DISEASES OF VEGETABLE CROPS

ASPARAGUS

ROOT ROT (Fusarium spp.) was observed in tr. amounts in Kent Co., Ont. In Northumberland and Prince Edward counties. Fusarium, Rhizoctonia, and Pythium were associated with root rot affected plants (A.A.R.).

BEAN

LEAF SPOT (Ascochyta sp.) one plant with leaf spot was observed in a garden at Kentville, N.S. (T.C.).

LEAF AND POD SPOT (Bipolaris sorokiniana). A sev. infection of leaves, pods, and stems caused by B. sorokiniana was found in 10 acres of snap beans (Phaseolus vulgaris) in N.S. Symptoms of the disease differed from those previously described (CPDS 44:113-117. 1964) for B. sorokiniana on beans in N.B. Lesions on leaves, petioles, and stems were similar to those described for B. victoriae on beans in North Carolina, but pod lesions were distinctive in the N.S. material. An adjacent field of infected oats (Avena sativa) was the probable source of inoculum (C.O.G.) (See CPDS 48:34-36. 1968).

GRAY MOLD (Botrytis cinerea). Infection of up to 2% of the pods was found in 9/11 fields examined at Florenceville, N.B. (S.R.C.). Light (1% of pods affected) infections were observed in Digby and Kings counties, N.S. (A.A.MacN.).

ANTHRACNOSE (Colletotrichum lindemuthianum). Tr. to 100% infection was common in all areas in N.B. except in processing crops (S.R.C.).

ROOT ROT (Fusarium spp.) was sl. in 1 field in the Bow Island area of Alta. (F.R.H.). Tr. infection occurred in 1/1 field in Lennox and Addington Co., and in Norfolk and Brant counties, Ont. (A.A.R.). Root rot was more prevalent than usual in s.w. Que. and caused mod. to sev. damage in several fields (R.C.).

HALO BLIGHT (Pseudomonas phaseolicola) was positively identified in 8/10 fields grown under irrigation in s. Alta. Damage was sl. in 7 and sev. in 1 field (F.R.H.). Sl. to mod. infections were reported in Sask., where bacterial blight can generally be found but less frequently (R.J.L.). In experimental plots at Morden, Man., several lines showed 100% incidence of halo blight on the foliage (M.D.S.). Light infection was observed in 20 acres of beans at Sherrington, Que. (R.C.). Blight was found in 3/11 fields and was prevalent in home gardens at Florenceville, N.B. (S.R.C.).

STEM CANKER (Rhizoctonia solani) caused damping-off and cankering in commercial fields in Northumberland and Norfolk counties, Ont. (A.A.R.). Sprout damage affected 60% of the seedlings in a field at Florenceville, N.B. (S.R.C.).

COTTONY SOFT ROT (Sclerotinia sclerotiorum) was found throughout the bean-growing area of w. Ont., particularly in pockets of low-lying land where up to 50% of the plants were affected by pod rot and yields were reduced (V.R.W., A.A.R.). (See also CPDS 47:116. 1967).

BACTERIAL BLIGHT (Xanthomonas phaseoli) was reported from Spruce Grove and Hanna, Alta. (A.W.H.), but was not found in 18 plantings examined throughout N.S. (A.A.MacN.). X. phaseoli var. fuscans was identified in an experimental plot at Lethbridge, (F.R.H.).

CHEMICAL INJURY. 2,4-D injury affected 80% of the plants in a field at Chatham, N.B. (S.R.C.).

SUN SCALD. About 10% damage occurred in a field at Florenceville, N.B. (S.R.C.).

BRONZING of lima beans was attributed to ozone damage in 2/3 fields in Kent County, Ont. (A.A.R.). [See also CPDS 47:44. 1967 - Ed.].

BEETS

ROOT ROT (Aphanomyces cochlioides) was observed at Acadie, Que. in experimental plots. Incidence ratings (diseased/healthy) among cultivars were 'Ruby Queen', 3.4; 'Improved Dark Red', 3.5; 'Royal Red', 3.9; and 'Detroit Dark Red', 6.3 (L.J.C.).

ROOT ROT (Botrytis cinerea, Fusarium sp.) was found in 1/3 fields in Kent Co., Ont. (A.A.R.).

LEAF SPOT (Cercospora beticola) was common in most commercial plantings and home gardens in N.S. In 13/18 fields damage ranged from tr. to sev.; it was more sev. in Cape Breton and in Antigonish, Cumberland, Digby, and Yarmouth counties than in Colchester, Kings, Lunenburg, and Halifax counties (A.A.MacN.).

LEAF SPOT (C. beticola, Alternaria tenuis) was rated sl. in 3/3 field in Kent Co., Ont. (A.A.R.).

PHOMA ROT (Phoma spp.) was reported from Lethbridge, Alta. (A.W.H.).

DAMPING-OFF (Pythium, Fusarium, Rhizoctonia). Phythium aphanidermatum reduced the stand of table beets in portions of a 30-acre field near Armstrong, B.C. Surviving plants in affected areas were

stunted and had chlorotic leaves and poorly developed roots with scurfy black lesions at the soil line (B.B.T.). (See also CPDS 48:37. 1968). Damping-off attributed to Pythium sp. and Fusarium spp. occurred in tr. amounts in 2/3 fields in Kent Co., Ont,; mod. losses associated with Pythium, Fusarium and Rhizoctonia solani were reported in 1/2 fields in York Co., Ont. (A.A.R.).

BLACK ROOT (Rhizoctonia solani). Incidence ratings (no. diseased/no. healthy) for seedlings of test cultivars at Acadie, Que. were: 'Detroit Dark Red', 0.82; 'Improved Dark Red', 1.0; 'Ruby Queen', 1.4; 'Royal Red', 2.4 (L.J.C.).

BRUSSELS SPROUTS

BLACK ROT (Xanthomonas campestris) caused sev. infection in 1/2 fields examined in York Co., Ont. (A.A.R.). In Kings Co., N.S., apparently all fields of Brussels sprouts were affected, and the disease caused sev. damage in 2 fields of about 10 acres. It was also observed to be sev. in P.E.I. Communication with Dr. A.F. Scherf, Cornell Univ., Ithaca, N.Y. revealed that black rot was common in all N.E. states and probably appeared in all areas because of seed contamination (A.A.MacN.). Approx. 2% infection was reported from Rogersville, N.B. (S.R.C.); and in the experimental plots at Charlottetown, P.E.I., ca. 2% infection was found on cv. 'Jade Cross' (C.B.W.).

CABBAGE

LEAF SPOT (Alternaria brassicae, A. brassicicola). Sev. infection occurred in 3/8 fields examined in York Co., Ont. (A.A.R.). A. brassicicola affected 100% of the plants — and retarded head development of 25-50% of them at Colinet, Nfld. (O.A.O.).

BOTRYTIS ROT (Botrytis spp.) was reported from Calgary, Alta. (A.W.H.). Botrytis sp. and Sclerotinia sp. were associated with storage rot at Medford, N.S., where 5% damage occurred (T.C.).

SOFT ROT (Erwinia carotovora) was reported at Edmonton, Lethbridge and Ft. Saskatchewan, Alta. (A.W.H.). Incidence and damage was unusually high at Pleasantview and St. Davids, Nfld. following hot, wet weather in Aug. (O.A.O.).

YELLOWS (Fusarium oxysporum f. conglutinans) was observed in 5/24 fields examined in w. Ont. In most affected fields incidence ranged from 10 to 15%, but reached 95% in a field near Burlington (A.A.R.). (See also CPDS 47:116. 1967).

DAMPING-OFF (Fusarium spp.) caused little damage to seedlings in 1/2 fields in c. Ont. (A.A.R.).

DOWNY-MILDEW (Peronospora parasitica) caused light damage in a 5-acre field at St. Remi, Que. (R.C.).

CLUB ROOT (Plasmodiophora brassicae). In Ont. 31-60% incidence was observed in 1/7 fields in Halton Co. and lighter infections in 4/10 fields in York, Lambton, and Essex counties (A.A.R.). Up to 3% of the plants in 4/11 fields at Maugerville, N.B. were infected (S.R.C.). In N.S. club root was sev. in 3/36 fields in Antigonish and Colchester counties but was not observed elsewhere in the province (A.A.MacN.).

SHANK ROT (Rhizoctonia solani) killed 1-2% of the plants in 2 fields in Halifax Co. and one in Cape Breton Co., N.S. (A.A.MacN.).

SCLEROTINIA (Sclerotinia sclerotic was reported from Edmonton, Lethbridge, and Ponoka, Alta. (A.W.H.). Up to 10% loss was reported in 2/4 fields at Welland, Ont. (A.A.R.). At Oromocto, N.B. 60% damage occurred in 1 field (S.R.C.). About 5% of the mature heads in a one-acre field in Kings Co., N.S. were affected (A.A.MacN.).

