New and Noteworthy Diseases

Stem rust (Puccinia graminis) was epidemic on wheat in Man. and south-eastern Sask. and was primarily responsible for losses in yield estimated at not less than 25 million bushels. In general, durum wheat was damaged more severely than bread wheat, although formerly the reverse was true. Losses in 1953 were the heaviest experienced in any year since 1935. Of the 5,000,000 acres in wheat in the heavy rust area, yield was reduced 50% on about 1,500,000 acres of late-sown Thatcher, Redman, and Lee and bushel weight was down about 6 pounds. Half of the early sown crop also suffered slight damage. In most localities in the rust area the new variety Selkirk carried only traces of stem rust, but a new rust race 15B-3, known from only two collections was found to attack the variety and its parent McMurachy. However, the predominant race was 15B-1.

Since its discovery in 1952 it has been established that dwarf bunt was present in Ontario in 1947 and is now present in several wheat-growing sections of the province. It is also noted that the causal organism, Tilletia brevifaciens G.W. Fischer is indistinguishable morphologically from T. contraversa Kühn originally described in 1874 on Agropyron repens but also known on other species of Agropyron in Europe.

Streak mosaic (virus) was prevalent in winter wheat areas in southern Alta. and caused severe damage to some fields of both winter and spring wheat. Since the discovery of the mite vector Aceria tulipae the natural spread of streak mosaic has been studied. Volunteer wheat provides the important source of infection of the new crop of winter wheat.

A special survey for ergot in Western Canada revealed that the disease was more prevalent in some crop districts in Alta. and western Sask. than elsewhere in the Prairies. The level of infection was much greater in rye than in wheat and barley and in some districts affected volunteer rye in fields of other cereals probably accounts for much of the ergot appearing in the harvested grain. Inspection records suggested that the amount of ergot in the crop may fluctuate widely from year to year.

Bacterial wilt (Corynebacterium insidiosum) is evidently continuing to spread in alfalfa in Ont. Recent studies on winter crown rot of Alfalfa indicate that the production of hydrogen cyanide by the low temperature basidiomycete under certain conditions causes injury to or death of the crown.

In 1953, in contrast to the two previous seasons, manganese deficiency occurred widely on soybeans on clay soils in Essex County and parts of Kent County in Ont. On the other hand, fungus diseases were of little importance. Stem canker (Diaporthe sp.), which was severe from 1949 to 1951 and moderate in 1952, caused negligible damage although numerous spur and petiole infections occurred earlier in the season. These differences in disease behaviour in 1953, when compared to previous years, are attributed to drought conditions prevailing during the last three weeks of August and the first week of September. Bacterial pustule (Xanthomonas phaseoli var. sojensis), not previously recorded in Canada, was found on soybeans at Ottawa, Ont.

Although bacterial ring rot (Corynebacterium sepedonicum) of potatoes has occurred at one time or another in almost all parts of Canada, its prevalence in

the different provinces varies widely. In P.E.I. where great stress is placed on the production of potatoes for seed, the strictest watch for its occurrence has been maintained, and when the disease is found a sustained effort is made to eliminate all stocks that might have become contaminated by disposing of them at once as table stock combined with a thorough cleaning of premises and implements. As a result, potato stocks in P.E.I. are very rarely infected. Ring rot has also never become established in B.C. Bt 1942, when the disease was first found in the province, the means by which it could be accurately diagnosed and successfully combatted has been worked out. Prompt action then and since against diseased table stock entering the province as well as against its presence in the field has effectively protected B.C. against ring rot. In Alta. and Ont., where ring rot gained considerable foothold before active measures were taken to halt its spread, the disease usually occurs only in trace amounts, but about 10% (Alta.) of the fields are found affected each year. As in these provinces potatoes are grown primarily for local consumption, the annual surveys insure the growers against any real loss, but because traces of ring rot are virtually impossible to detect, it is hardly feasible to undertake its complete eradication. A long growing season favours the detection of the disease and almost invariably fewer cases are found the following year. Except in Nfld., where the disease was first found in 1953, losses from ring rot are probably somewhat higher in the other provinces than in those discussed above, but data on which to base an opinion are meagre.

For the second successive year late blight (Phytophthora infestans) was reported from every province in Canada. The disease was late in developing in B.C., but on account of tuber rot, the losses were the heaviest since 1948. Some tuber rot also occurred in central Alta., eastern Sask. and northeastern Que. Losses were also quite heavy in unsprayed fields in N.S. The epidemic was severe in P.E.I., but the death of the vines was so rapid that tuber rot was negligible. Reduction in yield was placed at 10 bu. per acre in the seed potato crop, or under 300,000 bu. Late blight was quite widespread in tomatoes, but heavy losses were reported only in the occasional field.

