SUMMARY OF THE PREVALENCE OF PLANT DISEASES IN CANADA IN 1967

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The information presented here on the occurrence of plant diseases has been compiled from reports to the Canadian Plant Disease Survey by plant pathologists, crop specialists, and representatives of regulatory agencies in various reqions of Canada. These contributors are identified by their initials following each report, and their names and locations are listed in the Index of Contributors.

This summary is published to provide a continuing record of the prevalence and severity of plant diseases in Canada that will be readily available to pathologists and regulatory specialists throughout the country. Some of the reports are based on chance encounters and on diseased specimens submitted for diagnosis and do not always reflect the results of intensive or widespread surveys. However, the recording of these reports should be helpful in attracting attention to newly recognized diseases and to changes in the level or distribution of pathogen populations. Hopefully a continually updated inventory of existing diseases will assist pathologists in recognizing the new and the unusual.

Noteworthy diseases and weather conditions

British Columbia

Lower Fraser Valley.--The 1966-67 winter was exceptionally mild and, although temperatures were lower in outlying agricultural districts, frosts were rare in the Vancouver area and such tender plants as fuchsias, marguerites and geraniums survived. The spring was cooler than normal but was favorable to grass and pasture production.

During the five months April to August, sunshine was much above and rainfall much below average. Mean temperatures were well above normal in June and August. The CDA Research Station at Agassiz reported a 6.48 inch rain deficiency and a total of 174.8 hours extra sunshine (the equivalent of a whole month) for the above five month period. After the dry summer months rainfall returned to normal in September, but temperatures remained above normal and pastures recovered from the summer drought. In October, however, Agassiz recorded 14.33 inches of rain, better than double the long term average. The first killing frost occurred in November. Some 3 to 5 inches of snow fell immediately before Christmas but lasted no more than a few days.

The warm, dry summer prevented much of the usually prevalent damage to berry fruits from gray mold caused by Botrytis cinerea. The incidence of foliar diseases on all crops was of minor importance, as it had been in 1966. Late blight of potatoes did not occur generally in August, as is usual, but where growers neglected the routine spray schedule and were careless about irrigation, some foliar damage resulted. Irrigation was also blamed for a few severe cases of tuber rot in the field; Phytophthora infestans, P. erythroseptica, and Pythium spp. were all contributory. Where irrigation was used, rough potato tubers were present, especially in 'Netted gem.'

Xanthomonas pelargonii (N.A. Brown) Starr & Burkh. was detected in Pelargonium cuttings imported from California, and losses of up to 20% were sustained in some shipments.

Puccinia pygmaea Erikss. was identified on Mahonia aquifolium for the first time in Canada at a nursery near Vancouver, B.C., but its alternate grass hosts were not found.

Southern interior valleys.--For the second successive year, weather conditions were very favorable for growth of crops, and unfavorable for development of many diseases. The 1966-67 winter was mild, with temperatures below 20F recorded at Summerland on only 3 days, the lowest being 18F. There was snow on the ground for only a few days in December 1966 and during the first half of January 1967. All months from February to September, except May, had unusually low rainfall. Summerland recorded approximately 1 inch in the 3 months February-April, 1 inch in May, and 1 inch in the 4 months June-September. The higher rainfall in May provided two apple scab infection periods; and the Kootenays had an additional heavy rainfall in late June, providinq a third infection period. However, no serious commercial losses from apple scab were reported. There were mild and scattered occurrences of peach leaf curl. The blossom blight phase of brown rot was absent on all stone fruits, even in orchards with abundant overwintering inoculum. Brown rot on fruits was reported in a few scattered orchards but losses were negligible. Rhizopus rot of peaches reached normal levels in fruit lots that were not treated, demonstrating that its incidence is less dependent on weather conditions. Pear fire blight incidence was reduced to a few late season infections in several orchards.

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Early spring temperatures were high, inducing unusually early breaking of tree dormancy. Cool weather in April and May delayed full bloom to the normal season. This cool period coincided with seeding and transplanting times of many vegetables, so that these crops started slowly. Spring-seeded onions gave very low percentage germination in many fields, apparently because of prolonged exposure of the germinating seeds to chemicals applied as seed treatments. From late May until the end of September temperatures were consistently above normal, with the result that all fruit crops and most vegetable crops grew and matured well. Foliar and fruit diseases of field tomatoes remained at a low level throughout the season.