BLACK ROT (Xanthomonas campestris). Sev. (>60% plants affected) infection was found in 4/8 fields in York Co., Ont. In Halton Co., Ont., 11-30% infection occurred in 1/7 fields (A.A.R.).

BLACK LEAF SPECK (Physiological) affected 100 bins (33 tons) of cabbage in storage at Cambridge, N.S. Low temperature changes may have caused the symptoms. Average damage was about 4% (T.C.).

OEDEMA (unbalanced water relations) affected 10% of the plants in a field at Norton, N.B. (S.R.C.).

CARROT

LEAF BLIGHT (Alternaria dauci). 11-30% infection was reported from York Co., Ont. (A.A.R.). In s.w. Que., 21/22 fields were affected (17 tr.-light, 4 mod.-sev.) (R.C., T.S., L.T.). Tr.-2% infections were seen in 9/11 fields examined in N.B. (S.R.C.).

BLACK ROT (Stemphylium radicinum) caused 60% damage to carrots in one field examined at Shediac, N.B. (S.R.C.).

GRAY MOLD ROT (Botrytis cinerea) was reported from Rocky Mountain House, Alta. (A.W.H.) and caused 5% damage to carrots in storage at Oromocto, N.B. (S.R.C.).

LEAF SPOT (Cercospora carotae). Infection was sev. in 1/2 fields in Dundas Co., Ont. (A.A.R.). Leaf spot (probably C. carotae) affected 7/23 fields in N.S. and was most prevalent in Kings Co., where all 5 (23 acres) fields examined were affected; in 2 fields the disease was rated heavy, with all plants showing coalescing lesions

(A.A.MacN.). Incidence of C. carotae infected plants was also very high on several cultivars at Colinet, Nfld. (O.A.O.).

SOFT ROT (Erwinia carotovora) caused minor damage to stored carrots at Onoway and Red Deer; Alta. (A.W.H.). At Oromocto, N.B., 30% loss was reported in Nov. at retail outlets following washing of cold-stored carrots (S.R.C.).

ROOT ROT. Geotrichum candidum was associated with root rot affected carrots at Vermilion, Alta. (A.W.H.).

SCLEROTINIA ROT (Sclerotinia sclerotiorum) was reported from Edmonton, Oliver, Bowden, Red Deer and Ponoka, Alta. (A.W.H.). In the Ste. Clotilde–Sherrington, Que., area 3/22 fields examined showed tr.-light infection before harvest (R.C., T.S., L.T.). At Oromocto, N.B. 7% damage was reported in stored carrots in Nov. (S.R.C.). At Berwick, N.S., approx. 50% of bin-stored carrots were lost by Oct. 1. (T.C.).

ASTER YELLOWS (aster yellows ?virus) was present in most plantings of carrots in Sask., but few plants were affected (R.J.L.). Tr. amounts were reported in 5/22 fields in the Ste. Clotilde–Sherrington area of Que. (R.C., T.S., L.T.). It was not a major problem in commercial fields in N.S. where 5/23 fields were affected: 1–2% infection was reported in Yarmouth, Lunenburg, and Colchester counties, 2–5% in Cumberland, and 10% (severe rating) in Pictou Co. (A.A.MacN.). Up to 3% infection occurred in 10/11 fields examined in N.B. (S.R.C.).

CAULIFLOWER

LEAF SPOT (Alternaria brassicae) was rated sev. (>60% incidence in 1 field in Norfolk Co., tr. in Brant Co., and sl. (11–30%) in 1/4 fields in York Co., Ont. (A.A.R.).

SOFT ROT (Erwinia carotovora). Tr. amounts of head infection were found in Kings and Yarmouth counties, N.S. (A.A.MacN.).

YELLOWS (Fusarium oxysporum f. conglutinans) was rated sl. in 1/5 fields in Halton Co., Ont. (A.A.R.).

ROOT ROT. Fusarium sp. was associated with 10% incidence of root rot in Brant Co., Ont. (A.A.R.).

CLUBROOT (Plasmodiophora brassicae) was rated tr. in 1/3 fields in Lincoln Co., sl. in 1/3 fields in Essex Co., mod. in 1/1 field in Welland Co., Ont. (A.A.R.).

DAMPING-OFF (Pythium spp., Fusarium spp.) was observed in tr. amounts in 2/4 fields in Lincoln and Norfolk counties and in 1/5 fields in Halton Co., Ont. (A.A.R.).

WIRE STEM (Rhizoctonia solani). Up to 10% infection was found in 1/7 fields in Oxford and in 1/1 in Norfolk Co., Ont. (A.A.R.).

DROP (Sclerotinia sclerotiorum) caused tr.-sl. damage in Oxford, Welland, and Halton counties, Ont. (A.A.R.).

BLACK ROT (Xanthomonas campestris). Infection was moderate (31–60% of plants affected) in 3/4 fields examined in York Co. Incidence was similar in Oxford (3/7), Welland (1/1), and Essex (3/3) counties (A.A.R.).

LEAF SPOT (Xanthomonas spp.) was rated mod. in 3/4 fields in York Co., Ont. Unidentified bacteria were isolated from leaf spot affected plants in Wentworth Co., Ont. (A.A.R.).

BORON DEFICIENCY followed by bacterial soft rot was responsible for the breakdown of 2% of the heads in 2/7 fields examined at Maugerville, N.B. (S.R.C.).

CELERY

LEAF BLIGHT (Alternaria dauci). Mod. infection was reported in 1/6 fields in York Co., Ont. (A.A.R.).

EARLY BLIGHT (Cercospora apii). Tr. amounts were observed in 1/5 fields examined in s.w. Que. (R.C., T.S., L.T.).

SOFT ROT (Erwinia carotovora). Infection was light in a 10-acre field at Ste. Dorothde, Que. (R.C.).

BACTERIAL BLIGHT (Pseudomonas apii) was rated tr. in 2/5 fields examined at Ste. Clotilde, Que. (R.C., T.S., L.T.).

PINK ROT (Sclerotinia sclerotiorum). Traces were seen in 3/5 fields surveyed at Ste. Clotilde and Sherrington, Que. (R.C., T.S., L.T.).

ASTER YELLOWS (aster yellows ?virus) was found in trace amounts in 5/5 fields examined in s.w. Que. (R.C., T.S., L.T.).

MOSAIC (unidentified virus). Tr. in 2/5 fields at Ste. Clotilde, Que. (R.C., T.S., L.T.).

NEMATODE INJURY (possibly Pratylenchus macrophallus). In tr. amounts in 1/5 fields at Ste. Clotilde, Que. (R.C., T.S., L.T.).

CUCUMBER

LEAF BLIGHT (Alternaria cucumerina and A. sp.). Sev. damage occurred in 2/4 fields in Northumberland Co. and infection was rated sl.-mod. in 2/2 fields in Oxford Co., Ont. (A.A.R.). In N.S. 8/28 fields in Kings, Cumberland, Pictou, and Antigonish counties

were affected; incidence was approx. 100%, while severity was rated tr. in 1, light (10% leaf area dead) in 3, mod. (all oldest leaves affected on all plants) in 2, heavy (more than oldest leaves affected, 25–50% of leaf area dead) in 2 (A.A.MacN.). In experimental plots at Kentville, N.S., the percentage of vines killed on test cultivars were 'Burpless', 60%; 'Burpee M & M', 30%; 'Spartangreen', 30%; 'Princess', 30%; 'Duchess', 50%; 'Gemini, 70%; 'Poinsett', 90%; 'Highmark II', 50%; 'Early F1 Hybrid', 30%; 'Marketmore', 20%; 'High Yield', 30%; 'Dixislicer', 50%; '916S', 20%; 'SC-6', 15%; 'MSU527', 30% (C.O.G., E.W.C.).

GRAY MOLD (Botrytis cinerea). Up to 2% infection was present in 3/11 fields examined in Oromocto, N.B. (S.R.C.).

SCAB (Cladosporium cucumerinum) was rated mod. in 2/6 fields in Essex county, Ont. (A.A.R.). At La Pocatière, Que. 'Hybrid Challenger' showed 50% fruit infection by Sept. 1, and 100% by mid-Sept. In other varieties incidence was light (H.G.). In experimental plots at Acadie, Que., fruit infection in test cultivars was rated 'Gemini', 0; 'Highmark II', tr.; 'Polaris', 15%; 'Challenger', 50%; 'Palomar', 50%; 'Long Marketeer' and 'Exposition', 50–75% (L.J.C.). Scab was reported from all parts of N.B. (7/11 fields tr.-sev.) and was especially severe in home gardens (S.R.C.). In N.S., scab was observed in only 1 field, in Antigonish Co., where it was rated sev. (>50% fruit infected) on 'Marketer' and 'Tablegreen' and heavy (25-50% infected) on 'Armor'. 'Highmore' was apparently immune (A.A.MacN.).

POWDERY MILDEW (Erysiphe cichoracearum) was rated sev. in 1/2 fields in Oxford Co.. and 2/7 in Norfolk' Co., tr. in 1/5 in Durham Co., and mod. in 1 greenhouse in Essex Co., Ont. (A.A.R.).

