New or Noteworthy Diseases

Stem rust of wheat did little damage in Western Canada. In the important "rust area" in Manitoba and eastern Saskatchewan, rust resistant varieties have virtually replaced susceptible bread wheats, and there was almost no rust on any wheat variety. In late fields, beyond the "rust area" stem rust damage was moderate to severe in Saskatchewan and slight to moderate in southern Alberta. Stem rust was more prevalent than usual about Lethbridge and in the Peace River district. In Eastern Canada, stem rust was moderate to severe in only an occasional field.

Little stem rust or crown rust was reported on oats. However, localized epidemics of crown rust traceable to plantings of buckthorn were more severe this year in New Brunswick than in 1940. Similarly, a few restricted epidemics of stem rust also traceable to plantings of the alternate host, the barberry, were recorded in that province.

The effect of common root rot (Helminthosporium sativum and Fusarium spp.) on the yield of wheat was studied for the third successive year in Man. The average loss was calculated to be 12.1%, compared with 16.6% in 1940 and 7.47% in 1939. Attacks of the disease did not reduce the yields of individual plants to the degree they did in the previous years. It is thought that the abundant precipitation during late summer prevented the premature ripening of the affected plants. Common root rot was reported to be less severe than usual in Alta. and more severe in Sask.

Kernel smudge was less prevalent in the Prairie Provinces in 1941 than in 1940. While Alternaria spp. and Helminthosporium sativum were, far, the commonest fungi associated with smudged wheat, H. sativum appeared to be responsible for the more severe forms of kernel smudge. Varietal differences in susceptibility were again noted.

Although Fusarium graminearum has long been recognized as an important pathogen in head blight (scab) of wheat in the United States and has been shown to be associated with the disease in Eastern Canada (P.D.S. 19:10), it is comparatively rare in Man. It was isolated for the first time from blighted wheat heads in 1941, and has been encountered previously but twice in seed wheat.

An extended discussion is given by Dr. T.C. Vanterpool on browning root rot of wheat as it occurs in Sask., Alta. and the Dakotas.

Other diseases of cereals deserving mention are: The epidemic of yellow leaf blotch (Pyrenophora Tritici-repentis) in wheat on stubble in west central Sask.; further evidence that the newer varieties of oats are less susceptible to Helminthosporium Avenae, but more susceptible to Septoria Avenae, than the old standard varieties; and the occurrence of grey speck (manganese deficiency) of oats in southwestern Ont.

Bacterial wilt (Phytomonas insidiosa) of alfalfa continues to be destructive in the irrigated districts in southern Alta. and was reported from several new points in the dry interior of B.C. A crown and root rot was particularly severe on alfalfa in the seed-growing areas of northern Alta.; the pathogen was a low-temperature basidiomycete first isolated in 1931 from turf grasses severely damaged by snow mould. Stalk and ear rots were much less destructive in the seed corn belt of southwestern Ont. than in 1940. Savoy (virus) of sugar beet transmitted by the pigweed bug, Piesma cinerea, was found in Ont. for the first time. Although the season was unusually favourable for sugar beet seedlings, black root (cause undetermined) resulted in the abandonment of some fields and reduced yields in others; the disease has been present for some time. Other new extensions or records on these crops are: Black stem (Ascochyta imperfecta) on alfalfa and Stagonospora leaf spot (S. recedens) on red clover in B.C.; stem canker (Ascochyta caulicola) on sweet clover in Man. and leaf spot (Pseudopeziza Meliloti) in Alta.; downy mildew (Peronospora manshurica) on soy bean in N.S.; leaf smut (Ustilago striaeformis) in B.C. on western rye grass.

A further increase of bacterial ring rot (Phytomonas sepedonica) of potato was noted in the irrigated districts of southern Alta. this year. It was found on 102 farms compared with 89 in 1940 and 40 in 1939. Ring rot was found in new centres in Sask., Man., Ont., and Que., more especially in table stock. More fields were rejected on account of the disease in Que. and N.B. in 1941 than in 1940. However, in P.E.I., where the production of certified seed is a very important industry, only one case was discovered in 1941 in contrast with 25 in 1940. It is too early to say whether or not the disease has been stamped out, but great pains were taken to see that diseased stocks were properly disposed of and premises, implements, etc., were disinfected under the personal direction of the inspection and pathology staffs. The satisfactory record for P.E.I. constitutes a most hopeful sign that efficiency and a systematic approach based on co-operation between pathologists and producers will result in the successful control of this exceedingly destructive and elusive disease.

