

V. DISEASES OF TREES AND SHRUBSABIES - Fir

Tip Blight (Rehmiellopsis balsameae Waterman). This blight was reported in P.D.S. 24: 98 as due to R. bohemica. Alma M. Waterman (Journ. Agr. Res. 70: 315-337. 1945) has now shown the tip blight of Abies in eastern North America to be due to a distinct fungus, which she has named R. balsameae, and which she believes to be native to this region and to have spread to those species planted for ornament from A. balsamea. She also notes that specimens collected by Faulx in Ont. and Que. with immature fruit bodies are probably R. balsameae, and that the only known North American material of R. Abietis (E. Rostr.) O. Rostr. (R. bohemica Bub. & Kab.) consists of 2 specimens collected on A. lasiocarpa in B.C. by L.N. Gooding and J.W. Kimmey.

ACER - Maple

Leaf Spot (Phleospora Aceris (Lib.) Sacc.). Study of further material, including the type of Ascochyta Aceris Lib., has made it plain that many, at least, of the organisms grouped by Gilman and Archer (The fungi of Iowa parasitic on plants. Iowa State College Journ. of Sci. 3: 299-502. 1929) under Septoria Aceris are indeed identical; however, this variable fungus appears to us better placed in Phleospora than in Septoria. Accordingly under this name are to be included fungi previously reported in the Survey as Cylindrosporium consociatum, C. pennsylvanicum, Phleospora Aceris, Phyllosticta minutissima and Septoria acerina. Without more definite evidence we hesitate to include Septoria Negundinis on A. Negunde. It should be pointed out that Phyllosticta minutissima may be more than a microconidial stage; material collected in early Sept. at Rupert, Que. was severely damaged (P.D.S. 23: 94) yet no trace of the Phleospora acervuli could be found, strongly suggesting that the Phyllosticta spores had served as true conidia (D.B.O. Savile, I.L. Connors). P. Aceris caused moderate damage to A. pennsylvanicum and A. spicatum at Elgin Road, Que.; the microconidial stage was also present (I.L. Connors).

Tar Spot (Rhytisma acerinum) was light on A. rubrum at Elgin Road, Que. (I.L. Connors).

Leaf Scorch (cause undetermined) was severe on A. glabra at Brandon, Man., in 1944 (W.L. Gordon). Dr. Gordon suggested that this might be Phyllosticta minima as some pycnidia were present with spores 4.5-7.5 x 2.0-3.8 microns; these figures agree with those given by Bisby et al. (Fungi of Manitoba and Saskatchewan. 1938), whose material may have been this fungus, and of Seaver (N. Am. Flora 6: 50); but, as shown in P.D.S. 23: 94, P. minima is quite different. The fungus in Dr. Gordon's material is fruiting sparsely, being no more abundant than Alternaria sp. on the same lesions, and the fully mature spores are pale yellowish brown; it is suspected that this is a saprophytic or weakly parasitic Coniothyrium following a physiological disorder (D.B.O. Savile).

AESCULUS - Horsechestnut

Leaf Scorch (alkaline soil). Trees of A. glabra at Greenway, Man., showed slight scorching after a dry spell (J.E. Machacek).

AMELANCHIER

Witches' Broom (Apiosporina Collinsii) was seen on a few bushes of A. florida at North Saanich, B.C. (W. Jones).

Rust (Gymnosporangium corniculans). The pycnial stage was common on leaves of A. alnifolia in a nursery at Dropmore, Man., close to junipers; see also Juniperus.

Leaf Spot (Entomesporium maculatum). A. alnifolia at Dropmore, Man., was lightly infected (W.A.F. Hagborg, W.L. Gordon).

BETULA - Birch

Leaf Spot (Septoria Betulae) was heavy on B. alba in a nursery at Dropmore, Man. (W.A.F. Hagborg, W.L. Gordon).

CARAGANA

Leaf Spot (Septoria Caraganae). Infection was light but general in hedges at Edmonton, Alta. (M.W.C.).

CORNUS - Dogwood

Leaf Spot (Septoria cornicola) affected many leaves of Cornus sp. in a nursery at Dropmore, Man.; C. stolonifera was moderately to severely attacked (W.A.F. Hagborg, W.L. Gordon).

CRATAEGUS - Hawthorn

Rust (Gymnosporangium spp.). Pycnia and aecia of G. Betheli were seen on Crataegus sp. at Dropmore, Man., some 300 yards from infected J. scopulorum (W.A.F. Hagborg, W.L. Gordon). Fruits of Crataegus sp. infected by G. clavipes were received from Bowdley, Ont. (Ruth Macrae, I.L. Connors). G. clavariaeforme attacked C. Oxycantha var. rosea at Charlottetown, P.E.I. (R.R. Hurst).