Losses from wart (Synchytrium endobioticum) were heavy in Nlfd., weather conditions being ideal for the disease. Sebago continues to be highly resistant. Ascochyta lycopersici Brun. was recently identified as the cause of a leaf spot of potato collected in 1949 at Saanichton, B.C.

Diseases of the aster yellows (virus) type appear to have been usually prevalent, especially in the Prairie Provinces. It was reported on carrots from nearly every province from Alta. eastward, on celery from Ont. and N.B.,on parsnips from Alta. and N.B., on spinach from Alta., on onions from Man., on squash from N.B. and on a wide variety of ornamental plants. Purple top of potatoes was also recorded frequently from Alta. eastward. A disease of this group was reported for the first time on flax in Sask., Man. and Ont. In Sask. and Man., infection ranged from a trace in most fields to 5-25% in a few. Yellows was also recorded on sunflowers for the first time in Man. where it was first noticed in 1952 and was conspicuous in the plots at Winnipeg and Morden in 1953. The same disease also was noticed on rape in Man.

Although pink rot has been repeatedly reported in onions grown on muck soils in Ont., only in the last year was it shown to be essentially a deficiency disease that may be controlled by the addition of manganese to the fertilizer. The organisms associated with the decay appear to be only secondary although each

in turn has been considered the cause of the disease. Bacterial blight (Bacterium stewartii) was present in Essex and Kent counties in Ont., the only previous outbreak in Canada was in 1932 and 1933. It may be noted that Michigan Bay State and Vineland 508 proved resistant to leaf mould (Cladosporium fulvum) in greenhouses around Leamington, Ont., whereas V121, Vulcan, and Michigan Forcing were heavily attracked. Ghost spot caused by Botrytis cinerea was reported on tomatoes for the first time in Canada although the organism is often observed as the cause of a decay. Another new disease of the stem and leaves was bacterial spot (Pseudomonas syringae) on lima beans in Ont.

The epidemic of fire blight (Erwinia amylovora) that developed suddenly in 1948 in pear orchards in the Kootenays and the Creston Valley, B.C., subsided in 1952. Strict orchard control reduced its occurrence to a few cankers in scattered orchards in 1953. A special survey in N.S. failed to reveal its presence in apple and pear trees in that province. Instead, branches in suspected cases proved to be affected by black rot (Physalospora malorum) and European canker (Nectria galligena). The same fungi were also isolated from apple twigs submitted from N.B.

Apple scab (Venturia inaequalis) was unusually prevalent in Canada in 1953. Besides being heavy early in the season in the B.C. interior, losses from pinpoint scab were also substantial. From Ont. eastwards periods of heavy ascospore discharge were frequent at the earliest stages of bud development. There was, however, little development of late scab except in N.S.

Because of the susceptibility of the Washington raspberry to yellow rust (Phragmidium rubi-idaei), spraying for the control of rust on this variety is now recognized as a profitable practice in B.C.

From the number of reports being received particularly from B.C. and Ont., it is becoming increasingly evident that plants showing lack of vigour or pronounced symptoms of disease may be suffering from attack by nematodes.

Although observations on diseases of trees and shrubs are mostly of an incidental nature, there are nearly always a few of interest. New records this year were: Prosthecium innesii (Curr.) Wehm. on Acer pseudoplatanus in N.S.; Phyllosticta gallarum Thuem. on Caragana in Que.; Verticillium dahliae, a common pathogen, on Lonicera morrowi in Ont. and Taphrina populi-salicis Mix on Populus trichocarpa in B.C. Phleospora ulmi was also severe on Ulmus americana in N.S. Field observations in the B.C. interior indicated that Larix occidentalis and Salix bebbiana are affected by Melampsora epitea (M. bigelowii) wherever the two hosts grew in association. Field observations in the same area confirmed the experimental evidence of W.G.Ziller (shortly to be published) that the Melampsora occidentalis on Populus trichocarpa and M. albertensis on P. tremuloides have aecial states on Pseudotsuga.

Diseases on ornamental plants worthy of mention are: Bacterial leaf spot (Xanthomonas dieffenbachiae) on Dieffenbachia in Ont., root knot (Meloidogyne sp.) on Scindapsus in Ont., boron deficiency disease in gloxinia (Sinningia) in P.E.I., leaf spot (Alternaria raphani) on Mathiola in Que. and decline (Pratylenchus penetrans) in narcissus and tulip in B.C., all of which appear to be new. Rust (Puccinia chrysanthemi), said to be common in the United States, was found for only the second time in Ont. Both powdery mildew (?Erysiphe cichoracearum on tuberous begonia and blight (Alternaria zinniae) appear to be spreading rapidly in one or more provinces.