Late blight (Phytophthora infestans) was prevalent on potatoes in the coastal sections in B.C. and was also reported for the first time in the dry interior. Late blight again appeared in Man. after a lapse of 13 years and caused considerable damage in the Red River Valley. The disease was also destructive in northern Ont. and northwestern Que., in N.B. and P.E.I. The epidemic in the latter province was said to be the heaviest ever experienced.

A case of wart (Synchytrium endobioticum) was found in a small garden in Halifax. Twenty-five years ago such a discovery would have caused apprehension, but in view of our present knowledge of wart, and the success in keeping it under control on this continent, the possibility of the disease ever becoming a problem in potato production seems remote.

Leaf mould (Cladosporium fulvum) caused moderate damage to Vetomold in the Victoria district, B.C., where the variety has now been grown commercially for two years. In Ont. this "loss" of resistance has been attributed to the appearance of a new strain of the fungus. In a single commercial test, in the Harrow district, Ont., with Improved Vetomold V 121, infection was negligible. It will be a matter of considerable practical importance if a fully resistant variety can be developed.

A bacterial disease of tomato, observed for the first time in 1940 in Man., has been determined as bacterial speck (Phytomonas tomato). It caused heavy losses in one instance. Bacterial spot (Phytomonas vesicatoria) previously known from Ont. and Que. was reported this year from Man. and N.S. New diseases of interest on vegetables were: Leaf spot (Cercospora Apii var. Carotae) on carrot and leaf spot (Septoria Lactucae) on lettuce in Que. and leaf spot (Heterosporium variabile) on spinach in B.C.

The aphids found on potatoes and their importance in the transmission of virus diseases of that crop have been discussed by Mrs. Jean B. Adams in a separate section.

Fire blight (Erwinia amylovora) was reported for the first time in Alberta; the disease is now known from every province of Canada, but it has never been of any importance in the Annapolis valley, N.S. It was troublesome at one time in the Okanagan Valley, B.C., and it continues to be a problem in Ont. and Que., where a moderate epidemic occurred in 1941.

Among the diseases of stone fruits, the virus diseases, several of which are reported for the first time, hold first place. The following may be mentioned: X disease of peach and chokecherry in Ont., western X disease on peach in B.C., prune mosaic on prune and peach in Ont. and B.C., line-pattern mosaic in Shiro plum in Ont., cherry mottle leaf and little cherry (?virus) in B.C.

Yellows (virus) is a widespread and destructive disease. Mr. D.J. MacLeod proved, experimentally, that yellows as it occurs in buckwheat, carrot, China aster, phlox, and the weed, Hieracium floribundum, in N.B. is caused by Callistephus virus 1. It was also noted this year on lettuce in Man. and Que.; on everlasting in N.B.; on snapdragon in P.E.I.; on calendula in N.B. and P.E.I., and possibly on gaillardia in P.E.I. Leaf blight or streak is a destructive disease of perennial phlox in eastern Canada. Mr. MacLeod carried out experiments, which indicate that the trouble is due to a virus. When the bulb inspection service was begun in B.C., certain diseases, notably break (virus) and fire (Botrytis Tulipae) in tulips and eelworms (Ditylenchus dipsaci) in narcissus and bulbous iris threatened the extinction of the industry. Today, thanks to the strict application of methods of control then known or since improved, the troubles are rapidly declining in importance or have ceased to be a factor in well-managed plantings.

Many new diseases of ornamentals and extensions of host and range were reported this year. Only a few are reported below: Leaf spot (Phyllosticta Pterdis) on greenhouse ferns; leaf spot (Ramularia macrospora) on canterbury bells; stunt (Cladosporium Cyclaminis) on cyclamen; leaf spot (Ascochyta Aquilegiae) on larkspur; powdery mildew (Sphaerotheca Humuli) on meadowsweet; bacterial leaf spot (Phytomonas hederae) on English ivy; and bacterial leaf spot (Phytomonas tardicresens) on iris.