New or Noteworthy Diseases

Only a trace of stem rust (Puccinia graminis) developed on the resistant wheat varieties Thatcher, Regent and Redman in Man. and eastern Sask. Although stem rust was slow in developing, susceptible wheats carried 80% or more infection when they could be found. Stem rust was also severe in some late-maturing fields of soft spring wheat in Alta., but only a light infection was recorded on winter wheat in southern Ont. Infection by oat stem rust was light to severe in Man. and eastern Sask., but elsewhere stem rust was light except for sporadic outbreaks in Eastern Canada.

Leaf rust (P. triticina) infection was heavy in wheat throughout Canada except in parts of Sask. and Alta., but at most points the rust reached its maximum intensity only late in the season. Three races were responsible for most of the leaf rust on the varieties Regent and Redman. Only Exchange (Warden x Hybrid English) showed a high leaf rust resistance in all the rust nurseries across Canada.

Only traces or a very light infection of crown rust (P. coronata) occurred in Man. and southern Sask., but heavy infections developed here and there in Ont. and eastward. Further search in an area in N.B., where a severe infection has developed annually for last 13 years, revealed the buckthorn in quantity.

As a result of a special survey of the principal wheat growing districts in B.C., dwarf bunt (?race of Tilletia caries) was found well established but not severe in a small area about Armstrong and Enderby in the North Okanagan. However there exists in the herbarium a specimen of T. caries, collected at Armstrong in 1931, that has subsequently been identified as dwarf bunt.

Bacterial black chaff (Xanthomonas translucens) was severe at Indian Head, Sask., on naturally infected Saunders wheat, which is known to be one of the most severely affected varieties when artificially inoculated.

Gibberella Zeae was observed for the second time in Man. when perithecia were collected in August on corn stubble of the previous crop.

Although speckled leaf blotch (Septoria Passerinii) is a minor disease of barley, some promising new varieties have been rather heavily infected in Man.

Winter crown rot (low temperature basidiomycete) of alfalfa was again prevalent and caused the usual amount of damage in Alta. It was also present in all districts in northern Sask.

There was an increase of bacterial wilt (Corynebacterium insidiosum) in Alta. particularly in young stands in the southern part of the province. Besides reports of its occurrence in B.C. and Sask., the disease was reported for the first time in Eastern Canada when it was found

in several fields in southern Ont. A few severe, widely scattered, infections of black stem (Ascochyta imperfecta) were also reported. Several diseases of sweet clover previously unreported from southern Ont. were recorded; apparently the most destructive was Phytophthora root rot (P. cactorum).

Flax rust (Melampsora Lini) was epidemic in southern Man. and southeastern Sask. and caused damage estimated at $9,000,000. Under the unusual weather conditions prevailing in 1948, Royal, which possesses considerable mature plant resistance, was severely damaged. In addition many of the rust lesions were invaded by other fungi which caused considerable stem rot. Pasmo (Septoria linicola) was of little consequence because of the rust epidemic, but heavy pasmo infections were present on rust-resistant varieties in the rust area and slight to severe infections occurred in northwestern Man. and eastern Sask. Although Alternaria linicola was isolated several years ago from seed samples from Western Canada it was found for the first time this year on field material on which it was causing a brown stem canker.

Diseases of soybean were of little importance in Canada in 1948. However, brown stem rot (Cephalosporium gregatum Allington & Chamberlain) was found to be widespread on several varieties in southwestern Ont. and under more favourable conditions it may become destructive.

The increasing importance of the sunflower crop has directed attention to diseases of this plant. Some of the inbred female parents were found to be so severely affected by rust (Puccinia Helianthi) in Man. that the yield was cut in half whereas the loss was negligible in commercial fields.

Of scientific interest was the finding of Physoderma graminis causing severe damage to Agropyron repens at Ottawa. The only previous north American record is that of Thirumalachar and Dickson who reported it in 1947 at Madison, Wis.

Bacterial ring rot (Corynebacterium sepedonicum) was the cause of over 60% of the rejections in fields of potatoes entered for certification in Que. and Man. It has been evident for some time that the level of rejections in the seed crop parallels the incidence of the disease in table stock. Its high incidence in Que. has been known for several years, but any doubt concerning its prevalence in Man. was removed by the examination of carload lots of potatoes received in B.C. Of 33 cars shipped to B.C., 23 were found affected with ring rot, some being badly diseased. In contrast only a trace of ring rot was present in 6 of 177 cars received from Alta. Indeed failure to control the disease in table stock in any province seriously jeopardizes the production of seed potatoes.

The low incidence of ring rot in Alta. is clearly shown by the provincial survey. In 1948 the disease was found in 6.7% of the table stock fields in a year when conditions were ideal for its detection. In contrast in Que., 19% of the seed potato fields were disqualified because

of ring rot in the field and an additional 5.7% because of ring rot in other fields on the same farm. The fight to keep ring rot out of B.C. and P.E.I. and to bring it under control in Alta. and Ont. has been remarkably successful, but these efforts are hindered by the prevalence of the disease elsewhere.

High soil moisture and unfavorable growing conditions in the spring greatly increased the incidence of black leg (Erwinia phytophthora) in B.C., Alta., Sask., and northeastern Que. This disease was also more prevalent than usual in the Maritime Provinces, especially in the susceptible variety Sebago.