ELAEAGNUS

Leaf Spot (Phyllosticta argyrea Speg.). A slight infection occurred on E. angustifolia at Dropmore, Man.; spores 4-5 x 1-2 microns. Previously found at Morden (W.L. Gordon).

Bacterial Leaf Spot (? Pseudomonas elaeagni) was found on some leaves of E. angustifolia at Dropmore, Man.; the same disease was found at Morden in 1944 (W.A.F. Hagborg, W.L. Gordon).

Rust (Puccinia Garicis-Shepherdiae). Traces were present on E. angustifolia at Dropmore, Man.; first record on this host in Man. (W.L. Gordon).

FAGUS - Beech

Massaria galliformis Wehmeyer was collected on bark of F. grandifolia at Kentville, N.S., by R.M. Lewis; it was determined by L.B. Wehmeyer. This interesting fungus causes the affected bark to take on a greenish shade like that of poplar. It is not known whether it causes any appreciable injury (I.L. Connors).

FRAXINUS - Ash

Rust (Puccinia sparganioides) was abundant on F. pennsylvanica var. lanceolata in York and Queens Co., N.B. (J.L. Howatt).

JUGLANS

Leaf Spot (Marssonina Juglandis) caused much defoliation of J. cinerea near Pink Lake, Que. (D.B.G. Savile).

Canker (Melanconis Juglandis (Ell. & Ev.) Graves). Melanconium oblongum Berk., with a little of the perfect stage Melanconis Juglandis, was found in abundance on a branch of J. cinerea near Pink Lake, Que., that was broken over but still attacked. The staghorn effect commonly seen on butternuts in this district may be largely due to the disease caused by this organism and described by A.H. Graves (Phytopath. 13: 411-435. 1923). The pathogen is closely related to Melanconis Garthusiana Tul. (Melanconium juglandinum Kunze) on J. regia in Europe. The conidial stage of the latter (D. Sacc. Myc. Ital. 178) was examined, and, as L.E. Wehmeyer (Univ. Mich. Studies. Sci. Studies 14: 39. 1941) remarks, the conidia were somewhat broader than in Melanconium oblongum. Graves reports having seen two Canadian collections: London, May 13, 1892; and no definite locality, Feb. 11, 1893, Macoun (I.L. Connors).

Bacterial Blight (Xanthomonas juglandis) caused slight damage to foliage and fruit of J. regia at Saanichton, B.C. (W. Jones).

JUNIPERUS

Rust (Gymnosporangium spp.). Galls of G. Betheli were common on J. scopulorum at Dropmore, Man., 300 yards from rusted Crataegus (W.A.F. Hagberg, W.L. Gordon). G. clavariiforme caused slight damage to J. communis at Kentville, N.S. (R.M. Lewis). Specimens of G. ?corniculans on J. scopulorum were received from Indian Head, Sask. (I.L. Connors). G. corniculans was common on J. horizontalis, J. horizontalis var. Douglasii and J. virginiana at Dropmore, Man.; see also Amelanchier (W.A.F. Hagberg, W.L. Gordon).

OSTRYA - Hop-Hornbeam

Leaf Blister (Taphrina virginica Selys & Sadeb.) was received from Perrytown, Ont., on O. virginiana (Ruth Macrae). We have one previous specimen from Ont., but this is the first report to the Survey.

PICEA - Spruce

Rust (Chrysomyxa ledicola). A specimen on P. glauca was received from Hodgson, Man., with the statement that some trees were being seriously defoliated (W.L. Gordon). A specimen of rusted blue spruce (? P. pungens var. glauca) was received from the Station, Lennoxville, Que. (I.L. Connors).

PINUS - Pine

Rust (Coleosporium Solidaginis). Narrow yellowish bands appeared on some needles of P. Banksiana and P. sylvestris planted at the University, Fort Garry, Man. These bands were similar to those produced on P. sylvestris in the greenhouse shortly after inoculation from rusted Aster and Solidago. Similar bands were seen on P. sylvestris at Dropmore (A.M. Brown). Slightly infected P. resinosa was received from Walkerton, Ont. (I.L. Connors).

