New and Noteworthy Diseases

The leaf and stem rusts caused an estimated loss of 9 1/2 million bushels of wheat in 1955 in Man. and Sask. The initial spore shower was relatively light and was centered over Man., where 65% of the wheat acreage was in the stem rust resistant variety Selkirk and another 17% in the leaf rust resistant variety Lee. Although from the beginning of the season until mid-July temperatures and precipitation favored rust infection, hot, usually dry, weather then set in and in consequence ripening of the crop was hastened and rust development retarded. Race 15B was again the predominant race of stem rust. Selkirk was occasionally heavily infected principally as a result of a breakdown of resistance occasioned by the hot weather, but strain 15B-3 and two strains of race 29 capable of attacking Selkirk were isolated a few times.

Common root rot (Helminthosporium sativum and Fusarium spp.) was less in evidence than in the wet season of 1954 and was less severe than in 1953. The most critical observations were made in Sask., but the same conclusions appear applicable at least in Alta. Although the rusts were less destructive in 1955 than in the previous year, severe outbreaks of glume blotch (mostly Septoria nodorum) and speckled leaf blotch (S. avenae f. sp. triticea) occurred quite widely on wheat in the Prairie Provinces. The leaves and sheaths of Selkirk and Lee appeared to be highly susceptible to damage. Although in the absence of experimental evidence the loss cannot be estimated, it appeared that the disease along with hot weather, caused widespread premature killing of leaves and sheaths, which affected the filling of the heads, especially of Selkirk in southern Man.

Observations made chiefly by the Cereal Crops Division indicate that speckled leaf blotch (Septoria avenae) has become a destructive disease of oats, particularly on some varieties otherwise outstanding in Eastern Canada.

Yellow dwarf (virus) was again found in barley in Alta.; of the fields surveyed about 10% were severely affected. An extensive survey of leaf diseases of barley in the three Prairie Provinces demonstrated that the various diseases were unevenly distributed in Western Canada and that in breeding varieties good agronomically the plant breeder has selected lines possessing considerable resistance to the diseases locally prevalent.

Incidence of ergot in cereals was the highest since more extended observations were begun in the Prairie Provinces in 1953. Ergot was also prevalent in grasses. Indeed it appears that ergot is probably of greater importance to agriculture as a menace to livestock than as a hazard in cereal production.

Observations in Man. clearly indicate that Pseudoplea trifolii and Stemphylium botryosum are distinct pathogens, each causing a leaf spot on alfalfa. P. trifolii was also encountered on red clover and sweet clover. Another important observation made in Man. was the fact that the black stem

of sweet clover previously attributed to Ascochyta meliloti is caused by Cercospora davisii. In the same fields, the characteristic symptoms of Cercospora leaf spot were common. Flax diseases were of little importance; flax yields were exceptionally good in Sask. and were about average in Man. The most striking disease was yellows (virus), which caused a small amount of damage in Man. and e. Sask. Pasmo was more prevalent and severe in Man. than in recent years, but it was absent from much of the flax-growing area in Sask. Only traces of sunflower rust (Puccinia helianthi) were seen on the new rust resistant hybrid, Beacon, and in fact the general level of rust infection appeared to be less than formerly on susceptible varieties in areas where the acreage of this hybrid was extensive. Wilt (Sclerotinia sclerotiorum) and leaf mottle (cause unknown) were also less prevalent than usual.

Sclerotinia borealis Bubak & Vleugel is now recognized as a snow mold pathogen in Canada; as yet it has been found only on grasses in the experimental plots at Prince George, B.C. Sclerophthora cryophila W. Jones was described as the cause of downy mildew of orchard grass in B.C. Stem rust (Puccinia graminis) was recorded on Merion bluegrass at Winnipeg, Man., and Regina, Sask., whereas leaf rust (Puccinia poae-nemoralis) occurred on the same grass at Lacombe and Beaverlodge, Alta.