BACTERIAL WILT (Erwinia tracheiphila). In Ont. bacterial wilt was rated sev. in 1 field in Simcoe Co. and tr.-sl. (up to 30% incidence) in 3/5 fields in Durham Co., 3/4 in Northumberland; 4/4 in Kent: 2/2 in Oxford; 2/4 in Welland; 5/7 in Norfolk; and 1/3 in Huron (A.A.R.).

WILT (Fusarium sp.) caused loss of about 30 tons of greenhouse-produced fruit at Haney, B.C., where improper soil fumigation was practised (D.J.O.). Fusarium wilt was reported as sl. in 1/2 fields in Halton Co., Ont. (A.A.R.).

DAMPING-OFF (Fusarium spp., Pythium spp., Rhizoctonia solani) was rated tr. in 2/11 fields in Norfolk and Welland counties and sev. in 3/6 fields in Essex Co., Ont. (A.A.R.).

ANGULAR LEAF SPOT (Pseudomonas lachrymans) was reported on a specimen at Saskatoon, Sask. (R.J.L.). At Grand Coulee, Man., 100% incidence and sev. losses occurred in a field of pickling cucumbers (M.D.S.). The disease was widespread in Ont. where field ratings by county were Kent, 1 sl. 1 sev./4; Norfolk, 1 sl./7; Essex, 6 mod./6; Oxford, 1 mod. 1 sev./2; Huron, 2 tr./3; Simcoe, 1 sev./1; Durham, 5/5 sl.-sev.; Northumberland, 1 sev/4 (A.A.R.). At Oromocto, N.B. incidence in 3/11 fields was tr.-70% (S.R.C.). In N.S. 2/4 fields were affected in Kings Co., 1 mod. (10-25% fruit affected), and 1 sev. (>50% fruit affected). (A.A.MacN.).

MOSAIC (cucumber mosaic virus). In experimental fields at Acadie, Que., mosaic was rated tr. on 'Gemini' and 'Highmark 11', sl. (25% diseased fruit) on 'Expo', sev. (50-75%) on 'Palomar' and 'Challenger', and extremely sev. (75-100%) on 'Long Marketeer' and 'Polaris' (L.J.C.). At Oromocto, N.B. 10% incidence was reported in 1/11 fields (S.R.C.). In Kings Co., N.S., 2/4 fields were affected - 1 mod. (10–25% fruit affected), 1 sev. (>50% fruit affected) (A.A.MacN.).

EGGPLANT

WILT (Verticillium spp.) was attributed to V. dahliae in the Ont. counties of Norfolk, 1/1 fields tr.; Essex, 1/1 sl. (10-30% incidence); Lincoln, 1/2 sev. (61-100%); and Oxford, 1/2 sev. (A.A.R.). Verticillium sp. affected a few plants in an ornamental plot at Ste. Clotilde, Que. (R.C.).

LETTUCE

GRAY MOLD (Botrytis cinerea) was reported in 3/3 fields (1-10% incidence) in Essex Co., Ont. (A.A.R.); and in 2/8 fields at Sherrington, Que., where ca. 70% of a 5-acre field was destroyed (R.C., T.S., L.T.). In N.S. gray mold was more important than in the previous few years because of excessive rainfall and was most severe on over-mature plants; incidence: Halifax Co., 1/8 fields, 5-10% plants; Pictou Co., 1/7 fields, tr.; Cape Breton Co., 4/5 fields, 2-tr., 2-2%.; Digby Co., 1 garden, 10% (A.A.MacN.).

DOWNY MILDEW (Bremia lactucae) occurred in tr. amounts in 2/8 fields near Ste. Clotilde. Que. (R.C., T.S., L.T.). In N.S. downy mildew was present only in Halifax Co., 5/8 fields - 1 tr., 1 light (1-10% plants affected), 1 mod. (10-90%), 2 heavy (90-100%). (A.A.MacN.).

DAMPING OFF (Fusarium spp.) Tr. infection was observed in 1/3 fields in Dundas Co., Ont. (A.A.R.).

ROOT ROT (Pythium sp.) was light-mod. in a 3-acre field at Sherrington, Que. The condition may have been partially due to NH_4-N fertilizer injury. (R.C.).

BOTTOM ROT (Rhizoctonia solani) caused minor damage on the early crop in muck soil

market gardens near Vancouver, B.C. (H.N.W.T.). Tr. infection was seen in 1/8 fields at Ste. Clotilde, Que. (R.C., T.S., L.T.).

DROP (Sclerotinia sclerotiorum). Mortality from drop was relatively low in early lettuce on muck soils near Vancouver (H.N.W.T.). Tr. amounts of disease were found in 1/1 field in Lambton Co. and in 1/3 fields in Dundas Co., Ont. (A.A.R.). Tr.-light infections were reported in 2/8 fields near Ste. Clotilde, Que. (R.C., T.S., L.T.). At Oromocto, N.B. 20% damage occurred in 1 field (S.R.C.). Tr. was reported from 1 field in Pictou Co., N.S., while 1–2% of plants were diseased in a Cape Breton Co. field. (A.A.MacN.).

ASTER YELLOWS (aster yellows virus). Infection ranged from trace to light in 3/8 fields near Ste. Clotilde and Sherrington, Que. (R.C., T.S., L.T.). About 3% damage was observed in a field at Shediac, N.B. (S.R.C.). Aster yellows was a major problem affecting lettuce production in Pictou Co., N.S., where 4/7 fields were affected, 3 sev. (> 10%), 1 light (1-2%). It caused light to moderate damage in Cape Breton Co. The disease appeared in late July and caused most damage in late Aug. and Sept. Older fields were most severely affected, with up to 100% infection in fields approaching maturity. Extensive plantings in Yarmouth and Halifax counties were free from aster yellows (A.A.MacN.).

TIP BURN (physiological) was observed in 1/8 fields at Ste. Clotilde, Que. (R.C., T.S., L.T.), and mod. damage was seen in a 5-acre field at Sherrington, Que. (R.C.). Tip burn was present in tr. amounts in one field in each of Cape Breton and Pictou counties (A.A.MacN.).

MARGINAL LEAF BURN (cause undetermined) was found in tr. amounts on plants in 1/8 fields at Ste. Clotilde, Que. (R.C., T.S., L.T.).

SOFT ROT SLIME (cause unidentified). In N.S. incidence varied from zero in Yarmouth Co. to sev. (10%) in late, mature lettuce in Halifax Co., where 2/7 fields were affected, and in Cape Breton Co., where 2/5 fields were rated light–mod. (up to 5% of plants affected). Tr. was reported from 1 Pictou Co. field, and the disease was sev. in Colchester Co. gardens (A.A.MacN.).

MATRIMONY VINE (Lycium halimifolium)

POWDERY MILDEW (Oidium sp.). Infection was general in senescent leaves in Nov. at Vancouver, B.C., where matrimony vine is grown in Chinese market gardens as a pot herb. The perfect state was not found, even on fallen leaves (H.N.W.T.).

MUSKMELON

LEAF BLIGHT (Alternaria cucumerina) was observed in 2 fields in Norfolk and Halton counties, Ont; incidence in each was 11-30% (A.A.R.).

SCAB (Cladosporium cucumerinum). Sev. scab (61-100% incidence) was found in 1/1 field in Norfolk Co., Ont. (A.A.R.).

BACTERIAL WILT (Erwinia tracheiphila) was reported in tr. amounts (1-10%) in 1/2 fields in Oxford Co., Ont. (A.A.R.).

POWDERY MILDEW (Erysiphe cichoracearum) was rated sev. in 2/4 fields in Essex Co., Ont. (A.A.R.).

FRUIT ROT (Fusarium spp.). Incidence was sl. (11-30%) in 1/1 field in Prince Edward Co., Ont. (A.A.R.).

ONION

PURPLE BLOTCH (Alternaria porri). Infection was sl. (11-30%) in 1/3 fields in Durham Co. and sev. (61-100%) in 1/6 fields in Kent Co., Ont. (A.A.R.). Of 18 fields examined near Ste. Clotilde and Sherrington, Que., 5 showed tr. infection and 4 light. (R.C., T.S., L.T.).

NECK ROT (Botrytis allii). Dry weather extending to picking time resulted in very lt. infection and negligible damage in the Okanagan Valley, B.C. (M.F.W.). The disease was reported from Edmonton, Alta. (A.W.H.) and was rated mod. (31-60%) in 1/6 fields in Essex Co., Ont. (A.A.R.).

LEAF BLIGHT (Botrytis squamosa, Botrytis spp.). B. squamosa affected all 18 fields examined in the Ste. Clotilde–Sherrington areas of s.w. Que.; incidence ratings were 10–tr. 2–light 5–mod. 1–sev. (R.C., T.S., L.T.). In Ont., Botrytis spp. affected fields in Durham Co. (1-mod./3), York Co. (3 mod.-sev./8) and Lambton Co. (1–mod. 1-sev./4) A.A.R.).