Blister Rust (Cronartium spp.). Galls of C. ?quercuum were abundant on one tree in a grove of P. sylvestris at Fort Garry, Man. (A.M. Brown). A specimen of C. ribicola on P. Strobus was received from MacGregor Lake, Que., with the information that there was a scattering of infected trees in the district and that two had been killed on the sender's property; in the specimen received the infected area had been largely eaten away (H.N. Racicot). Half the trees were infected in a small grove of P. Strobus in York Co., N.B. The disease is widespread, but the scarcity of white pines makes it unimportant except where these trees have been planted for ornament or where attempts have been made to re-establish stands (J.L. Howatt).

PLATANUS - Plane Tree

Anthracnose (Gnomonia veneta). Twig blight was severe on a tree in the Macoun Memorial Garden, C.E.F., Ottawa, Ont., and moderate on two trees in the Arboretum in early July; at that date there were no fruiting lesions on the leaves, but numerous small specks suggested that infection had occurred (D.B.O. Savile).

POPULUS - Poplar

Leaf Blight (Fusicladium radiosum) was seen on Populus sp. at Kentville, N.S.; it was apparently general (J.F. Hockey). Not previously reported from N.S. in the Survey.

Leaf Spot (Marssonina Castagnei) was general on young native poplars near Okanagan Lake, B.C. (G.E. Woolliams). It was severe and caused defoliation of P. tremuloides at Melfort, Sask. (H.W.M.). At Ottawa, Ont., this disease was very severe on P. alba, defoliation of the lower branches starting in July and being complete on some trees by mid-August. It was also heavy on P. tremuloides in the district, causing some defoliation in late August. In the fall defoliation of all but the uppermost few feet of the larger trees was noticeably hastened (D.B.O. Savile). P. grandidentata was moderately heavily attacked at Elgin Road, Que. (I.L. Conners) and at Springfield, N.S. (J.F. Hockey).

Rust (Melampsora albertensis) was general on P. tremuloides at Summerland, B.C. (G.E. Woolliams).

Leaf Spot (Septoria spp.). S. populicola was found on P. trichocarpa adjacent to Okanagan Lake, B.C. (G.E. Woolliams). S. musiva was widespread and severe on P. balsamifera at Fort Garry, Man. P. ?populicola was moderately heavy on the same host at Bird's Hill; spores curved, 3-4-septate, 45-77.5 x 3-4.5 microns (B. Peterson, W.L. Gordon). S. populicola was conspicuous on P. tacamahacca at Black L., Megantic Co., Que. (Ruth Macrae).

Yellow Leaf Blister (Taphrina aurea) was seen on a few trees of P. nigra at North Saanich, B.C. (W. Jones).

Powdery Mildew (Umicinula Salicis) was heavy on P. grandidentata at Elgin Road, Que. (I.L. Conners).

PRUNUS

Shot Hole (Cercospora circumscissa) was severe on P. sp. (?nigra) at Fort Garry, Man. (W.L. Gordon).

Shot Hole (Cylindrosporium lutescens) was severe on P. virginiana at Somerset, Man. (W.A.F. Hagborg, W.L. Gordon).

Fomes applanatus was found fruiting on the trunk of P. virginiana at Fort Garry, Man. (W.A.F. Hagborg).

Powdery Mildew (Podosphaera Oxycanthae) slightly affected P. emarginata at North Saanich, B.C. (W. Jones).

Twig Blight (Sclerotinia fructicola) was common on P. virginiana at Fort Garry, Man. (W.A.F. Hagborg).

QUERCUS - Oak

Anthracnose (Gnomonia veneta) was light on the leaves of one tree of Q. alba in the Arboretum, Ottawa, Ont. (D.B.O. Savile).

Leaf Spot (Marssonina Martini). A light, general infection occurred on Q. macrocarpa at Fort Garry, Man. This disease has become more common in recent years (W.L. Gordon).

Leaf Spot (Phyllosticta phomiformis Sacc.) severely damaged the younger leaves of Q. macrocarpa at Fort Garry, Man.; spores mostly 10-15 x 4-6 microns, smaller than usual; known previously in Man., but not reported in the Survey (W.L. Gordon).

Leaf Blister (Taphrina caerulescens) was heavy on a specimen of Q. borealis received from Bewdsley, Ont. (Ruth Macrae).

RHAMNUS - Buckthorn

Rust (Puccinia coronata). A light infection occurred on R. cathartica at Starrs Point, N.S. (R.M. Lewis). A trace only was seen on this host in P.E.I. (R.R. Hurst).

Mosaic (virus) severely damaged several bushes of R. cathartica in a hedge at Charlottetown, P.E.I. (R.R. Hurst).

SALIX - Willow

Tar Spot (Rhytisma salicinum) was common at North Saanich, B.C. (W. Jones).

