counties, N.B., causing fruit rot and defoliation (S.R. Colpitts). In N. S,, early blight was not serious in commercial fields but was sev. in plots at the Exp. Farm, Kentville (K.A. Harrison).

GRAY MOLD FRUIT AND STEM ROT (Botrytis cinerea). There was an unusually high incidence of stem rot in greenhouse tomatoes in s.-w. Ont. in April and May (C.D. McKeen). Fruit rot affected 10% of a crop at Oromocto, N.R. after a prolonged wet period (S.R. C.). It was the most serious disease of greenhouse tomatoes in Hants and Kings counties, N. S. in 1961. In one greenhouse, 50% of the plants had stem cankers and 3% of the plants were killed. Production was affected in both counties, (K.A. H.).

LEAF MOLD (Cladosporium fulvum). Some plants in a planting of Vinequeen at Falmouth, N. S. were completely susceptible. The seed was apparently a mixed lot. It was also tr. in Pinehurst, Lunen, Co. Growers

are of the opinion that Thylate, used to control gray mold, gives some measure of control of leaf mold (K.A.H.).

ANTHRACNOSE (Colletotrichum coccodes). Adequate spray programs, using maneb as a fungicide, gave reasonably good control of anthracnose in both the basket and canning crops in Essex and Kent counties, Onl.. (C.D. McK.). It was less troublesome in the field in Kings Co., N. S. than in past seasons (K.A.H.). although it was the most common rot encountered in storage (C.L. Lockhart).

BACTERIAL CANKER (Corynebacterium michiganense) affected 5-10% of the plants in a 12-acre field at Lillooet, B. C., causing some loss in yield (G.E. Woolliams). A 2-acre field of staked tomatoes, at Leamington, Ont, was 50% infected and a heavy loss was sustained. A high incidence of Verticillium in the field aggravated the losses (C. D. McK.). A trace infection was observed in a crop nr. Welland, Ont. (J.F. Bradbury).

WILT (Fusarium oxysporum f. lycopersici). Two greenhouses in s.-w. Ont, showed a high incidence of infection that resulted in a 40% loss in yield (C.D.McK.).

ROOT-KNOT NEMATODE (Meloidogyne arenaria arenaria) was recovered from a greenhouse crop at London, Ont. (R. H. Mulvey, (C. P. D. S. 41:5. 357. 1961).

LATE BLIGHT (Phytophthora infestans). Infection was sl, -mod in field plots at the University, Vancouver, B. C. It did not appear until late Sept. (H.N.W. Toms). Late crops in Kings Co., N.S. began to show some infections after 1 Oct. but the disease was not a problem in commercial fields in 1961 (K.A.H.). A rapid build-up occurred late in the season in P. E.I. and affected some unsprayed plantings (J.E. Campbell).

BUCK-EYE ROT (Phytophthora parasitica). The causal organism was isolated from fruits of the lower clusters of a greenhouse crop nr. Stoney Creek,, Ont. The soil had not been sterilized (J. F. B.).

ROOT-LESION NEMATODE (Pratylenchus penetrans). High populations of this nematode were present in 3 fields in the Leamington, Ont. area (W.B. Mountain, R. M. Sayre (C. P.D.S. 41:5,.376. 1961).

PINK ROOT ROT (Pyrenochaeta terrestris). Characteristic pinkish, diffuse lesions developed on the roots of about one-half of the plants in a 20, 000 sq. ft. planting in a greenhouse in the Fraser Valley, B. C. Some wilting resulted. The organism produced a rot of cortical tissues but the vascular system remained healthy. Typical pycnidia with setae developed profusely on the lesions on roots stored under water in a refrigerated room and on potato-dextrose agar. The organism was isolated in pure culture (R.G. Atkinson). This is the first report, to the Survey, of P. terrestris on tomato in Canada (D. W. C.).

DAMPING-OFF (Rhizoctonia solani) caused the loss of 3-5% of seedlings of the varieties Vogue and Globemaster in a greenhouse at Fonthill, Ont. (G. C. Chamberlain).

COLLAR ROT (Sclerotinia sclerotiorum) was tr. in a commercial greenhouse at Summerland, B.C. (G.E.W.), in a greenhouse at Grand Pré, and in field plots at Kentville, N. S. (K.A.H.).

LEAF SPOT (Septoria lycopersici). A specimen was received from Levis, Que. (D. Leblond).

GRAY LEAF SPOT (Stemphylium solani). Many fields' of canning tomatoes in Essex Co., Ont. showed mod.-sev. infections by 'late Sept. (C.D. McK.).

