

New and Noteworthy Diseases

The year 1954 bears witness once more to the destructiveness of the cereal rusts over much of the wheat-growing area of the United States and Canada. Every condition appeared to be optimum for the development of a most widespread and destructive epidemic. Except for limited acreages of the stem-rust-resistant Selkirk and the leaf-rust-resistant Lee, all the wheat varieties cultivated in Western Canada are thoroughly susceptible to the prevailing races of leaf and stem rust. When the varieties Regent and Renown were first introduced in 1939, they were more resistant to leaf rust than Thatcher, the other stem-rust-resistant wheat commonly grown in the "rust area". However, since 1946, when new leaf-rust strains or races appeared, these two varieties have been almost as heavily rusted by leaf rust as Thatcher. In 1950, with the appearance of race 15B, all the stem-rust-resistant varieties developed in the '30's began to rust. In the succeeding years stem rust has caused increasing losses, especially in durum wheats.

In 1954, by late May abundant inoculum was present from Kansas southward. Strong winds in early June carried heavy loads of spores northward and deposited them over great areas in Sask. as well as central and eastern Man., more particularly in a zone extending from Regina to North Battleford. Rain that followed provided conditions ideal for spore germination and infection. Thus the epidemic had an early start as at that time much of the wheat was only leafing out. Leaf rust was so heavy that the leaves were killed soon after they unfolded and left the stems alone to support the plant. Finally later attacks by stem rust frequently caused the whole plant to dry up. In preliminary estimates, the loss was placed at not less than 135 million bushels.

On account of its resistance to the prevailing race of 15B, the new variety Selkirk will provide some immediate relief from rust damage. Yet, strains and races of stem rust to which Selkirk is susceptible have already been encountered. Moreover, varieties that might provide additional sources of resistance appear to possess protein characteristics of an undesirable nature for combination with the present varieties.

Dwarf bunt occurred in small amounts in several of the winter wheat areas of Ont. Evidence was obtained that dwarf bunt was present in Michigan over 60 years ago. How long dwarf bunt may have been present can only be determined by a critical examination of other collections of bunt made in still earlier decades of the last century. Eye spot (Cercospora herpotrichoides) must now be recognized as a disease of winter wheat in Ont.; it was found in several fields in Kent Co. Although common root rot (Helminthosporium sativum and Fusarium spp.) was unusually prevalent in Sask. and Alta. in 1954, it appeared to have caused less damage than in recent years. The wheat root parasite, Lagenia radiculicola, was again demonstrated to be present in the heavy soils of the

Regina plains in Sask. and Cryptoascus graminis was found in Ont. for the first time. Streak mosaic (virus) was more prevalent in winter wheat in Alta. than in any year since its discovery in 1952; it was also seen in oats and barley in Alta. and in winter wheat in Sask. What may prove to be yellow dwarf (virus) was found on wheat, oats, and barley in the plots at Lethbridge, Alta.

Although the alfalfa variety Ladak is only partially resistant to bacterial wilt (Corynebacterium insidiosum) its replacement of Grimm in southern Alta. appears to have diminished the destructiveness of the disease. Leptosphaeria pratensis has long been known as the cause of a leaf spot of alfalfa but the pathogen has recently been demonstrated to be the cause of a crown rot in crops grown for seed in Man. Gloeosporium spadiceum was found for the first time in Eastern Canada when it was observed on red clover in a field in Que. In general flax diseases were of little importance in Man. and Sask. in 1954. Yellows (virus) became widespread on flax, light infections being common in both provinces. For several years a Phoma, identified as P. exigua, which causes severe damage to germinating flax seed, was known from parts of Sask.; this year a basal stem rot, with Phoma pycnidia associated, was found in 4 Sask. fields. A protracted drought largely prevented any serious outbreaks of parasitic diseases in soybeans in southwestern Ont. On the other hand manganese deficiency of the soil was very evident over large areas in Essex and Kent counties. However, with many growers it has become standard practice to spray their crop with manganese sulphate when the symptoms appear, thereby greatly improving their returns. Distinct progress has been made in developing a hybrid sunflower resistant to rust. However, under weather conditions unfavourable for the crop yields were low and diseases more destructive than usual. Downy mildew (Plasmopara halstedii) is apparently becoming more severe in the main sunflower area. Also diseases, such as leaf mottle (cause unknown), are increasing in importance.

