New or Noteworthy Diseases

Stem rust (Puccinia graminis) was present on wheat throughout southern Man. and southeastern Sask. and even to some extent west and north of the 'rust area' at harvest. Damage to durum wheat in the area was considerable. Most of the wheat stem rust consisted of race 15B to which durum wheat is susceptible. Leaf rust (P. triticina) was even more widespread than stem rust on wheat in the Prairie Provinces. The loss in yield from rust in common wheat in Man. was estimated at 15%, about two thirds caused by leaf rust and one third by stem rust. Stripe rust (P. glumarum) was unusually prevalent on wheat and barley in southern Alta. Leaf rust (P. secalina) of rye was widely distributed across the southern part of the Prairie Provinces. Stem rust and crown rust (P. coronata) occurred on oats late in the season.

Little information is available on the occurrence of the cereal rusts in Eastern Canada, but to judge from the rust nurseries located in the east these rusts were heavy in some areas. Race 15B of wheat stem rust was widely distributed for the first time in Ont. and Que. Rye stem rust was heavy on barley at Fredericton, N. B., and Merrickville, Ont. Its occurrence at these two places may well be correlated with the presence of barberries in the areas. Rye stem rust was the predominant variety isolated from aecia of Puccinia graminis on barberry. Aecia of P. coronata from buckthorn were similarly studied. From 25 collections of aecia from Rhamnus cathartica, P. coronata var. avenae was isolated from 24, a variety which it is proposed to name P. coronata var. secalis from 6, and var. festucae from 3 collections. From 2 collections of aecia from R. frangula, P. coronata var. agrostidis was isolated.

The cereal diseases, speckled leaf blotch and glume blotch, caused by Septoria spp., were unusually prevalent in Canada. Scald (Rhynchosporium secalis) and net blotch (Helminthosporium teres) were prevalent on barley in Alta. and northern Sask.

Dwarf bunt (Tilletia brevifaciens G. W. Fischer) was found for the first time in Ont. After it was discovered in the field, examination of seed samples revealed its presence in samples from three other localities in Ont. Common bunt caused by T. foetida was also heavy in many of the samples. The name T. brevifaciens has been adopted for the dwarf bunt organism because the morphology of its spores and its effect on the wheat plant set it off from the common bunt species. Streak mosaic (virus) was recognized for the first time in Canada when it was found on winter and spring wheat in southern Alta.

Bacterial wilt (Corynebacterium insidiosum) has been very prevalent on alfalfa in the last two years in Alta., probably on account of the abundant soil moisture. Crown bud rot (Rhizoctonia solani, Fusarium spp., etc.) spread even more rapidly in southern Alta. than in 1951. Leaf spots were also unusually prevalent in Alta. and Sask. Anthracnose caused by Colletotrichum destructivum was found on red clover at Ottawa, Ont., but the disease was due to C. graminicola at Ste. Anne de la Pocatiere, Que.

Digitalis lanata being grown as a drug plant in B. C. was found affected for the first time in Canada by a leaf spot (Colletotrichum fuscum Laubert) and by a crown rot (Pythium sp.). Flax rust was epidemic in Sask., but only a few fields were heavily rusted in Man., where resistant varieties were mostly grown. Rhizoctonia seedling blight was severe in flax on summer fallowed land. It was demonstrated experimentally that pod and stem blight (Diaporthe phaseolorum var. sojae) may cause appreciable reductions in the soybean yield in southwestern Ont. Rust (Puccinia helianthi) caused little damage to sunflower, because reduced production permitted most fields to be planted away from fields in sunflowers the previous year. Wilt (Sclerotinia sclerotiorum) was rarely severe and head and neck rot (S. sclerotiorum and Botrytis cinerea) was not found in farmers' fields. Net blotch (Helminthosporium dictyoides) moderately affected meadow fescue variety Ensign in the seed-increase plots at Ottawa, Ont.

The prevalence of bacterial ring rot (Corynebacterium sepedonicum) of potato showed little change in the last year. The disease has yet failed to gain a foothold in B. C. and its occurrence was at a very low level in P. E. I. and probably in N. S. Ring rot was reported less frequently in Que. than in any year since it became widespread. The suggestion was made that its lower incidence in Que. is in part on account of the replacement of used jute bags by new bags made of paper.