Pythium aphanidermatum (Edson) Fitzp. was reported on table beets (Beta vulgaris L.) for the first time in Canada near Armstrong, B.C. Damping-off, yellowing, and stunting were associated with this soil-borne disease (See Till, CPDS 48:37). P. aphanidermatum has been reported previously—on sugar beets in Ontario.

As is usual in hot summers in the Kootenays, the surviving sweet cherry trees infected with little cherry virus produced very small unmarketable fruits.

In some Okanagan orchards serious levels of Anjou pit (cork spot) of pear occurred for the first time since 1962. This is believed to be a physiological disorder that characteristically appears in hot summers.

Powdery mildew was also unusually severe on apples and on sweet cherry in the interior of British Columbia.

In the Okanagan Valley, a "golden discoloration" disease of Sambucus nigra var. aurea was found to be caused by a virus that was also transmissible to seedlings of peach and cherry.

The association of Stemphylium spp. with a fruit rot of apples in controlled atmosphere storage following possible low temperature injury is apparently a new record for Canada.

The B.C. grape harvest increased an additional 50% in 1967, reflecting not only the increased acreage, but the full recovery of vines from the 1964 winter. The crop was free from all diseases except powdery mildew, which was adequately controlled by sulphur sprays.

The most serious foliar diseases in this area in 1967 were the powdery mildews on fruit plants and many ornamentals. This is attributed partly to the favorable 1967 summer weather, but at least on pome fruits it can be largely attributed to a succession of mild winters through which overwintering of the fungus has been uninterrupted. Losses in the sweet cherry crop due to powdery mildew infection of the fruit were more widespread than in any previous year and reached substantial proportions for the first time.

Caribou and Central B.C.--A very dry spring was followed by a dry hot summer, and yields of all potato varieties were reduced by drought. Although many leafhoppers were present, symptoms of aster yellows were not as widespread as in previous years.

Rhizoctonia canker occurred in almost all potato fields on Vancouver Island and in the Cariboo and central areas of British Columbia. Plants weakened by drought were severely damaged and 'Netted Gem' plants appeared to be most seriously affected. Witches' broom continued to be a problem in seed produced in the Cariboo area of B.C.

The Pusarium solani that has been associated with a dry rot of potato tubers in B.C. was identified as F. solani var. eumartii.

Alberta

Southern Alberta.--During late April and early May, southern Alberta received record-breaking snowfalls, totalling 60–70 inches, that greatly enhanced damage from psychrophilic pathogens.

Pink snow mold incited by Fusarium nivale, which has been thought to be indigenous to southern areas of the temperate zone and relatively unimportant in the Canadian prairies, caused extensive damage to winter wheat, Kentucky bluegrass and creeping bent in southern Alberta following the unusually heavy snowfall (See Lebeau, CPDS 48: 130–131.).

F. nivale and Typhula spp. have been associated with snow mold damage of turfgrasses in Ontario and southwestern Quebec, but our records on the etiology of snow mold in most parts of Canada are fragmentary.

In addition to the late snowfall, most parts of the district also received up to 2 inches of rain in late May so that most plantings were delayed by 2-6 weeks by the unseasonably cold, wet weather. During the remainder of the growing season, however, extremely arid conditions were experienced, with practically no rainfall in July and August. As a result little damage was found from foliage diseases.

Central and Northern Alberta.--Below-normal temperatures and precipitation were experienced during April and May; April was the coldest since 1954, resulting in slow melting of snow from fields. During the rest of the summer, temperatures were normal or above normal; but precipitation was below average and wind velocities were above normal. In many areas these factors resulted

in drought conditions, which affected potato yields considerably.

In Alberta Stemphylium loti was reported for the first time in Western Canada on birdsfoot trefoil. S. loti was first reported in Canada on Lotus corniculatus in Quebec in 1966.

At Lacombe, Alta., root rot of barley was more prevalent than in the previous 2 years. Observations indicated that the disease was less severe in fertilized than in nonfertilized land, and the cultivar 'Jubilee' appeared to be somewhat more resistant than 'Gateway'. Contrary to expectations, disease indices were higher in rotations in which barley followed fallow than when barley followed barley. Undersowing barley with bromegrass also appeared to increase the severity of root rot (See Piening et al., CPDS 47:108-109).

Saskatchewan

Late spring seeding resulted from the slow disappearance of snow, but moisture was generally adequate for prompt germination and emergence. Except for a period after mid-July, temperatures were not high and nights were cool throughout most of the season. Rainfall was generally low throughout the growing season and in many parts of the province it was the lowest on record. Except for a few areas, foliage diseases were of minor importance.