Plentiful rain and dull weather greatly favoured the development of vegetable crop diseases such as bean anthracnose; cucumber scab; the downy mildews of lettuce and onions in the Montreal district; and black leg, late blight and rhizoctonia stem rot of potatoes. A new field rot of carrots, caused by Phytophthora megasperma Drechsl., was found at Matsqui, B.C. Sclerotinia sclerotiorum caused heavy pod rot in a field in N. S.; apothecia were abundant.

Bacterial ring rot is now an established disease in Canada. However, its incidence in the various provinces depends basically on the measures taken by the provincial authorities. The disease is still a newcomer to Nfld. It also occurs at very low levels in B.C., P.E.I. and probably N.S. In no province is the average loss significant, but the aggregate loss may be considerable in Que. and Ont. In provinces where the growing of table stock is of primary interest, Alberta has been most successful in keeping ring rot at a very low level.

For the third year in succession late blight was present in every province in Canada. The disease was epidemic in the coastal areas of B.C., about Edmonton, Alta., over a great triangle in Sask. with vertex w. of Saskatoon and base along the eastern boundary, in southern Man., in some parts of Ont., and nearly everywhere in Que. and the Maritime Provinces. Losses from tuber rot were heavy on account of wet conditions extending into the harvest period. Moreover, severe field frosts, which occurred in several areas before the crop was harvested, added further to the losses. Only in P.E.I. where the epidemic was early, was the loss largely the result of reduced yields.

This year the latent virus S was demonstrated, by work done at Fredericton, N.B., to be present in Green Mountain potato plants growing in Canada. When this virus was originally reported from Holland, it was stated to be present in Dutch, German, English and American varieties.

An outbreak of fire blight (Erwinia amylovora) occurred in two apple-growing districts in s.w. Que. In Eastern Canada, scab (Venturia inaequalis) was prevalent over most of the area and caused considerable loss even in well sprayed orchards in N.B. and P.E.I. The use of eradicant fungicides to control scab whenever the protectant schedules are inadequate has greatly improved control of apple scab in commercial orchards in N.S. Pear blast (Pseudomonas syringae), a disease not previously recognized in Canada, was epidemic in the Saanich peninsula, B.C., in 1953, but was less destructive in 1954. Pears in the Niagara peninsula suffered 15-20% loss in store from rot caused by Phytophthora cactorum; heavy rains at harvest favoured spread of the disease. Brown rot (Monilinia fructicola) was severe on sweet cherries in the Niagara peninsula and on harvested peaches in all peach-growing districts in Ont. Peach leaf curl (Taphrina deformans) was prevalent on the B.C. coast. End-rot (Fusicoccum putrefaciens) is proving very destructive to the 1954 crop of cranberries in store in N.S. Red stele (Phytophthora fragariae) was observed for the first time in the Niagara peninsula, Ont. Verticillium wilt appears to be an important disease of strawberries in the Saanich peninsula, B.C.

From the records of diseases on trees and shrubs the following are of interest: an Elsinoe apparently new to science was collected on introduced species of Tilia in N.S.; Marssonina betulae Magn. on Betula papyrifera in N.B. appears to be a new North American record; Actinopelte dryina on Quercus borealis at Rougemont, Que., is a new Canadian record. These are all leaf spotting fungi. Further evidence was obtained from observations that the cultivated blue spruce, Picea pungens, is much more susceptible to the rust Chrysomyxa ledicola than white spruce, P. glauca. Weather conditions were particularly favourable for the development of aecia on Berberis, Rhamnus, Sorbus, etc.

Among the diseases of ornamental plants the following may be mentioned. A condition known as topple was quite severe on Chrysanthemum in a greenhouse at Regina, Sask. Three new Canadian records were carnation pimple (Xanthomonas oryzae (Uyeda & Ishiyama) Dowson var. dianthi Thomas & Dickens) on the variety Northland at Leamington, Ont.; leaf spot (Septoria lythrina) on cultivated Lythrum at Port Burwell, Ont.; and brown canker (Cryptosporium minimum Laubert) on rose near Victoria, B.C.