DAMPING OFF (Fusarium spp., Pythium spp.) caused tr. infections in 1/8 fields in York Co. and in 1/6 fields in Essex Co., Ont. (A.A.R.).

BASAL ROT (Fusarium oxysporum f. cepae). In the Okanagan Valley, B.C., high incidence and serious losses were sustained on one farm near Oliver, but the disease was not serious in the Kelowna district (M.F.W.). Unidentified fusaria were associated with 10-30% incidence of basal rot in 1/6 fields in Essex Co., Ont. (A.A.R.).

PINK ROOT (Fusarium spp.). In Ont. Fusarium was the only pathogen isolated from

roots showing symptoms of pink root; incidence ratings were sl. 1/2 fields in Lincoln Co., mod. 1/6 in Kent Co., mod. 1/2 in Welland Co., and sl. 1/3 in Durham Co. (A.A.R.).

BULB ROT (Penicillium spp.) caused tr. infection in 1/6 fields in Essex Co., Ont. (A.A.R.).

WHITE ROT (Sclerotium cepivorum). Of 17 farms near Kelowna, B.C., on which low levels of infection were detected in 1964, two developed very high levels in 1967, resulting in total loss of the crops (M.F.W.).

SMUT (Urocystis magica). In the Kelowna, B.C. area treated fields had low losses from smut, but in cold dry ground where emergence was slow the recommended fungicide-insecticide treatment caused PRE-EMERGENCE INJURY to poorer batches of seed (M.F.W.). In Ontario tr. infection was found in 4/8 fields in York Co., 1/6 in Essex Co., and 1/2 in Lincoln Co. (A.A.R.). Infection ranged from tr. to light in 3/8 at Ste. Clotilde, Que., and light to mod. infection was reported in a 30-acre field on organic soil at Sherrington, Que. (R.C.).

TIP BURN (physiological). Incidence was rated tr. in 1/4 fields in Lambton Co. and mod. in 3/6 fields in Kent Co., Ont. (A.A.R.).

PARSNIP

BOTRYTIS ROT (Botrytis sp.) was reported from plantings at Edmonton and Bowden, Alta. (A.W.H.).

LEAF SPOT (Cercospora pastinacae) was reported on 60% of the plants in a field examined at Sheffield, N.B. (S.R.C.).

CANKER (Itersonilia perplexans). Light infection was observed in 1/4 plantings in Kings Co., N.S. (A.A.MacN.). At Norton, N.B. 10% damage resulted to parsnips in storage (S.R.C.).

SCLEROTINIA ROT (Sclerotinia sclerotiorum) occurred on parsnips at Edmonton, Alta. (A.W.H.).

PEA

GRAY MOLD (Botrytis cinerea) was light in 1/9 fields in Yamouth Co., N.S. (A.A.MacN.).

POWDERY MILDEW (Erysiphe polygoni) was reported from 6 locations (A.W.H.) and in 8/124 fields of seed peas in Alta. (D.S.MacL.). S1.-mod. damage occurred in Sask., where powdery mildew is the most troublesome disease of peas, particularly for gardeners who expect the crop to extend over several weeks (R.J.L.).

WILT (Fusarium oxysporum) was observed at Calgary, Alta. (A.W.H.). Elsewhere in Alta., F. oxysporum f. pisi was found in tr. amounts in 13/124 fields of seed peas; and in 3 fields, near wilt (F. oxysporum f. pisi race 2) was reported (D.S.MacL.). In N.S. 4 fields representing ca. 50 acres of processing peas were severely affected in the Auburn, Weston, and Harbourville Mountain areas; vascular symptoms were typical of near wilt (W.L.S., C.L.L.).

ROOT ROT (Fusarium, Pythium) was rated 8-tr. 2-sl.-mod./10 fields under irrigation in s. Alta. in eaxly July (F.R.H.), and was found in tr. amounts in 31/124 Alta. fields of seed peas (D.S.MacL.). A pathogenic Fusarium sp. was isolated from roots of garden peas at Saskatoon, Sask. (R.M.). In c. Ont. incidence of root rot attributed to Fusarium spp. was rated up to 30% in 3/4 fields in each of Haldimand, Kent, and Norfolk counties, 1-tr./2 in Northumberland and I-sl. 1-sev./4 in Prince Edward Co. (A.A.R.).

FOOT ROT AND BLIGHT (Phoma medicaginis var. pinodella = Ascochyta pinodella; Mycosphaerella pinodes). In Man. mod. infections occurred in experimental plots at Morden, and in 2/4 fields-examined at Winkler all plants were severely affected (M.D.S.). At Grand Falls, N.B., a 20-acre field was plowed under because of blight; more than 90% of the plants were severely stunted and showed footrot and necrosis of the lower leaves and nodes; three other fields examined in the area were less severely affected. The disease was most often found in fields in which peas and potatoes have alternated for several years (W.L.S.). Blight was tr.-light in 2/5 fields examined near Florenceville, N.B., and in 3/8 fields in the Sherwood-Brookfield area of P.E.I. (W.L.S.).

LEAF AND POD SPOT (Ascochyta pisi) was found in 38 fields in s. Alta., but incidence was rated tr. or very light. (D.S.MacL.). Tr. infections were found in Saek., but the dry season kept spread to a minimum (R.J.L.). Leaf spot was light in test plots at Kentville, N.S. (C.O.G., W.L.S.).

BACTERIAL BLIGHT (Pseudomonas pisi). In Alta. tr.-sev. infections were reported in 48/124 fields of seed peas inspected by the CDA Plant Protection Div. (D.S.MacL.). In 52 acres near Gem, Alta., incidence was rated <5%, severity sl.; in the Brooks, Alta. area incidence was <5%, severity mod. in 15/37 fields (470/1200 acres); at Cluny, Alta., incidence was 1% and severity sl. in 1/3 fields; and in the Rosemary, Alta. area three plantings of 24, 106 and 71 acres each showed ca. 5% incidence and sl. damage (M.D.S.).

STEM ROT (Rhizoctonia solani) caused mod. damage in 8/10 irrigated fields examined in early July in s. Alta. Many of the fields had been cropped the previous year to potatoes (F.R.H.). Tr. infections were seen in 2/8 fields in Kent and Norfolk counties,

Ont. (A.A.R.).

RUST (Uromyces fabae). Tr. infections were observed on several varieties in yield trials at Kentville, N.S. At Brookfield, P.E.I., all plants were affected and severity was rated high in a 10-acre field of 'Dark Skin Perfection' (W.L.S.).

BLIGHT (cause unknown). A sudden blighting of leaves and stems affected about 800/1000 acres of peas grown for freezing and canning near Grand Falls, N.B. The condition appeared early in August on a number of farms on which peas were being grown under contract with one processor. According to field supervisors, the crop appeared to be developing normally until about flowering, when growth stopped and vines quickly senesced. When examined on Aug. 15, up to 90% of the plants in individual fields were necrotic; leaves and stems were almost uniformly brown, without lesions or other signs of recognizable disease. Few of the plants were affected by footrot or rootrot, and most had well developed root systems. No signs of vascular discoloration were evident. Scattered through the fields were healthy green plants with well-filled pods. In several fields the green plants occurred in linear strips of one row running parallel to the direction of the rows, giving an appearance similar to that of fields treated with a sprayer or applicator having a faulty nozzle. Tissues from affected plants were examined microscopically and were plated on potato dextrose agar and nutrient agar, but no bacterial or fungal pathogens were detected that could account for the intensity of the condition in so many fields. The company reported that analyses of soil samples also failed to indicate a cause of the condition. Plant tissues were not analyzed for herbicide residue or viruses (W.L.S.).

PEPPER

EARLY BLIGHT (Alternaria solani) was rated tr. in 1/6 fields in Lincoln and sl. in 3/6 in Essex Counties, Ont. (A.A.R.).

FRUIT ROT (Phoma destructiva). Minor damage occurred in 1/6 fields in Essex Co., Ont. (A.A.R.).

DAMPING-OFF (Pythium spp., Rhizoctonia solani, Fusarium spp.). Up to 30% incidence was reported in 4/5 greenhouses in Essex, Norfolk, and Elgin counties and tr. in 1/6 fields in Lincoln Co., Ont. (A.A.R.).

SOFT ROT (Pythium spp.). Tr. was observed in 1/1 fields in Brant Co., Ont. (A.A.R.).

WILT (Verticillium spp.) was attributed to V. dahliae in tr. amounts in 1/6 fields in each of Elgin and Lincoln counties and in mod.-sev. amounts (31-100%) in 3/6 fields in Essex Co., Ont. (A.A.R.).

BLOSSOM-END ROT (physiological) affected up to 10% of the fruit in 2/12 fields in Essex and Lincoln counties, Ont. (A.A.R.), and caused about 5% damage in 1/1 fields at Oromocto, N.B. (S.R.C.).