It is notable that common root rot was rated light throughout the wheat-growing area although this disease is usually favored by less than adequate rainfall. Possibly moisture at the seed level was too low to promote activity of the fungus until late in crop development. Light rains occurred generally in early August, and yields of grain were slightly above average.

In Saskatchewan, leaf spot diseases of bromegrass appeared 2-3 weeks later than in 1966. Damage was light in the brown and dark brown soil zones and on drought-affected areas of the thin black soil zones. However, Pyrenophora bromi caused slight to moderate damage to hay and seed crops in late July and August in some northern areas on black and gray soils. As had previously been noted in Saskatchewan, P. bromi was the predominant leaf spot pathogen of brome on black and gray soils in Alberta and in the Peace River region of British Columbia. Selenophoma bromigena was found to be widely distributed over all soil zones in the bromegrass-growing area, and Rhynchosporium secalis occurred sporadically in all areas surveyed (See Smith, CPDS 47:112-115).

Yields of timothy seed were reduced by 50% from 1966 levels by a leaf spot incited by Heterosporium phlei Gregory.

Despite low rainfall during the growing season, yields of rape in the Prairie Provinces almost equalled those of 1966. The unexpectedly high yields were attributed, in part, to the unusually low incidence of leaf and stem diseases, such as alternaria spot. Of the chief pathogens of rape, only Leptosphaeria maculans caused more damage in 1967 than it had in previous years. In Saskatchewan the brassica strain of the fungus extended its range from the Saskatoon-Humboldt-Naicam region north to the Melfort area.

New records for Saskatchewan include Mycosphaerella brassicicola on Brassica kaber var. pinnatifida at Brooksby; Plenodomus lingam on B. kaber var. pinnatifida, and Gliocladium roseum on rape, near Saskatoon. Ascocarps of Leptosphaeria maculans, the perfect state o P. lingam, were collected in the Saskatoonf Sask., area on Thlaspi arvense. This is believed to be the first report of the perfect state of the blackleg fungus on crucifers in Canada (See Petrie 6 Vanterpool, CPDS 48:25-27).

Manitoba

As elsewhere in the Prairie Provinces, unusually dry weather during the growing season was probably the major factor limiting development of rust on cereal crops in Manitoba in 1967. Precipitation in Manitoba from April 1 to September 11 was 8.97 inches compared to the average 12.25 inches. Rust development on winter wheat in the United States was also limited by drought and by an extended period of low temperatures. Consequently relatively few urediospores of the leaf and the stem rust fungi were carried into Western Canada. Wheat yields, therefore, were not affected by rust. Indeed, stem rust was not found on any resistant variety of wheat grown in the rust area throughout the growing season. Similarly, stem rust of oats was less prevalent than in any other year since 1961; and losses to oats from stem rust and from crown rust in Western Canada were negligible.

Spore trapping activities showed that insignificant numbers of spores of leaf rust were produced in Western Canada before mid-July and of stem rust before early August. The occasional incidence of high spore counts both early and later in the growing season was positively correlated by meteorological studies with air movements originating in the winter wheat producing areas of Kansas and Nebraska. During these periods unstable homogenous air masses were present from Kansas and Nebraska to Manitoba and eastern Saskatchewan and air from the south moved into Western Canada. In these masses convection currents were also present that could carry spores to high altitudes and return them to earth. Upper air currents of 40-60 nautical mph were present that could

carry spores rapidly and fairly uniformly over larqe areas. For further information on the distribution of rusts on cereal crops in Canada in 1967, see articles by Green, Samborski, Martens, and Fleischmann in CPDS 48: 1–19.

Following the worst outbreak of aster yellows on record in 1966, incidence of the disease on barley was very low in the Canadian prairies in 1967. The prevalence of aster yellows in stinkweed (Thlaspi arvense L.) indicated that the causal agent had successfully overwintered in this weed host. However a lower than usual population of the leafhopper vector, Macrosteles fascifrons was noted; few. if any, eggs of the insect survived the winter in Manitoba, and the spring migration from the south was lighter and occurred later than usual. For further information on virus diseases of cereals and populations of vectors, see Gill & Westdal, CPDS 47:101-103.

Verticillium dahliae Kleb. was reported for the first time in Manitoba from an elm tree showing symptoms of wilt.