An epidemic of late blight (Phytophthora infestans), the severest ever recorded in B.C., caused great damage. The disease was not only prevalent on the coast, but it also penetrated into many of the dry areas of the interior. Late blight was also widespread in Man. and eastern Sask. and caused considerable tuber rot in northern areas. The disease spread rapidly in Ont. and threatened to cause heavy losses but for the advent of dry weather. Late blight developed early in Que. and N.B., but conditions were favourable for keeping the crop protected with fungicides and for harvesting rot-free crop. Epidemic conditions developed in the two other eastern provinces. It was destructive in the coastal areas of N.S., but in P.E.I. except for some reduction in yield due to destruction of the vines much of the crop was adequately sprayed, vine killers were used extensively and as a result, tuber rot was slight. Some loss also occurred on tomatoes in B.C. and from Ont. eastward.

Leak (Pythium ultimum) has been recognized for many years as a transit disease in potatoes intended for early market. It would appear to be of fairly frequent occurrence on potatoes during the early storage period particularly if the weather is warm during digging. The pathogen is a high temperature wound parasite and potatoes naturally thin-skinned or immature are especially subject to damage.

Evidence is presented that in the purple or bunch top disease of potato, the name is derived from the current season's symptoms. A small proportion of the tubers become affected by the virus and when such tubers are planted they frequently fail to germinate during the growing season. The tubers that do germinate produce plants that show the secondary or haywire symptoms of the bunch top virus.

Blue mold (Peronospora tabacina) is well established in the two important tobacco growing areas in Ont. The disease was effectively controlled in the seed beds, but it caused widespread damage in the field particularly in the districts where flue-cured tobacco is intensively cultivated.

A few diseases on other vegetables may be mentioned. Although no destructive outbreaks of bean rust (Uromyces appendiculatus) were reported in 1948, its presence was recorded in no less than 5 provinces across Canada. An interesting finding was the occurrence of yellow mosaic

(Phaseolus virus 2) on beans in a garden in N.B. where the source was traced to gladioli growing in the same garden. Besides late blight of potatoes already mentioned the downy mildews of hops and onion were likewise widespread and severe in B.C. To the long list of important pea diseases was added root rot, caused by Aphanomyces euteiches Drechsler, which caused the loss of nearly 500 acres of late maturing canning peas in Essex Co., Ont. A case of marsh spot (manganese deficiency) was recognized in a sample of peas from Sask. Wilt (Fusarium bulbigenum var. niveum) has rarely been observed in watermelons in Canada, but it was severe in 3 fields in Ont. this year; its sudden appearance suggested the pathogen may be seed-borne.

Apple scab (Venturia inaequalis) was very severe throughout B.C., but it was checked by dry weather and less serious than usual in Ont. and Que. Spring weather favoured infection in N.B. and N.S. and losses were heavy. Pear scab (V. pirina) was also severe in B.C. Powdery mildew (Podosphaera leucotricha) was also more destructive than usual in B.C. Perennial canker (Neofabraea perennans) has increased in the Okanagan Valley with the increase of the wooly aphid. Both the fruit and canker phases have increased in the Creston Valley. Another disease favoured by the unusually wet season in B.C. was peach leaf curl (Taphrina deformans), which was severe. The first Canadian record of reversion (virus) was reported when a single tree of Late Duke cherry was found at Creston.

Red stele (Phytophthora Fragariae) proved to be well established in N.S. Its occurrence was suspected previously, but only this year were the symptoms definite as a result of the wet weather. Leaf blight (Dendrophoma obscurans), previously unreported in Canada, was found attacking strawberries at three places in Ont. An interesting new record was the occurrence of downy mildew (Peronospora Rubi) on wild Rubus spp. in B.C. probably as the result of the wet weather.

Dutch elm disease (Ceratostomella Ulmi) was found in 7 additional counties in Que. and on a single tree at Ottawa, Ont. The pathogen was also isolated from the bark from 13 trees in 6 counties in eastern Ont.; there was no evidence that these sickly trees had yet been attacked by the fungus. Scab (Fusicladium saliciperdum) was found on Salix sp. in Ont. for the first time. Canker (Dothichiza populea) nearly destroyed a planting of Lombardy poplar (Populus nigra var. italica) in western Que. Pole blight (cause unknown) of Pinus monticola was reported for the first time in Canada when it was found in B.C. The disease is serious in Idaho and Montana. Rust (Chrysomyxa ledicola) was very heavy throughout Man. on Picea glauca and caused considerable defoliation. Specimens of canker on Laburnum collected in Ont. proved to be due to Fusarium lateritium.

Interesting reports of diseases of ornamentals were: powdery mildew (?Erysiphe Cichoracearum) of begonia in Sask. and Ont.; bud rot (Fusarium Poae) on Dianthus plumarius in Ont.; stem rot (Coniothyrium Euphorbiae) on Euphorbia epithymoides in Ont.; gladiolus scab (Pseudomonas marginata) widely reported; mosaic (Phaseolus virus 2) evidently widespread on gladiolus and white break (virus) in Ont.; soft rot (Erwinia carotovora) severe in forced L'Innocence hyacinth in Ont.