Die Back (Valsa ambiens) affected a number of branches of S. alba var. vitellina at Fort Garry, Man. Valsa spores 20-25 x 5-6 microns, Cytospora spores 5-10 x 1.5-2 microns (T. Johnson, W.L. Gordon).

SAMBUCUS - Elder

Crown Rot (? Fusarium sp.). Specimens of S. ?pubens were sent to Ottawa in Oct. by R.C. Russell from the Forest Nursery Station, Sutherland, Sask., with the statement that the shrubs had been dying a limb at a time during the summer. Isolations yielded Fusaria identified by W.L. Gordon as F. Solani, F. avenaceum and F. sporotrichioides (Ruth Macrae). In July a shrub of S. racemosa at Government House, Winnipeg, Man., suddenly wilted after two hot days; isolations from the rotted stem bases yielded F. Solani and F. Scirpi var. acuminatum; the former organism has been previously isolated from similar rots of other plants and is suspected of being the pathogen (W.L. Gordon).

Leaf Spot (Septoria sambucina) was very heavy on S. racemosa at Dropmore, Man., and light at Winnipeg; spores 42.5-80 x 2.5-3 microns (W.L. Gordon).

SHEPHERDIA

Leaf Spot (Cercospora manitobana J.J. Davis) was collected at Brandon and Morden, Man., in 1944 on S. argentea; spores 30-80 x 5.7-8.0 microns, 1-2-septate, at Brandon, and 40-125 x 5-7 microns at Morden; conidiophores up to 115 microns long, in dense coronoid fascioles; known from Sask. and Man. on Elaeagnus argentea, but not on Shepherdia (W.L. Gordon).

Leaf Spot (Septoria Shepherdiae) was found on S. canadensis in Hants Co., N.S. (J.F. Hockey).

ULMUS - Elm

Dutch Elm Disease (Ceratostomella Ulmi). In 1945 an intensive scouting programme to determine the limits of distribution of this disease in Que. was carried out on a co-operative basis by the Dominion Department of Agriculture and the Quebec Department of Lands and Forests. Less intensive scouting was also done in Ont., over a large area of the southern part of the province, and a limited amount of work was carried out in N.B. and N.S. The

results of this work indicated that the infected area was confined to Que. and that the disease was well established there. Infected trees were found from near the city of Quebec to Lachine and from Richmond to St. Gabriel, or in an area about 160 miles long by 80 miles at its maximum width. The centre of the infection appears to be Sorel and it is evident from the size of the infected area that the disease has been present for a considerable period of time - possibly 10 years. To date only the native elm bark beetle (Hylurgopinus rufipes Eich.) has been found in Que. This beetle is not supposed to be as effective a vector as the smaller European elm bark beetle (Scolytus multistriatus Marsh.) which is present in the United States, but in view of the widespread occurrence of the disease in Que. this view appears to be open to question.

Altogether a total of 1349 infected trees has been located. In an effort to confine the disease to its present known limits, or at least to retard its spread, a policy of eradication of diseased trees has been adopted, and to date practically all known infected trees have been destroyed. The felling of large trees, particularly in cities, towns, and villages, is a difficult and expensive operation, but in view of the high scenic and commercial value of elm it is felt that such a policy is justifiable. The effectiveness of such a course in arresting or retarding the spread of the disease can only be determined by studying its progress from year to year (A.W. McCallum).

Black Spot (Gnomonia ulmea) was common on leaves of U. americana at Fort Garry, Man. Perithecia with immature spores were found in overwintered leaves on the ground on 31 March 1945; although it has always been assumed that the perithecial stage was formed in Man., this appears to be the first collection of it (W.L. Gordon). Black spot was prevalent on U. pumila (Harbin strain) at Dropmore (W.A.F. Hagborg). Infection was about 30% on U. americana at Bridgetown, N.S. (J.F. Hockey).

Coral Spot (Nectria cinnabarina). Heavy rainfall spread this disease to such an extent in hedges of U. pumila at the Botanical Garden, Montreal, Que., that control by pruning was quite impossible. About 200 trees were destroyed (J.E. Jacques).

Canker (Sphaeropsis ulmicola) was heavy and destructive in a row of trees of U. parvifolia at the Station, Charlottetown, P.E.I. (R.R. Hurst). Previously reported from N.B.

Mosaic (virus). A tree of U. americana 25-30 years old at Bridgetown, N.S., showed severe mottling; the leaves were generally smaller and more deeply serrate than normal (J.F. Hockey).

INSECTS

Empusa sp. was seen throughout N.B. on aphids, killing about 10% of the population. Owing to unfavourable weather conditions, mortality was less than usual (J.L. Howatt).