POTATO

EARLY BLIGHT (Alternaria solani). In c. B.C. most varieties other than Netted Gem were affected and yields reduced because of early death of vines (E.F.C.). It was reported from Edmonton, Camrose, and Winterburn, Alta. (A.W.H.). S1.-mod. damage was recorded in 9/65 fields in Sask. (B.H.W.). Early blight was more prevalent in 1967 in Que., where 38.7% of the fields were affected, as compared with 29.8% in 1966. In 1967 the disease was most prevalent and sev. in the n.e. part of the province, where 66.3% of the 351 fields inspected were affected: disease ratings for the province were 239-s1. 42-mod. 11-sev./ 751 fields (G.E.). In field trials at La Pocatiere, Que., most varieties and lines were practically free from early blight, but all plants of 'F6438' were infected and damage was sev. (H.G.). At Ste. Clotilde and St. Michel, Que., early blight was rated tr. in 4/18 fields (R.C., T.S., L.T.). At Jemseg, N.B. infection ranged from tr. to 100% in 7/7 fields and although defoliation occurred in 2 fields, losses were not sev. because the crop was near maturity (S.R.C.).

BLACK DOT (Colletotrichum coccodes) was reported from Naton, Alta. (A.W.H.). At La Pocatiere, Que., many varieties and seedlings grown in sandy soil were slightly affected, and symptoms were more noticeable on tubers than in 1966 (H.G.).

BACTERIAL RING ROT (Corynebacterium sepedonicum). Three fields in the Vancouver, B.C. area were affected; two had been planted with N. Dakota seed and the third with locally grown seed (J.C.H.) Field surveys in Alta. showed the incidence of ring rot to be considerably lower than in 1966. The percentage of farms affected in 1967 were as follows (1966 figures in brackets): Lethbridge, 23.4 (35.0); Calgary, 6.3 (35.0); Brooks, 16.7 (22.9): Edmonton, 7.8 (29.6). In addition ring rot was positively identified in diseased tubers from more than a dozen locations in Alta. (A.W.H.). In Sask. fewer specimens than usual were examined in 1967, although the disease continues to be an important one in the province (R.J.L.). Of 751 fields inspected in Que., 58 (362 acres) were affected. Following harvest, ring rot was detected in potatoes representing an additional 42 acres. The percentage of Que. potato fields denied certification because of ring rot has declined steadily since 1960, when 21.3% were affected; figures for succeeding years were: 1961 - 12.61, 1962 - 9.71, 1963 and 1964 - 10.7%, 1965 - 7.1%, 1966 - 8.2%, 1967 - 7.5% (G.E.). Ring rot was also detected in 1/18

fields in the Sherrington, Que., area (R.C., T.S., L.T.).

BLACK LEG (Erwinia atroseptica) was much more prevalent in the B.C. interior than in 1966; it was found in seed imported into the area but was most sev. in seed grown in the area in 1966 (E.F.C.). In Alta. it was reported from Ponoka, Peace River, Sangudo, Two Hills, Wetaskiwin, and Woking (A.W.H.) and Edmonton (R.P.B.). In Sask., one garden showed about 30% loss, although certified seed had been planted (R.M.); and two fields were rejected (B.H.W.). Tr. infections were found in 1/3 fields in Lambton Co., Ont. and in 1/2 in Oxford Co., blackleg was rated sl. in 2/3 fields in Kent Co. (A.A.R.). In Que. 421/751 fields inspected were affected; the 1967 figure of 56.4% contrasts with 60.9% in 1966 and 65.9 in 1965; 2.5% of the fields (191 acres) were rejected in 1967, compared with 6.3% in 1966 and 4% in 1965; sl. infection was noted in stored potatoes (G.E.). 'Sebago' appeared quite susceptible to black leg (15% infection) at La Pocatiere, Que. (H.G.). At Sherrington, Que., tr. was reported in 1/18 fields (R.C., T.S., L.T.). In Nfld. incidence varied from 1% to 5% in most fields examined, but in 1 field at Salmonier 50% of the plants showed stem infections; several varieties, but chiefly 'Sebago', were affected (O.A.O.).

SOFT ROT (Erwinia carotovora) was reported from Red Deer and Alder Feats, Alta. (A.W.H.) and caused 15% loss in 1/1 field near Jemseg, N.B. (S.R.C.).

STEM-END ROT (Fusarium solani (Mart.) App. & Wr. var. eumartii (Carp.) Snyd. & Hansen). Two samples of dry rot near the stem end were received, one from Vancouver Island and one from the Cariboo. The pathogen was identified as F. solani f. sp. eumartii by Dr. W. C. Snyder. This is the first record of the forma specialis in B.C., although the disease is not new, having previously been included under Fusarium solani (D.J.O.).

DRY ROT (Fusarium spp.) was reported from Grimshaw and Leduc, Alta. (A.W.H.) and affected potatoes in storage at Leader, Sask. (R.M.). In Que. incidence of dry rot was sl. in 11 potato lots in storage but reached 15% and 25% in 2 lots of 'Keswick' that had been harvested under unfavorable soil conditions (G.E.).

BLACK ROT (Fusarium spp.) was reported from Stony Plain, Alta. (A.W.H.).

WILT (Fusarium spp., Verticillium spp.). Tr. amounts were observed in Sask. (B.H.W., R.J.L.).

SILVER SCURF (Helminthosporium solani). Incidence was light–mod. on seedlings of many varieties in plot trials at La Pocatiere, Que. (H.G.). It was noted in 10 potato lots in storage, where infection ranged from 0.25 to 0.5% (G.E.).

RHIZOCTONIA (Pellicularia filamentosa = Thanatephorus cucumeris [Frank] Donk). Unsuitable growing conditions in c. B.C. resulted in many weak plants which were severely affected by Rhizoctonia; cv. 'Netted Gem' was most severely attacked (E.F.C.). It was reported from Camrose, Edmonton, and Disbury, Alta. (A.W.H.). In Sask. this disease occurred in about half (65) of the fields examined where damage was sl.-mod. (B.H.W.). Rhizoctonia solani and Fusarium spp. were associated with tr. amounts of stem canker observed in 1/3 fields in each of Elgin, Essex, Kent, Lambton, and Welland counties, Ont. (A.A.R.). In Que. fields examined by Plant Protection inspectors, Rhizoctonia was less prevalent than in 1966; it was observed in 67 fields or 8.7% of the fields inspected, compared with 195 fields or 21.9% in 1966, and 251 fields or 29.4% in 1965. Of 378 bins inspected in the fall of 1967, 21.6% were affected; 72 were rated sl. and 8 mod. In 1966, 125 lots or 32.5% were affected (G.E.). The disease was sev. on 'Kennebec' and on some 20 seedling lines grown at Ste. Clotilde, Que. A few seedlings were also severely affected at L'Assomption, and a light infection was recorded at La Pocatiere (H.G.). Only tr. infections were found in 2/18 fields examined in the Sherrington, Que. area (R.C., T.S., L.T.).

STEM-END HARD ROT (Phomopsis tuberivora). 20% of the tubers in a lot of certified 'Early Epicure' seed grown at Ladysmith, B.C. were found to be infected. The hot, dry summer of 1967 may have been a contributing factor. It is believed that small amounts of the disease occur commonly, but this is the first laboratory confirmation in B.C. since 1948. (D.J.O.).

PINK ROT (Phytophthora erythroseptica). Pink rot was associated with late blight affected tubers in a few fields where care had not been taken in limiting sprinkler irrigation in the Fraser River Delta area, B.C. (H.N.W.T.).

LATE BLIGHT (Phytophthora infestans) was more prevalent in Que. in 1967 than in the preceding 2 years; it was present in 216 fields or 28.6% of those inspected compared with 41 fields (4.6%) in 1966 and 27 fields (3.1%) in 1965; of the fields affected 128 were rated sl., 73 mod., and 15 sev. (G.E.). In the Ste. Clotilde, St. Michel areas of Que., late blight was rated 2-mod. 5-sev./8 fields of early maturing potatoes and 3-tr. 1-lt./10 fields of late varieties (R.C., T.S., L.T.). In N.B. late blight was not sev. in commercial areas, but foliage blight and tuber rot were sev. in other parts of the province (S.R.C.). Late blight was quite common in N.S. but did not appear until relatively late considering the unusually wet season; it was found in the Yarmouth, Scotts Bay, Lower Truro areas, and in Halifax Co. on Aug. 8. It was common in Cape Breton, Colchester, Halifax, and Yarmouth counties, where heavy fog, cool temperatures, and

frequent rain showers occurred. Losses were high in Colchester Co. and the Yarmouth area where fungicides were not used and where 2 - 3% root rot was common by Aug. 23. Considerable late-season infection occurred in the Kentville area and sev. tuber infection was reported in unsprayed plantings (C.O.G., A.A.MacN.). In P.E.I. blight developed rapidly late in the growing season and became sev. in poorly sprayed fields in September. Some growers lost heavily from tuber rot, particularly in the variety 'Kennebec' (L.C.C.). Light-mod. infection and mod. damage were reported in several areas of e. Nfld. and tuber rot was common in storage: however, there were few reports of blight in the c. and w. parts of the province (O.A.O.).

