New or Noteworthy Diseases

Observations on the rusts of wheat and oats in 1945 revealed some notable contrasts with previous years. Stem rust (Puccinia graminis) of wheat was virtually absent in fields of stem rust resistant varieties in Man., but the amounts of rust recorded on susceptible varieties grown experimentally, indicated that a rather severe epidemic with heavy losses would have developed if the farmers in Man. were still dependent on the old susceptible varieties. Leaf rust (Puccinia triticina) of wheat was generally severe in most parts of Canada except in the dry areas of Alta. and western Sask. Moreover, wheats such as Regent and Renown that have been resistant in previous years were almost as heavily rusted as Thatcher due apparently to the prevalence of races of leaf rust to which they are susceptible.

Crown rust (Puccinia coronata) of oats was very prevalent in Man. and appeared in epidemic form in many localities in Ont., Que., and the Maritime Provinces. The season was unusually favourable for rust development in eastern Ont. Erban and other varieties possessing a similar type of resistance suffered wide-spread damage from crown rust, in marked contrast to the resistance displayed by Erban in 1938 when it was first being grown extensively. The failure of Erban and related varieties was due to the increasing prevalence in recent years of races of crown rust to which these varieties are susceptible. Likewise, stem rust of oats was rather severe in Man. and eastern Sask. and locally in parts of Eastern Canada. Ajax, previously resistant, was heavily rusted in most of Man. and Vanguard bore more rust than in past years. The explanation is to be found in the unprecedented prevalence of races to which these varieties are susceptible. The severity of stem rust in localized areas in eastern Ont. focussed attention on the importance of the barberry in initiating local epidemics and a campaign is in progress to eradicate the barberry and buckthorn, the alternate host of crown rust, in the eastern counties of Ont.

Take all (Ophiobolus graminis) was definitely more prevalent than usual. It was common and in some fields severe in northeastern Sask. In Man., where the disease is rarely recorded, a severe outbreak was noted in one field. Take all appears to be increasing in winter wheat in southern Ont. and it was recorded for the first time at Ste. Anne de la Pocatière, Que. Some interesting calculations are given by Vanterpool on the increased returns through the use of phosphate fertilizers in the control of browning root rot (Pythium spp.) of wheat in Sask.

Johnson has continued his observations on the Septoria diseases of cereals in Canada. He presents additional evidence on the occurrence of a strain of Septoria, which closely resembles S. Avenae, but which occurs most abundantly on fading leaves of wheat, and to a limited extent on rye, barley and oats. It is incapable of attacking thrifty oat seedlings and therefore is pathogenically quite distinct from S. Avenae.

Bacterial wilt (Corynebacterium insidiosum) of alfalfa has now spread in Alta. into the northern seed-producing areas; it was also reported for the first time in Man. Crown rot (low-temperature basidiomycete) was not particularly destructive this year in Alta.; however, it was found for the

first time in southern Sask., at Swift Current. Crown wart (Urophlyctis Alfalfae), a new disease of alfalfa in Canada, was observed in the plots of the University of British Columbia and in 2 fields at Chilliwack.

Most parasitic diseases of flax were generally light in Sask. Seedling blight (Rhizoctonia Solani) caused some damage and root rot (miscellaneous fungi) affected yields in some areas. On account of the low rainfall over wide areas in Sask., yields were below average and physiological troubles were more conspicuous. Rust (Melampsora Lini) caused little damage largely due to the replacement of susceptible varieties by resistant or immune sorts. A destructive foot rot, due to a species of Phoma, tentatively identified as P. exigua, was recorded for the first time. Some of the parasitic diseases tend to show certain host and geographical limitations. Anthracnose (Colletotrichum Lini) seems primarily a disease of fibre flax in eastern Canada. Stem break and browning occurs mostly on oil flax in Alta. and Sask. This year seed infection by Polyspora Lini was more in evidence in samples from the dark soil zone of Sask. while several samples from the park belt carried Alternaria linicola. The latter has not yet been detected in the field. Again pasmo (Septoria linicola) has been found most frequently on oil flax in Man.