Black leg (Erwinia phytophthora) was unusually prevalent in the B. C. interior, over much of Alta. and Sask., and in parts of Que. The disease was severe because the soil was nearly saturated with moisture and, in some areas, cold during the period of early growth.

For the first time since the Survey was published, late blight (Phytophthora infestans) was reported simultaneously from every province in Canada. The abundance of soil moisture in the spring and the absence of drying winds during the summer over most of Alta. and Sask. allowed late blight to appear on the foliage at some places. However, conditions at harvest were favourable and little tuber rot developed. Late blight was present, although rarely severe, on the foliage from Ont. eastward, but vine growth continued through the fall, particularly in Que. and N. S., with the result that tuber rot was severe. The occurrence of races of P. infestans to which the new varieties Canso, Keswick, and Kennebec are susceptible has already demonstrated that these varieties cannot be safely grown in the larger centres of potato production without protecting them with a fungicide. The dry weather that prevailed during much of the growing season in N. S. and P. E. I. clearly favoured the development of common scab (Streptomyces scabies) to a degree rarely observed in these provinces. On the other hand in Ont., where scab is a problem in some areas, the value of scab-resistant varieties has been amply demonstrated. The acreage of the variety Ontario has rapidly expanded in the last two years although it is not an attractive variety in many other respects.

In recent trials in Nfld., Kennebec proved to be highly resistant to wart (Synchytrium endobioticum) and also appeared to be one of the best potato varieties for Nfld. conditions. In earlier trials was discovered the highly resistant mauve-flowered strain of Sebago, which growers in one important section are now planting in place of a susceptible variety.

The finding of nematodes on potatoes in B. C. in a garden where nematode-infected bulbous iris had been grown the previous year led to cross-inoculation experiments and a morphological study of the nematodes on the two plants. It was concluded that only one nematode was involved and that it was none other than the potato rot nematode (Ditylenchus destructor). Although the bulbous iris was found infected by nematodes in B. C. as early as 1932, the nematode has declined in importance with the development of practical control measures. Moreover, the principal potato growing areas are mostly well removed from those devoted to growing of bulbs.

Only a few diseases of vegetables warrant mention. Observations made this year again emphasized the importance of using seed free from the pathogens causing anthracnose (Colletotrichum lindemuthianum and halo blight (Pseudomonas phaseolicola) in the production of beans. Violet root rot (Rhizoctonia crocorum) was found attacking celery as well as carrot and potatoes in the Thedford Marsh in Ont. ; its occurrence on celery seems not to have been reported previously in North America. Additional cases of brown spot (Cephalosporium apii) were found in Ont. on the green pascal varieties of celery. Powdery mildew (Erysiphe cichoracearum) has become a problem in growing the fall crop of cucumbers under glass in south-western Ont. The mosaic-resistant Burpee hybrid, which showed high resistance to Cucumis virus 1 for several years, has recently exhibited little resistance to the strains of the virus now present. Improved Bay State appears to be the only variety of greenhouse tomato that still shows resistance to leaf mould (Cladosporium fulvum) in southwestern Ont. Verticillium wilt (V. albo-atrum) was prevalent in the B. C. interior. A careful survey revealed that 55% of the plants were affected in varying degree and the estimated loss in yield was 6. 6% or 2, 725 tons of tomatoes. Verticillium wilt was found on several other vegetable crops in B. C. and other provinces. These crops include lima bean, cucumber, eggplant, melon, pepper and potato. Blossom-end rot and skin cracking were prevalent in tomato in southwestern Ont. and in Nfld. as a result of dry weather in the early part of the season followed by heavy rain during the harvest period. Mosaic (turnip virus 1) has proved very destructive in recent years to swede turnip in an important seed-producing area in N. S.