LEAK (Pythium ultimum). Severe infection occurred prior to digging in a 40-acre field of 'Kennebec' potatoes at Ladner, B.C. A hot summer coupled with heavy irrigation and rainfall late in the season were contributing factors. Twenty percent of the crop was left on the field and a further 10-20% was culled out at the receiving station (D.J.O.). In Sask., specimens from a field of early-harvested potatoes indicated sev. tuber breakdown (R.J.L.). At La Pocatiere, leak was light-mod., particularly in cv. 'Teton', at early harvest in Aug. when warm conditions prevailed (H.G.). S1.-mod. damage was ohserved in 26 lots or 6.3% of the bins of stored potatoes inspected after harvest (G.E.).

POWDERY SCAB (Spongospora subterranea). In Que. the disease was mostly confined to the Lower St. Lawrence district and sl. infections were reported in 8% of the bins inspected in that area but the infection was mostly sl. (G.E.). Light infection was noted at La Pocatiere on 'Green Mountain' and some other varieties or lines and the disease appeared less sev. than in 1966 (H.G.).

COMMON SCAB (Streptomyces scabies). Hot, dry weather in c. B.C. seemed to increase the incidence of scab, and all varieties except 'Netted Gem' showed more scab than usual (E.F.C.). One 4-acre field of 'Pontiac' at Ladner, B.C. was 100% affected and unfit for market: the grower had used chicken manure as fertilizer in 1966 (H.N.W.T.). Infection was reported from many localities in n. Alta. (A.W.H.), but incidence was less than normal in Sask.. (B.H.W.). It was rated 1 sl./2 fields in Oxford Co., Ont. (A.A.R.). Light-mod. infection was observed in a 10-acre field of 'Green Mountain' at La Pocatiere, but 'Huron' 'Cherokee', and 'Norland' appeared quite resistant (H.G.). Common scab was found in every potato-growing area in Que., but was less prevalent than in the preceding 2 years. In storage infection was rated 188-sl. 12-mod. 4-sev./378 bins inspected. Percentage of bins affected was 53.4 in 1967, 68.4 in 1966 and 70.5 in 1965. Incidence within bins was usually in the 0.25 - 0.75% range, with a few lots of 1 - 3%; the most sev. infections were observed in Bonaventure and Charlevoix counties (G.E.). Scab was widespread in N.B. (S.R.C.) and was mod.-heavy in the St. John's area of Nfld. (O.A.O.).

WART (Synchytrium endobioticum). In c. Nfld. wart was generally not sev. in 1967. The dry weather in June and July over most of the island retarded the establishment of infection when the potatoes were most susceptible. Incidence and damage were rated mod. (O.A.O.).

WILT (Verticillium spp.). Tr. infection in 1/3 fields in Ontario Co., Ont., was attributed to V. dahliae (A.A.R.). In Que. V. albo-atrum was found in tr. amount in 1/18 fields near Ste. Clotilde (R.C., T.S., L.T.) and was reported elsewhere in 63 (8.3%) of the fields inspected: three fields representing 31.5 acres were rejected: wilt was most prevalent in cv. Kennebec, but losses were negligible (G.E.).

PURPLE TOP (aster yellows ?virus). Tr. amounts were seen in 13/65 fields inspected in Sask. (B.H.W.). Although aster yellows was present in most plantings of carrots in Sask., incidence in potatoes and annual and perennial flowers was qcncrally low (R.J.L.).

LEAF ROLL (virus) was reported from eleven locations in Alta. (A.W.H.). In Sask. incidence of leaf roll was greater in 1367 than in the previous year, and 1/65 fields inspected was rejected (B.H.W.); it was also reported from a home qarden in Saskatoon (R.M.). In Que. leaf roll was less prevalent than in the previous 2 years: it was observed in 53 (7.48) of the fields inspected, and one (25 acres) was rejected. Incidence in 1966 was 178 fields (20.2%); in 1965, 197 fields (23%): the disease is apparently more prevalent in the area north of Montreal than elsewhere in the province (G.E.). Leaf roll was light in 1 field in Yarmouth Co., N.S. (A.A.MacN.).

MOSAIC (viruses). Tr. amounts were found in 1/65 fields in Sask. (B.H.W.). In Que. 245 (32.58) of the fields inspected showed infection, a decrease from 356 (40.4%) in 1966 and 457 (57.9%) in 1965. Fields rejected because of mosaic were 42 (255 acres) in 1967, 107 (702 acres) in 1966, and 102 (645 acres) in 1965 (G.E.). Mosaic was commonly observed in Halifax Co., N.S., where home-grown seed was used; 3/3 fields were affected: 1 light (<5% plants affected) 2 sev. (75% plants affected). In Cumberland Co., N.S., 1/4 fields was heavily infected, with stem streaking common (A.A.MacN.).

SPINDLE TUBER (virus) was rated tr. in 2/65 fields (B.H.W.), but it is thought to be increasing in prevalence in Sask., where difficulty in field diagnosis prevents effective roguing (R.J.L.). In Que. a few infected plants were detected in 7 fields of 'Kennebec' (G.E.).

WITCHES' BROOM (virus). Tr. amounts were

reported in Sask. (B.H.W.).

BLACK HEART (physiological) was reported from six areas in Alta. (A.W.H.).

HOLLOW HEART (physiological). Because of wet weather in the fall, hollow heart was widespread and caused mod. damage of all varieties in Que. (H.G.).

MAGNESIUM DEFICIENCY affected 40% Of the crop in 1 field at Jemseq, N.B. (S.R.C.).

FROST INJURY was found in 94 lots or 24.3% of the crop inspected in Que. Losses of 2-4% were sustained from injury from frost and adverse weather conditions experienced in Oct. (G.E.).

RADISH

GRAY LEAF SPOT (Alternaria brassicae) caused tr. infection in 1 seed field at Vauxhall, Alta. (F.R.H.) - a first report on Raphanus in Alta., although the pathogen has been reported on brassicas in the province.

BLACK LEAF SPOT (Alternaria brassicicola). Tr. infection was observed at Vauxhall, Alta. (F.R.H.). This is also a first report on radish in Alta.

BLACK POD BLOTCH (Alternaria raphani). Tr. infection was found in 2 seed fields at Vauxhall, Alta. in late August. This is the first report of this pathogen in Alta. (F.R.H.). Of 7 fields (38 acres) of seed radish inspected by Plant Protection Div. in s. Alta., 6 were affected by A. sp. (probably A. raphani) (D.S.MacL.).

RHUBARB

LEAF SPOT (Ascochyta rhei) was reported from Fort Saskatchewan, Alta. (A.W.H.) and Merrickville, Ont. (W.L.S.).

ROT (Fusarium sp.) caused about 2% damaqe in a field at Keswick, N.B. (S.R.C.).

RUTABAGA

BOTRYTIS ROT (Botrytis sp.) was reported from Edmonton, Alta. (A.W.H.).

SOFT ROT (Erwinia carotovora) was reported from Calgary, Bowden, and Lethbridge, Alta. (A.W.H.). At Fredericton, N.R., 100% loss occurred in 1 field in Sept. when soft rot developed in growth cracks (S.R.C.). Warm weather and frequent thunderstorms during August in the Lethbridge, Nfld., area promoted the development of soft rot in epidemic proportions in fields of 'York' rutabaga - only the 'York' variety was affected. Approximately 40% of the plants of this variety were affected, and none of the affected roots were harvested. Rot developed initially in growth cracks on the shoulders or in root maggot injuries below ground. At St. Davids on the W. coast of Nfld. about 5% of the 'York' plants examined were affected (O.A.O.). Tr.-light (up to 1%) incidence of crown rot in 2/7 fields in Pictou and Antigonish counties and sev. (90% loss) infection in 1/5 fields in Cape Breton Co., N.S. were noted in Aug.; as in the other Atlantic Provinces, rot was usually associated with growth cracks (A.A.MacN.).

DOWNY MILDEW (Peronospora parasitica) infection followed by rot affected 10% of a 10-acre field of 'Laurentian' at La Pocatiere, Que. (H.G.). It was rated tr. in 1 field in both Antigonish and Cape Breton counties and sev. in Kings Co., N.S. (A.A.MacN., C.L.L.). Mod. infection was observed on the Avalon Peninsula, Nfld. (O.A.O.).