Ontario

Temperatures in most areas of Ontario were normal during June and July but were somewhat below normal in May and August. In most counties seeding was delayed because of frosts and heavy rainfall. Damage to winter wheat crops from winter killing was sliqht, but high water levels in the sprinq caused widespread damage, and total losses in this crop from winter kill and water damage were estimated at 11%.

Wet spring weather delayed the planting of spring grains and potatoes, and in the Western and Central regions heavy rainfall continued into July. Record yields of tame hay, clover, and alfalfa were recorded (cuttings averaged 2.6 tons/acre), but the quality was poor. Similarly the yields of spring grains were above average but the quality was generally only fair. In the Southern region dry weather early in September hastened the maturity of soybeans, resulting in lowered yields. However wet weather later in the season caused difficulties in harvestinq dry beans, soybeans, corn, and potatoes. In Simcoe County alone, flooding and water damage accounted for a loss of about 29% of the potato crop; 3100 acres were lost early in the season and another 500 acres were abandoned at harvest. In the Niaqara District, however, heavy rains just before harvest resulted in an increase of 12% in grape production.

Crown rust caused by Puccinia coronata f. sp. avenae was very prevalent and severe in parts of eastern Ontario, where yield losses of up to 20% were reported (See Clark, CPDS 48:134-135).

In southwestern Ontario Sclerotinia sclerotiorum caused considerable losses in seed bean (Phaseolus vulgaris L.) crops growing on low-lying or wet land. The disease appeared late in the season and caused up to 50% yield losses in some 'Sanilac' and 'Seaway' fields due to pod rot (See Wallen & Sutton, CPDS 47:116).

Fusarium yellows of cabbage incited by Fusarium oxysporum f. conglutinans was particularly troublesome in the Burlington, Ont., area and was noted in several other locations in Ontario (See Reyes & Warner, CPDS 47:116-117).

Southern bacterial wilt of tomato incited by Pseudomonas solanacearum was reported for the first time since 1949 in southwestern Ontario. Transplants in all affected fields and most tomato seedlings used as transplants in this area were imported from the southern United States (See Layne & McKeen, CPDS 47:94-98).

Alternaria dauci (Kuhn) Groves & Skolko on celery and Phoma destructiva Plowr. on pepper were reported for the first time in Canada from Ontario. For results of an extensive survey of vegetable diseases in Ontario in 1967, see Reyes et al., CPDS 48:20-24, 53-55, and 95-96.

Horse-nettle (Solanum carolinense L.) was found to be a weed host of tobacco mosaic virus in the Ontario tobacco growing area.

In Ontario root lesion nematodes (Pratylenchus spp.) continued to cause decline and replant failure in orchards and caused severe stunting of Juniperus and Taxus. Almost all soil samples tested from Ontario tobacco fields yielded root lesion nematodes, and fumigation has become necessary in most fields. Meloidogyne hapla, the northern root knot nematode, was found in many crops and it is apparently becoming more prevalent in tobacco soils. It was also found in ginseng (Panax quinquefolius L.) (See Olthof et al., CPDS 47:110-111).

Unusually large numbers of plant-parasitic nematodes (19 genera, 34 species) were identified in 1967; most were from soil and plant material intercepted at ports of entry (See Hadland, CPDS 48:43-46).

A new western extension of the distribution range of Dutch elm disease was indicated by the detection of infected trees at Sault Ste. Marie, Ontario.

In southwestern Ontario, three of the four usual symptoms of bacterial spot caused by Xanthomonas pruni were found in peach orchards. Spring cankers were observed from late April until June and are important sources of primary inoculum; defoliation from leaf spot occurred durinq July–September, but fruit spots were less common on most varieties. The summer canker phase was not

found, even in severely affected trees, during the 3 years of the study, 1965–67 (See Dhanvantari, CPDS 48:32-33).

Quebec

Cool weather in May delayed planting and hot weather in June and July had some influence on the sporadic occurrence of potato late blight. Heavy rains in August favored development of foliage diseases, and late blight became severe in several counties. An early frost in September and top killing reduced the spread of the disease somewhat, but tuber rot was moderate to severe in some areas. Dry conditions checked the disease on the North Shore.

Verticillium wilt of eggplant is destructive in Canada wherever eggplant is grown extensively; in 1967 its distribution was extended to Quebec.

Powdery mildew was reported on adult appla trees for the first time in Quebec.

New Brunswick

The weather in New Brunswick during the growing period of May 1 to September 30, 1967 was most favorable for the development of many plant diseases. In summary, May was cold and wet with late snowfalls covering most areas of the province. Planting of the main crops was considerably delayed, resulting in an overall reduction in yield and a very high incidence of root- and seed rots.