The outbreak of fire blight (Erwinia amylovora) of pear in the Creston Valley, B. C. , is still serious, but winter pruning and inspection have reduced its intensity in most orchards to the level occurring before the 1948-51 epidemic. The severe damage caused by this disease to apples at Brooks, Alta. , is typical of outbreaks in prairie orchards, where in search for winter hardiness very susceptible parents have been used in breeding suitable hybrids. Apple scab (Venturia inaequalis) was fairly heavy in B. C. and from Ont. eastward unless the trees were well sprayed. In eastern Que. , N. B. , and N. S. , the early part of the season was wet, favouring infection and making the application of spray difficult. In N. S. many commercial growers used eradicant fungicides to supplement their regular protectant schedules with excellent results. Heavy loss from pear scab

(V. pirina) occurred in some orchards in the Niagara Peninsula, Ont. Surveys in the Okanagan Valley, B. C., confirm the general view that sweet cherry trees are resistant to crown rot (Phytophthora cactorum); 33 trees out of 4615 were found infected. Virus diseases of stone fruits continue to cause concern. In the Niagara Peninsula, the percentage of trees affected by one or more virus diseases in the sweet cherry orchards surveyed has increased from 60.7 in 1951 to 70.2 in 1952; the corresponding figures in the sour cherry orchards were 43.4 in 1951 and 56.6 in 1952. Brown rot (Monilinia fructicola) caused in Ont. considerable loss of fruit during shipment and subsequent sale. Verticillium wilt (V. albo-atrum) attacked young stone fruit trees and raspberry plantings; in some instances its occurrence was associated with diseased vegetable crops. Two new virus diseases were found on raspberry in B. C.; severe leaf curl appears to be a new disease, but the other appears to be vein chlorosis described originally from Scotland.

A number of mostly minor tree diseases new to Canada are reported for the first time. These are: Leaf spot (Cladosporium humile J. J. Davis) on Acer rubrum in N. S.; leaf spot (Ramularia ?alnicola Cooke) on Alnus crispa var. mollis in N. S.; leaf blight (Taphrina tosquinetii (West.) Tul.) on the same host in Nfld. in 1951; leaf spot (Phyllosticta innumerabilis Peck) on A. intermedia and A. stolonifera in N. S.; leaf blister (Taphrina carnea Johans.) on Betula glandulosa at Chesterfield Inlet, Dist. of Keewatin in 1950 and on B. pumila at St. Anthony, Nfld., in 1951; witches' broom (T. nana Johans.) on B. glandulosa at Great Whale River, Que., in 1949; leaf blight (Monilinia johnsonii (Ell. & Ev.) Honey on leaves of Crataegus macrosperma in N. S.; shoot hypertrophy (Taphrina flavorubra Ray) on Prunus besseyi (cult.) in N. S., as well as specimens previously collected on the same host in Ont., N. B., and P. E. I., and checked by Dr. A. J. Mix; leaf spot (Ascochyta wisconsina J. J. Davis) on Sambucus canadensis in N. S. Crown rot (Phytophthora cactorum) was severe on Cornus nuttallii in one garden in B. C. Willow blight (Physalospora miyabeana) and scab (Fusicladium saliciperdum) reached the western limits of Que.; however, the fungi are unknown on native willows.

New or rare diseases on ornamental plants observed in 1952 were: Downy mildew (Peronospora antirrhini) on seedlings of snapdragon in Alta.; leaf spot (Septoria armeriae Allesch.), a disease of cultivated thrift in England, on wild Armeria maritima var. labradorica at Great Whale River, Que.; yellows (Callistephus virus 1) on China aster from as far north as Ile a la Crosse in northern Sask.; rust (Puccinia chrysanthemi Roze) in a greenhouse at Montreal, Que., on chrysanthemum cuttings from Leamington, Ont., and also reported from B. C.; anthracnose (Colletotrichum himantophylli Kabat & Bubak) on Clivia miniata at Victoria, B. C.; leaf spot (Curvularia lunata (Wakker) Boed.) affecting gladiolus corms in the Montreal area, Que.; leaf spot (Phyllosticta hydrangeae Ell. & Ev.) on hydrangea, now known from Quebec, P. Q., and Winnipeg, Man.; rust (Chrysomyxa piperiana (Arth.) Sacc. & Trott.) on Rhododendron californicum in B. C.; root and stem rot (Rhizoctonia solani) on tulips at Saanichton, B. C.; leaf spot (Ascochyta violae Sacc. & Speg.) on pansy at Keating, B. C.; and blight (Alternaria zinniae) on zinnia at Kentville, N. S.