CLUBROOT (Plasmodiophora brassicae) incidence was mod. (32-60%) in 1/4 fields in York Co., Ont. (A.A.R.). In Que. 3 fields in the Ste. Clotilde-Sherrington area were rated 2-tr. I-light (R.C., T.S., L.T.), and in 1 field on alluvial soil at Riviere-Ouelle 80% incidence and sev. damage occurred following cool wet conditions during early growth (H.G.). Tr.-15% infection was reported from 3/22 fields in s. N.R. (S.R.C.). In N.S. cluhroot was present only in the counties of Pictou (1-tr./5 fields), Antigonish (1-tr./4 fields), and Cape Breton (2-light [1-2%]/5 fields). In both Pictou and Antigonish counties, the variety 'York' stood up well in areas where clubroot was formerly a serious problem, but in Cape Breton Co. both 'York' and the older 'Laurentian' were affected (A.A.MacN.). [The variety 'York', developed at the CDA Research Station, Charlottetown, P.E.I., was released in 1964 and seed was generally available in 1966. It possesses resistance to several races of P. brassicae in the Atlantic Provinces and Quebec hut is susceptible to race 1, which is present in certain areas of N.S., N.B., and Nfld. - Ed.].

RIIIZOCTONIA ROT (Rhizoctonia solani). Incidence of skin blotch was 1% in a field at Blissfield, N.B. (S.R.C.) and 10% in a field of 'York' in Antigonish Co., N.S. (B.B., C.O.G.). Rot caused mod. damage to 'Laurentian' rutabaga at Vernon, P.E.I., where high day and night temperatures during July and Aug. resulted in conditions favoring rapid growth and subsequent cracking of the fleshy roots followed by entry of the pathogen (G.W.A.). R. solani was isolated from rutabaga showing "crater rot" symptoms in storage at Prince George, B.C., where the disease is of general occurrence but seldom affects more than I-2% of the root (D.J.O.).

SCAB (Streptomyces scabies) was rated tr. in 1 field at Keswick, N.B. (S.R.C.).

BLACK ROT (Xanthomonas campestris). Discoloration of the root surface and vascular tissue occurred at 'Grand Forks, B.C., where the disease was spread by wash water contaminated by a few diseased roots (D.J.O.).

BROWN HEART (Boron deficiency) was sev. in 1/3 fields at Sherrington, Que. (R.C., T.S., L.T.) and affected 50% of a field of 'York' in Antigonish Co., N.S. (B.B., C.O.G.).

CHEMICAL INJURY. Malformation caused by 2,4-D drift caused sl. damage in Sask. (R.J.L.).

CRACKING. At Cloverdale, B.C., 85% of the roots in a 4-acre field were lost from cracking shortly before harvest; cracking followed the application of irrigation after a long dry period (D.J.O.). In other areas, growth cracks were rapidly invaded by rot-inducing pathogens: by soft rot bacteria in N.B., N.S., and Nfld. and by Rhizoctonia solani in P.E.I.

SURFACE PITTING. At Vancouver, B.C., a superficial pitting of unknown cause affected up to 90% of the roots in several shipments of rutabagas from Quesnel, B.C. The condition (Pig. 1) did not appear until several days after washing. Laboratory examination failed to detect any significant bacterial infection and no parasitic fungi were isolated (D.J.O.).

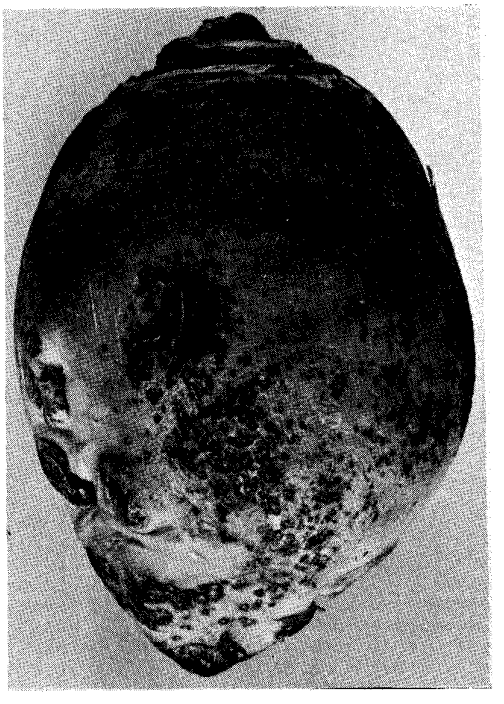

Figure 1. Superficial pitting of rutabaga following woshing. Grown at Quesnel, B.C.

SPINACH

GRAY MOLD (Botrytis cinerea) was rated tr. in 1/1 field in Kent Co., Ont. (A.A.R.).

SOFT ROT (Erwinia carotovora). Mod. (31-60%) infection was reported from 1 field in Kent Co., Ont. (A.A.R.).

SQUASH

LEAF SPOT AND FRUIT ROT (Alternaria cucumerina) caused sev. damaqe to fruit in N.S. (C.O.G.).

STORAGE ROT (Alternaria sp.). A. tenuis was associated with 66% loss of 'Sweet Keeper', 'Green Hubbard', and 'Buttercup' squash in storage at Port Williams, N.S., and with 25% loss of acorn squash at Canning, N.S. In both instances low temperature injury appeared to be a predisposing factor in disease development (T.C.).

STORAGE ROT (Botrytis sp., Fusarium sp., Rhizopus sp., Sclerotinia sp.). Tr. amounts of Fusarium roseum and Rhizopus sp. were found on 'Sweet Keeper' at Sheffield Mills, N.S.; and F. roseum and Botrytis sp. initially caused 25% loss of bulk-stored 'Buttercup' and up to 75% loss following bagging, at Canninq, N.S. (T.C.). Fusarium and Sclerotinia were associated with a 2% loss at Maugerville, M.B. (S.R.C.). Sclerotinia sclerotiorum caused 2% loss of 'Sweet Meat' at Port Williams, N.S. (T.C.).

BACTERIAL SOFT ROT (Erwinia carotovora), an uncommon field disease in N.S., was reported in light amounts on younq sauash in a Digby Co. field following unusually rainy weather (A.A.MacN.).

FUSARIUM WILT (Fusarium oxysporum) affected approx. 25% of a field in Digby Co., N.S.; apparently a new record for this province (A.A.MacN.).

BLACK ROT (blycosphaerella citrullina) was found on many varieties, including 'Sweet Meat' and some Japanese hybrids, in field trials at Kentville, N.S. (T.C.).

SOFT ROT (Rhizopus sp.). A tr. amount was reported from 1 field of summer squash in Kent Co., Ont. (A.A.R.). Tr. amount was reported from storage at Sheffield Mills, N.S. (T.C.).

SWEET CORN

EAR ROT (Fusarium spp.) affected 20% of the crop in 1 field at Oromocto, N.B. (S.R.C.).

ROOT ROT (Fusarium spp.) was rated tr. in 1 field in Norfolk Co., Ont. (A.A.R.).

SMUT (Ustilago maydis) occurred commonly in home gardens in N.B. and N.S. (S.R.C., A.A.MacN.).

STALK ROT (cause unknown). A tr. amount was found in a field at Rosemary, Alta. No known pathogen was isolated (F.R.H.).

TOMATO

EARLY BLIGHT (Alternaria solani) occurred in tr. amounts in 1/1 greenhouses in both Elgin and Lincoln counties and in 1/4 greenhouses in Brant Co., Ont. Sl. infection was found in 1 greenhouse in Northumberland Co. Field infections in Ont. were rated 3-tr. 1-sl/3 in Norfolk, 1-sl./6 in both Essex and Lincoln, 1-mod./3 in Wentworth, 3-mod./4 in Kent, 3-sl./3 in Durham, 1-sl./5 in Northumherland, and 2-sl./8 in Prince Edward Co. (A.A.R.). In experimental plots at Acadie, Que., the incidence of the disease on the fruit of several cultivars and lines was Heinz 1350, 6%; 26-37-26, 12%; I,, S,, 26%; F, -3058, 29%; Manitoba, 30%; Starfire, 42% (L.J.C.). Incidence ranqed from tr. to 100% in 11/17 fields in the Oromocto-Gaqetown area of N.R., and sev. defoliation occurred in 7 fields (S.R.C.). In N.S. early blight was of economic importance in parts of Cumherland (1-tr., 1-sev./3 fields) and Antigonish (1-sev./2 fields) counties, where differences in varietal susceptibility were apparent; tr. infections were also found in 1/2 fields in Pictou Co. and in 1 field in Kings Co. (A.A.MacN.). In the Okanagan Valley, R.C., there was no evidence of early blight throughout the season (M.F.W.).

ALTERIJARIA FRUIT ROT (Alternaria tenuis). In the Okanaqan Valley, B.C. incidence of fruit rot was very light on several varieties and damage was negligible, even on fruit harvested from unsprayed fields and stored for up to 2 weeks (M.F.W.).

FRUIT ROT (Alternaria, Phoma, Colletotrichum, Pusarium) was sev. following frost in Pictou Co., N.S.; 50-75% of the qreen and ripe fruits were affected (A.A.MacN.).