The early part of June was very wet and cold, and was followed by a dry period during which most of the crops were planted. July and August were not extremely wet, but frequent showers and high humidity gave desirable conditions for the spread of many plant diseases. September was extremely wet throughout the province, and the late crops suffered extensively from plant diseases. In fact, only the absence of frost permitted the harvesting of the potato crop. Had normal freeze–up occurred, a high percentage of the crop would have suffered extensive damage.

Dutch elm disease made small gains in New Brunswick in 1967.

Most areas of N.B. received above–average amounts of rainfall for the period July 1 to September 30. Rainfall data for selected stations in the province as a percentage of the 10–year average are Fredericton, 109.9%; Gagetown, 143.2%; Grand Falls, 116.7%; Moncton, 158.3%; Sussex, 160.5%; Woodstock, 220.5%; and Chatham, 136.9%.

Excessive losses due to the relationship of weather to plant diseases were recorded with the following crops.

Botrytis diseases of strawberries, raspberries, beans, blueberries, tomatoes, and potato foliage caused serious losses.

Scab disease of cucumber was troublesome both in commercial plantings and in home gardens. Leaf spot was more prevalent than usual.

Apple scab, though not serious in the overall picture, was found in most orchards due to primary spread in May and early June.

Root rot disease of grains, especially of barley, was serious in the province this year. It would appear that humidity and soil moisture were ideal since 60%of the crop was lost.

Bacterial soft rots in potatoes, turnips, and carrots were more prevalent than in previous experience.

The finding of clover yellow vein mosaic virus in New Brunswick, P.E.I., and Quebec represents the first positive identification of this virus in North America. It was distinguished serologically from bean yellow mosaic virus and pea mosaic virus; all three of these viruses have somewhat similar host reactions and have similar particle lengths. It has been suggested that CYW may have been collected before in North America but reported as BYMV or PMV (See Pratt, CPDS 48:87-92). Pea streak virus was widespread in red clover in the St. John Valley of N.B. and in the Ottawa Valley in Ontario but was less common elsewhere in eastern Canada and was not present in P.E.I.

Nova Scotia

Sub-zero temperatures reaching –11F accompanied by winds of 30 mph during February 1967 severely damaged peach buds and caused some injury to plum and cherry flower buds. Bark splitting on sweet cherry was attributed to this cold spell, which may also have caused rather severe losses of young apple trees.

The spring was very backward, and the mean temperatures for April and May were 5F below the 50–year averages. Apple buds were up to 2 weeks late in opening and trees were late in coming into full bloom. The first discharge of apple scab ascospores was on May 10, with a light infection period on May 20. A moderate to heavy infection period occurred on May 25–27, at which time many orchards were unsprayed, mainly because of soft ground. Conditions throughout the remainder of the growing season were favorable for the development and spread of apple and pear scab, and the disease was more prevalent in commercial orchards than for several years. Conditions were also favorable for late or pinpoint scab. Rainfall from May to

September was about 3 inches above the 50-year average of 15.4 inches.

In Nova Scotia powdery mildew increased in importance on fruit crops in 1966 and 1967. In 1967 commercial control measures were again required in one apple orchard, and mildew was also found in several others. Similarly, powdery mildew appeared in several sour cherry orchards, following a first report of the disease in the province in 1966. In 1967 powdery mildew was found for the first time in N.S. on sweet cherry, and a severe infection was reported on highbush blueberry.

Little or no spread of fire blight of pear and apple occurred in Nova Scotia during the bloom period in 1967. However, active twig infections were found and infection was seen to extend from established fire blight cankers in several pear orchards during July and August.

In Nova Scotia Botryosphaeria obtusa (Schw.) Shoem. was reported for the first time in Canada on pear (Pyrus communis). However, this fungus has been reported on other hosts under other combinations; e.g. as Physalospora obtusa in N.S. on Amelianchier intermedia; as Sphaeropsis malorum in Ont. on Crataegus pinnatiloba, Ribes nigrum, Sorbus spp., Malus pumila, and Vitis hybrid, and in Sask. on Malus baccata; and as Sphaeropsis juglandis in Ont. on Juglans cinerea. It has been variously reported on Malus pumila as Physalospora cydomiae (Ont.), P. malorum (Ont., Que.), Sphaeropsis malorum Que.), S. mali (Ont.), and Botryosphaeria quercuum (Ont.). According to Shoemaker (Can. J. Bot. 42:1297-1301. 1964), Canadian specimens examined on Quercus spp. were either B. quercuum (N.S., Que., Ont.) or B. melanops (Ont.); and specimens associated with dead arm of grape (Vitis spp.) were either B. obtusa or B. stevensii (see also Chamberlain et al., Can. J. Bot. 42:351-355. 1964). Also in Nova Scotia, Nectria cinnabarina Tode ex Fr. was reported for the first time on pear in Canada.