Bacterial ring rot (Corynebacterium sepedonicum) is still one of the most important diseases of potatoes and is receiving increasing attention each year in Canada. It has been demonstrated that even where the disease has been allowed to become thoroughly established it can be brought rather quickly under control provided vigorous measures are taken to detect its prevalence and to halt its further spread. Ring rot is no longer a serious menace to the certified seed industry, but it will continue to be a problem as long as the disease occurs in the commercial crop. The percentage of rejections in each province on account of ring rot appears to be a measure, in the first place, of its incidence in table stocks and, in the second, of the effectiveness of the local measures adopted for its control.

Bacterial ring rot has yet to be reported in N.S. grown potatoes. Its occurrence in P.E.I. and B.C. is limited to sporadic infections. Only 3 additional cases were found in P.E.I. and one outbreak of 10 cases was uncovered in the Comox district, B.C. In Alta., where ring rot became thoroughly established in the principal potato-growing areas in the southern part of the province and caused severe losses from 1940 onwards, the disease is definitely on the wane. Ring rot was found in only 137 fields out of 1198 inspected in 1945 and the average infection was under 3%. There were also in Ont. fewer cases found and of these fewer were on farms where the disease had been present before. Ring rot has reached epidemic proportions in Man. and an organized campaign to bring the disease under control is urgently needed. Observations in Sask. have been limited, but from the larger number of cases found in 1945, an extended survey for ring rot is highly desirable. Although ring rot has been known the longest in Que. and N.B., the disease is far from being under control to judge from the meagre reports received from these provinces.

In general, late blight (Phytophthora infestans) was less destructive than usual in Canada in 1945. In several provinces blight developed very early and conditions appeared extremely favourable, but before the disease became epidemic, a dry spell intervened. Occasionally tuber rot was severe in limited areas particularly in the late crop. Pink rot (Phytophthora erythroseptica) which was first recognized in B.C. in 1943 has now been reported from Man. and Que.

The potato rot nematode (Ditylenchus destructor), another newcomer to Canada, was found at York and Uigg, P.E.I.

A study of the trends in mosaic and leaf roll rejections in fields entered for certification in recent years indicates that the incidence of mosaic in the crop is dependent in general on the initial freedom of the seed from infection. On the other hand, the occurrence of leaf roll appears to be correlated with the abundance and activity of the aphid population. Mosaic has reached very low levels in the certified seed crop, but a severe epidemic of leaf roll in N.B. resulted in the rejection of 793 fields out of 2746 inspected.

Only a few of the more important observations on other diseases of vegetables may be included. Last year, charcoal rot (Macrophomina Phaseoli) was reported on soybeans in southwestern Ont. It was not recorded again on this host, but it was found to be abundant on plants of navy beans in fields on dry sandy soil in the same area. The bacterial blights, particularly halo blight (Pseudomonas medicaginis var. phaseolicola), appear to be increasing in Canada. The freedom from disease of seed grown in the Kamloops district, B.C., as well as in California (Calapproved seed), when grown in areas where the disease is destructive has stimulated interest in the possibility of producing disease-free stocks in Canada under a system of certification. For the second year a downy mildew of economic importance has been recorded in the B.C. Interior; last year it was the onion downy mildew (Peronospora destructor); this year, the beet downy mildew (P. Schachtii). Fusarium wilt (F. oxysporum) is proving a very destructive disease in important melon-growing areas in Ont. Neck rot (Botrytis Allii) was more destructive than usual in stored onions, due to the wet fall of 1944; storage conditions, however, were not always the best. Yellow dwarf (virus), a new disease of onion in Canada, was found in the B.C. Interior. Carrot yellows (virus) was generally much less severe than in 1944; the same was true of purple or bunch top (virus) of potatoes. Observations made this year in Ont. indicate that Alternaria Raphani can be a destructive pathogen of the radish seed crop. The disease has been named Black Pod Blotch. A strain of Cladosporium fulvum capable of attacking the variety Vetomold 121 of tomatoes has now appeared in B.C. and has become quite prevalent in southwestern Ont.

Discussion of the diseases of fruits, trees and shrubs, and ornamentals is of necessity limited to a few miscellaneous items in the paragraphs below.