NAILHEAD SPOT (Alternaria tomato) was sev. on a particularly susceptible selection in a breeding program in the Fraser Valley, B.C. (D.J.O.).

GRAY MOLD (Botrytis cinerea) was reported from Olds, Alta. (A.W.H.). In s. Ont. greenhouses it was rated 1 tr./4 in Brant Co., 1 tr./1 in Elgin Co., 1 tr./5 in Norfolk Co., 1 sl./1 in Lincoln Co., and 1 mod. 1 sev./2 in Essex Co. Mod. infection occurred in 1/5 fields in Northumberland Co., Ont. (A.A.K.). Tr.-70% blossom blight and fruit rot was noted in 3/17 fields near Oromocto, N.B., (S.R.C.). Infection in Digby Co., N.S., was rated light (leaf spot only) in 3/4 fields; in Cumberland Co., 1 light, 1 mod. (leaves and up to 2% fruit affected)/3 fields; in both Pictou and Antigonish Counties, 1 tr./2 fields (A.A.MacN.).

ANTHRACNOSE (Collectotrichum coccodes) occurred on all varieties in the Okanagan Valley, B.C., but incidence was very light and damage negligible in 1967 (M.F.W.). In Ont. tr. amounts were reported in 1/1 fields in Kent Co., 1/3 fields in Norfolk Co., and 3/6 fields in Essex Co., Ont.

BACTERIAL CANKER (Corynebacterium michiganense) was reported from a home garden at Medicine Hat, Alta. (F.R.H.) and was found in most areas of Ont., where incidence was rated 1 tr., 1 mod./2 fields in Lennox and Addinqton Co., 1 tr./1 greenhouse in Durham Co.; 1 tr./6 greenhouses in Prince Edward Co.; 1 mod., 1 sev./3 greenhouses and 3 tr./6 fields in Essex Co.; and 1 tr./4 fields in Kent Co. (A.A. R.).

WILT (Fusarium oxysporum f. lycopersici) was rated tr. in 1/6 fields in Essex Co., 2/6 fields in Lincoln Co., and 1/2 fields in Oxford Co., Ont. (A.A.R.). At Oromocto, N.B., wilt was noted initially in seedlings in the greenhouse and it later affected 5% of the transplants in the field; the pathogen was suspected to be Fusarium (S.K.C.).

DAMPING-OFF (Fusarium spp.) affected 70% of the plants in 1 field at Sheffield, N.B. (S.R.C.). [See also DAMPING-OFF - Pythium Phizoctonia, Fusarium].

ROOT ROT (Fusarium spp., Pythium spp.) in Ont. counties was rated tr. in 1/4 fields in Kent, 1/6 in both Lincoln and Welland, and 1/3 in Norfolk (A.A.R.).

LATE BLIGHT (Phytophthora infestans) had little or no affect on early varieties at La Pocatiere Que., but 25% infection and mod. damage was observed on two hybrids in variety trials at the CDA Research Station (H.G.). Tr. infections were reported in 2/17 fields near Oromocto, N.B. (S.R.C.).

SOUTHERN BACTERIAL WILT (Pseudomonas solanacearum) was detected on six farms in Kent Co., Ont.; incidence ranged from 1 to 4% and there was evidence of secondary spread within the row on two farms. Diseased plants were removed in July and no further evidence of the disease was observed later in the season; losses were quite small. The affected plants on all six Ont. farms - and about 80% of all field tomatoes grown in southwestern Ontario - were imported as transplants from Georgia, where bacteria wilt is of common occurrence (R.E.C.L., C.D.McK.). A tr. amount of bacterial wilt was also reported from 1/4 fields in Kent Co. (A.A.R.). The only previous report of Ps. solanacearum in Canada was in Ontario in 1949 [See also Layne and McKeen, CPDS 47:94-98. 1967].

BACTERIAL SPECK (Pseudomonas tomato) was rated tr. in 2/6 fields in Essex Co., 1/4 in

Kent Co., and 2/8 in Prince Edward Co., and sl. in 2/3 fields in Durham Co., Ont. (A.A.R.).

DAMPING-OFF (Pythium spp. Rhizoctonia solani, and Fusarium spp.) occurred in tr. amounts in 1/5 greenhouses and 2/8 fields in Prince Edward Co., Ont. (A.A.R.).

LEAF SPOT (Septoria lycopersici) was rated tr. in 1/3 greenhouses in Essex Co. and sl. in 1/3 fields in hoth Wentworth and Norfolk counties, Ont. (A.A.R.).

STEM ROT (Sclerotinia sclerotiorum) affected 20% of the plants in 1 field at Homestead, N.B. (S.R.C.).

WILT (Verticillium dahliae). Tr. amounts were found in 1/6 fields in Essex Co. and sl. in 3/4 fields in Kent Co., Ont. (A.A.R.).

BACTERIAL SPOT (Xanthomonas vesicatoria) was reported in tr. amounts in 1/5 fields in Northumberland Co. and in 1/8 fields in Prince Edward Co.; 31-60% infection occurred in 1/3 fields in Northfolk Co., Ont. (A.A.R.).

MOSAIC (cucumber mosaic virus) was reported from Edmonton, Alta. (A.W.H.).

MOSAIC (tobacco mosaic virus). Incidence was 100% in a qreenhouse crop at Lincoln, N.B. (S.R.C.).

GRAY WALL (tobacco mosaic virus) was found in about 8% of the early fruit picked from 3/3 fields at Sheffield, N.R., but later fruit were free from this symptom. (S.R.C.).

BLOSSOM-END ROT (physioloqical) was common in n. Alta. (A.W.H.) and in Sask. was troublesome in locations where tomatoes were crowded or where tree roots comneted for available moisture (R.J.C.). In variety trials at La Pocatiere, Que., 4-6% of the fruit of 'Quebec 314', 'Boule de Feu', and 2 hybrids were affected (H.G.). Tr. incidence (1% fruit affected) was reported from fields in both Kings and Pictou counties N.S. and 1% of the fruit in a field in Antigonish Co. were affected (A.A.MacN.).

BLOTCHY RIPENING (physioloqical). Green streaks on the shoulders of fruit at the stem end were common in tomatoes produced in B.C. during a long hot summer; the flesh beneath such patches was unusually hard (H.N.W.T.). Tr. amounts were seen in 1 greenhouse in Lincoln Co. and in 2/3 qreenhouses and 3/6 fields in Essex Co; and 11-20% incidence was reported from 3/4 fields in Kent Co., Ont. (A.A.R.).

CAT-FACE (physioloqical). Tr. was reported from 1 field at Homestead, N.B. (S.R.C.).

CHEMICAL INJURY. 2,4-D injury was reported from 2 locations in Alta. (A.W.H.).

MAGNESIUM DEFICIENCY was observed in 40% of the crop in 2/3 fields at Waterboro, N.B. (S.R.C.).

FROST DAMAGE occurred in 2/4 fields in Kent Co., Ont.; damage was only tr. (A.A.R.).

HAIL DAMAGE caused sl. damaqe in 1 field examined in Kent Co., Ont. (A.A.R.).

WATERMELON

ALTRRNARIA ROT (Alternaria cucumerina) caused sev. damage to field-grown fruit in N.S. (C.O.G.).

DISEASES OF FRUIT CROPS

A. Pome Fruits

APPLE

CROWN GALL (Agrobacterium tumefaciens). In B.C. incidence was lower than usual in locally grown nursery stock (L.E.L.).

STORAGE ROT. Alternaria sp. was isolated from 60% of a sample of affected 'Golden Russet' apples from Gagetown, N.B., while 'Delicious' and 'Cortland' apples from the same source showed general breakdown (C.L.L.). Alternaria sp. also comprised 90% of the organisms isolated from zonated spots occurring in tr. amounts on apple seedlings in storage at Kentville, N.S. (C.L.L.).

ARMILLARIA ROOT ROT. (Armillaria mellea) affected 30% of the 'Gravenstein' and 'McIntosh' trees in an orchard at Falmouth, N.S.' The affected trees have been declining for the past 3 yrs. (C.L.L.).

FRUIT SPOT (Cylindrosporium pomi = Phoma pomi). Calyx-end rot affected about 5% of 'Northern Spy' fruit in storage at Greenwich, N.S.; Alternaria and Penicillium spp. were also isolated (C.L.L.).

BRULURE BACTERIENNE/FIRE BLIGHT (Erwinia amylovora). L'humidité et la chaleur du début de juin ont favorisé le développement de la brûlure bactérienne. Quelques Lobo et McIntosh ont été trouvées affectés par cette maladie dans un verger de Missisquoi, Qué. La variété McIntosh a également été trouvée atteinte par la maladie à Rougemont, Qué. Enfin, on nous a signal6 des attaques sur les variétés Alexandre et Wolf River (R.D.).

In Alta., fireblight was reported from Olds and Edmonton (A.W.H.) and caused mod. damage to about 20% of the trees in an orchard at Lacombe, where dry weather in