Sphaeronema pomorum Shear was reported for the first time in Canada; it was associated with rot of cranberry fruit in storage in Nova Scotia.

Bipolaris sorokiniana (=Helminthosporium sativum) was associated with a severe lesioning of pods, stems, and leaves of snap bean (Phaseolus vulgaris). Although considered an unusual host for B. sorokiniana, beans were similarly affected in New Brunswick in 1964. On both occasions the probable source of inoculum was traced to a nearby infected oat crop (See Gourley, CPDS 48: 34-36).

Losses of 6% to 26% occurred among strawberry plants in cold storage facilities in N.S. during the winter and spring of 1966-67. Typhula sp. was largely responsible, and losses were greatest in storages that were filled rapidly and in which inadequate spacing of crates prevented rapid cooling. In these storages periods of 53 to 75 days were required to lower plant temperatures to -1.1C.

Prince Edward Island

The mean temperature for March–May 1967 was 8.2F below that for 1966 and 6.8F below the 58–year average. The months June to October all had above–average mean temperatures. June was the only month with above–average hours of sunshine, whereas May and July were much below average. Rainfall for the 6–month period May–October was more than 8 inches above normal.

Planting of all crops was delayed 3-4 weeks by unusually cool, wet conditions in the spring of 1967. Few potatoes were planted before June 1. However, emergence was very rapid and growth was favored by high day and night temperatures. High humidities occurring through most of the growing season, together with very succulent growth, favored the development of foliage diseases, particularly in grain.

Both septoria blight of oats and leaf blotch of barley caused by Cochliobolus sativus were very severe and caused a great deal of damage. Serious yield losses in barley were accompanied by high percentages of seed infection by C. sativus, and growers were concerned about the consequences of planting heavily infected seed the following year. Field experiments at Ottawa using infected seed from P.E.I. showed that seedling emergence was reduced considerably in samples of infected seed. At the usual planting rate, however, yield was not affected unless the number of plants per row was reduced by at least 50%. Treatment of the seed with a mercury fungicide increased emergence but did not improve seed yield (See Clark & Wallen, CPDS 49:60-64).

Because of a low level of carry–over inoculum, potato late blight was not found as early as in most wet seasons; but it became severe late in the season. Blight was first reported on July 28. Some unsprayed fields were defoliated rapidly, thus preventing extensive tuber rot, whereas a number of inadequately sprayed fields showed more tuber rot than those that received no protection. Tuber rot was a problem in the variety Kennebec.

Heavy rains provided periods of high soil moisture which favored the development of root diseases. Clubroot of crucifers was more severe than usual; and helminthosporium root rot of barley was very damaging, especially in the variety Herta.

Little or no frost occurred in most parts of the province until November 7, and harvesting conditions were generally good despite a rainfall of 4.77 inches at

Charlottetown on October 9–10. A few cases of potato tuber breakdown from flooding were reported. Hollow heart was a common complaint in large potato tubers over 12 ounces and was more severe in some varieties than in others. Fusarium storage rot (Fusarium sambucinum F. 6) was not a problem in the 1967 crop; apparently the high soil moisture helped to prevent a buildup of inoculum during the season and also provided conditions less conducive to bruising during harvest.

Strawberry green petal caused considerable losses in P.E.I. and northern Nova Scotia and was also found in southern New Brunswick and in areas south of the St. Lawrence River in Quebec. See Stultz & McNab, CPDS, this issue.

Similarly, clover phyllody was widespread in clovers in P.E.I., where it was considered to be a limiting factor in stand maintenance in some fields of red clover. Phyllody was also present in most clover fields examined in northern Nova Scotia and southern New Brunswick but appeared to be less severe; it was seldom found in fields in Quebec and was not found in Ontario (See Pratt, CPDS 48:87-92).

Newfoundland

The unusually wet growing season promoted the development of soft rot in rutabagas in the Maritime Provinces and in Newfoundland, where Erwinia carotovora developed in growth cracks and caused losses of epidemic proportions in some areas.

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