Although the incidence of bacterial ring rot (Corynebacterium sepedonicum) of potato in Canada differs from province to province, depending chiefly on local measures taken to suppress its spread, there are also annual fluctuations in its recorded incidence within each province. The fluctuations arise from differences in the weather that favor symptom expression and detection in affected stocks. In 1954 the recorded incidence was low because the cool rainy season was unfavorable for the development of ring rot and its detection was sometimes impossible on account of the premature destruction of the vines by a late blight epidemic. In 1955 the hot dry summer favored the development of ring rot in affected fields and the vines were not destroyed by late blight or frost before symptoms developed. Late blight was again detected in every province in Canada, but it was almost absent in Alta. The disease reduced yields in the early crop on the Pacific Coast, but elsewhere it was much less prevalent than usual. In the Atlantic provinces, where spraying is a general practice, the disease was controlled without difficulty in well-sprayed fields. Spindle tuber (virus) appears to be increasing gradually in several provinces.

In general, vegetable diseases were about as prevalent as usual, but the hot, usually dry, summer did favor marked development of a few in some sections. Early blight (Alternaria solani) occurred in epidemic proportions on tomato in Ont. and Que. being particularly severe in southwestern Ont. Anthracnose (Colletotrichum phomoides) was also heavy in southwestern Ont., whereas grey mold (Botrytis cinerea) was rather prevalent in N. S. Stemphylium solani Weber was recorded for the first time, when it was found in a mixed infection with early blight in southwestern Ont. There also, high incidence of cucumber mosaic and tobacco etch in tomato coincided with heavy aphid infection.

Blossom-end rot was particularly prevalent in the first tomatoes ready for harvest through southern Ontario and eastward.

Scattered outbreaks of fire blight (Erwinia amylovora) were reported in apple and pear from B.C. to Que. Powdery mildew (Podosphaera leucotricha) is rarely a disease of economic importance in Canada except in the B.C. interior. Recently it has been noticed more frequently in Eastern Canada. One reason for its scarcity may have been that repeated application of sulphur for the control of apple scab kept it in check; some of the organic fungicides now in use are ineffective. Apple orchards were exposed initially to rather heavy infection periods, but apple scab was well controlled in most well-managed orchards. A condition was found in the Okanagan valley in several apple orchards where Virginia Crab was used for the framework of the tree; the possibility that it is due to a virus is being tested. The close association of twisted leaf (virus) of sweet cherry and ring pox (virus) of apricot has been noted in the Okanagan; whether the two diseases are caused by the same virus or by two closely related viruses is being investigated. Brown rot (Monilinia fructicola) caused severe losses in the peach crop after the fruits were picked and before they reached the consumer. A severe epidemic of leaf curl (Taphrina deformans) affected peaches in the Niagara Peninsula, Ont.

Among the diseases noted on trees and shrubs the following may be mentioned: Rhizothyrium abietis Naum. recorded on needles of Abies balsamea in N.B. and Nfld. appears to be new for North America. A rarely collected fungus, Taphrina dearnessii, was found again on Acer rubrum in Que. The fungus may not be rare, but it is easily overlooked because it is evanescent in the necrotic spots, which except for their sudden appearance in great abundance are similar to those caused by several other fungi. A second collection of Marssonina betulae was made on the leaves of Betula papyrifera in N.B. Examination of affected specimens in 1955 indicates that Dutch elm disease Ceratostomella ulmi) is steadily spreading in Ont. and Que.

A few diseases of ornamental plants are worth mentioning: Powdery mildew (Erysiphe cichoracearum) has become a disease of considerable importance on tuberous begonias in Ont.; Karathane has proved effective in its control. The Curvularia that causes a leaf spot and corm rot of gladiolus has been found to be morphologically indistinguishable from C. trifolii. Examination of some old collections recently acquired disclosed a specimen of the rust, Uromyces scillarum (Grev.) Lév. on Hyacinthus collected at Sidney(?), B.C. in 1919; this rust has been recorded in North America only once previously when it was collected on Scilla hispanica at Berkeley, Calif., in 1931. The rust, Cumminsiella mirabilissima, was collected on Mahonia in Ont. for the first time although it has been frequently intercepted on plants imported from Europe.