WILT (Verticillium spp.). Affected plants of staked varieties were received from 2 home gardens at Ladner, B.C. (H.N.W.T.). Progress of the disease was checked by continuous hot weather in the B.C. Interior (G.E.W.). There was evidence of infection by V. dahliae in most of the early basket crops in Essex Co., Ont. and a variable incidence was observed in many canning crop fields. This organism is now considered to be the most destructive of the soil-borne pathogens in s.-w. Ont. (C.D. McK.) V. albo-atrum caused serious losses in a small greenhouse at Dublin Shore and tr. infections were seen in 2 greenhouses at Falmouth and in 1 at Grand Pré, N. S. A sev. outbreak also occurred in variety trials at the Research Station, Kentville. The variety Stokesdale produced a crop despite the infection (K.A. H.).

BLOTCHY RIPENING (virus) was sev. in commercial greenhouse crops on Vancouver Island, B.C. Some heavy economic losses were sustained (R.G.A.). Traces were seen in s. Alta. (P.E. Blakeley). It was not as sev. as in past seasons in N.S. (K.A.H.).

BROWN WALL (tobacco mosaic virus). Symptoms of this disease were found in fruits from several greenhouse and field crops in s.-w. Ont. (C.D. McK.).

MOSAIC (tobacco mosaic virus) occurred as infections of 1-10% in most commercial fields in the Okanagan, Thompson and Upper Fraser Valleys, B.C. (G.E.W.). Nearly 100% of the plants in most greenhouse crops in s.-w. Ont. were affected. Infection in field crops was of a much lower order (C.D. McK.). A trace of mosaic was seen in a greenhouse at Gagetown, N.B. (S.R.C.). It also affected 100% of greenhouse plants in Hants and Kings counties, N. S. (K.A.H.).

SPOTTED WILT (virus) affected 2% of the plants in a crop of Stokesdale at Kentville, N.S. A number of fruits, as they ripened, showed typical circular, yellow spotting. Affected plants were weaker than normal and produced fewer fruits. The diagnosis was confirmed by B.H. McNeill. Spotted wilt has not previously been encountered in N. S. (K.A.H.).

STREAK (virus). Infection was 100% in 2 new commercial greenhouses constructed on a site planted to potatoes in 1960. Yield was reduced by at least 40% (C.D. McK.). A few plants in a greenhouse at Pinehurst, N. S. were affected (K. A. H.).

BLOSSOM-END ROT (physiological) occurred to a slight extent in many fields in the B. C. Interior (G.E. W.). Two slightly affected plantings were seen in s. Alta.(P.E.B.). The hot, dry summer in Sask. aggravated the disorder. In a few plantings, 50% or more of the fruits were a complete loss (R. J. Ledingham). Damage was sl. at Winnipeg and was 10% in a planting at St. Boniface, Man. (B. Peturson). Sev. damage was incurred in a greenhouse at Kingston, N. S. following inadequate watering by an automatic watering system. Appreciable losses in the field crop in Kings Co. occurred because of extremely dry weather during July and Aug. (K.A.H.). It was of common occurrence in home gardens in P.E.I. (J.E. C.).

CATFACE (non-parasitic). A specimen was received from Three Rivers, Que. (D. L.). About 3% of the fruit of the variety Quebec 5 was affected at Oromocto, N.B. (S. R. C.).

CHEMICAL INJURY. Severe foliage injury resulted at Pinehurst, N. S. when borax was applied as a spray to plants that were not setting fruit properly (K.A.H.).

CHEMICAL INJURY (2, 4-D). Drift from a nearby sprayed lawn caused damage to tomatoes in a home garden at Vancouver, B. C. (H. N. W. T.).

FROST INJURY. Frost on 30-31 May caused mod.-sev. injury to tomatoes and other crops at Ste. Clothilde, Que. Some 2070 of tomato plants in cold frames were killed (R. Crête).

INTERNAL BREAKDOWN (cause unknown) affected 20-25% of the fruit in a canning crop nr. Welland, Ont. Because affected fruits could not be separated from sound ones without cutting, the canner was forced to reject the entire crop. There was no evidence of 2, 4-D injury and no virus could be isolated from affected plants (J. F. B.).

IRREGULAR RIPENING (physiological). A combination of bright sunlight and high temperatures in the B. C. Interior seemed responsible for the disorder. Considerable financial losses were .incurred (G.E. W.).

TURNIP

SOFT ROT (Erwinia carotovora). Injury to white turnips by cultivating equipment apparently provided infection courts for the organism which caused some damage at East Gore, N.S. (K.A. Harrison).