Apple scab (Venturia inaequalis) was exceptionally serious from Ont. eastward; defoliation and loss of crop was common in poorly sprayed orchards. What is feared to be stony pit (virus) of pear was found in Ont. for the first time in eastern Canada. Cherry leaf spot (Higginsia prunophorae) was unusually severe in southern Ont. The rapid spread of little cherry (virus) in B.C. is causing concern. Brown rot (Sclerotinia fructicola) of peaches caused heavy losses in the Niagara Peninsula. Downy mildew (Plasmopara ribicola) of gooseberry was found in Ont., this being the first record of its occurrence in Canada. Anthracnose (Elsinoe veneta) of raspberry caused heavy damage to the variety Taylor in Ont. Decline (virus), first reported on Cuthbert, is spreading in other raspberry varieties in B.C. Grape downy mildew (Plasmopara viticola) was more abundant than usual in Ont. Red stele (Phytophthora

Fragariae), recently recognized for the first time in B.C., has been shown to be well established and to have caused heavy loss in the Fraser Valley. June Yellows (genetic breakdown) of strawberry was unusually prevalent in Premier in eastern Canada.

Melanconis Juglandis was found on Juglans cinerea in Que. Taphrina virginica was collected on Ostrya virginica in Ont. Marssonina Castagnei seems to have been unusually abundant in many districts; it was extremely heavy on Populus alba at Ottawa, causing early defoliation, and was moderately heavy on P. tremuloides in B.C., Sask., Ont., Que., and N.S. Dutch elm disease (Ceratostomella Ulmi) has been found to be considerably more widespread in Que. than the preliminary scouting late in 1944 indicated.

Yellows (Callistephus virus 1) was widespread and severe on many composites and some other ornamentals in the Maritime Provinces, although the virus caused less damage in carrots than in 1944. The need for study of this disease complex and its vectors is more and more apparent. The diseases of gladiolus, notably yellows (Fusarium oxysporum), scab (Pseudomonas marginata) and dry rot (Sclerotinia Gladioli) were again conspicuous, not merely because of the numerous requests for information but because of the size of the industry concerned. A Phyllosticta agreeing well with P. rosicola, collected in Man. and Ont., was found to be associated in each case with Cercospora rosicola and is apparently a microconidial stage of Mycosphaerella rosicola.

Other new or interesting records for ornamental plants included: Ascochyta majalis and Botrytis cinerea on lily-of-the-valley in Ont.; spotted wilt (virus) on dahlia in Man. and Que.; Urocystis Anemones on winter aconite in B.C.; Phyllosticta Ulmariae on Filipendula in Man.; Colletotrichum Liliacearum on irus in Man.; Cercosporella inconspicua on lily in Man.; Uromyces Holwayi on lily in B.C.; Cercospora antipus on honeysuckle in B.C.; Xanthomonas papavericola on poppies in Ont. and Que.; Pseudomonas syringae heavy on lilac in Alta. and Man.; Botrytis Tulipae very severe on tulip at Ottawa, Ont.; Colletotrichum Violae-tricoloris on pansy at Ottawa.

Maladies nouvelles ou d'importance notable

A. Payette

Les observations de 1945 sur les rouilles du blé et de l'avoine marquent un contraste frappant avec le comportement antérieur. La rouille de la tige (Puccinia graminis) du blé a été pratiquement inexistante au Manitoba sur les variétés résistantes, tandis qu'on a rapporté de forts pourcentages de cette rouille sur les variétés susceptibles (c'est-à-dire, sujettes) cultivées pour fins d'expérimentation; on en peut déduire qu'il se serait déclaré une épidémie sérieuse entraînant de lourdes pertes si les fermiers du Manitoba n'avaient pu ensemencer que les veilles variétés susceptibles. La rouille de la feuille (Puccinia triticina) s'est, en général, manifestée à l'état grave, presque partout au Canada, sauf dans les régions relativement sèches de l'Alberta et de l'ouest de la Saskatchewan. Bien plus, on a pu noter sur des variétés de blé jusque-là résistantes, telles le Regent et le Renown, presque autant de cette rouille que sur le Thatcher, en raison, apparemment, de la propagation de certaines races de rouille de la feuille auxquelles ces variétés sont susceptibles.