VI. DISEASES OF ORNAMENTAL PLANTS

AZALEA

Three hundred plants were unmarketable on account of red leaf (Exobasidium Vaccinii (Fuck.) Woron.) in a greenhouse at Etobicoke, Ont. Only a few malformed blooms were formed.

BAISAM (Impatiens Balsamina)

Wilt infected 30 per cent of the plants in a planting in Lincoln county, Ont. The plants were grown on ground previously cropped with tomatoes. Verticillium sp. was isolated from diseased plants.

CALLA (Zantedeschia)

Bulbs of Calla imported from New York State were planted in pots at Kingston, Ont. Some of the bulbs grew and produced healthy plants; others rotted with bacterial soft rot (Bacillus carotovorus L.R. Jones). It appears that the bulbs were diseased when imported.

CAMELLIA

Leptosphaeria Camelliae Cke. & Massee caused small lesions on the twigs of camellia at North Saanichton. (J.E. Bosher)

CAMPANULA

Five per cent of the flower stalks were killed at the base by wilt (Sclerotinia Sclerotiorum (Lib.) de Bary) in a garden at Saanichton, B.C.

CARAGANA

Leaf spot (Septoria Caraganea (Jacz.) Died.) lightly to heavily infected the leaves on many hedges at Edmonton, Alta. It caused some leaf drop.

As early as July 18, pycnidia were extruding mature spores on a fairly heavily infected hedge at Saskatoon, Sask. Later in the season severe premature defoliation was widespread, which was quite as heavy as in 1928. From one hedge 75 per cent of the leaves had fallen by Sept. 5.

CANNATION (Dianthus)

Rust was widespread on carnation in New Brunswick, but the damage was slight. It was also observed on a few plants in Kings county, N.S.

CHINA ASTER (Callistephus)

Wilt (Fusarium conglutinans Woll. var. Callistephi Beach) was

prevalent at many places on Vancouver island; the plants died before or during blooming.

Wilt caused medium damage at Edmonton, Alta.

This disease was severe in one garden at Melville, Sask.

A light infection of wilt was found in a garden in Lincoln county, Ont. Two-thirds of the plants were affected with wilt in a garden near Ottawa. The disease was also reported from Mattawa.

Wilt infected 5 and 8 per cent of the plants respectiveey in 2 gardens at Ste. Anne de la Pocatière, Que.

Yellows (Virus) affected 4 to 5 per cent of the plants on one seed farm at Westholme, B.C.

Yellows was widespread and severe at Saskatoon, Sask. It was observed in practically every planting of asters and severely damaged many beds.

This disease was worse than usual in Manitoba. It has practically ruined aster culture.

Yellows was widespread and destructive in New Brunswick. At the Experimental Station, Fredericton, infection ranged from 85 to 100 per cent on the 14 aster varieties (600 plants) grown. Several perennials were also grown in test plots to determine their susceptibility to yellows. The results reported by Mr. D.J. MacLeod are as follows: Coreopsis, Scabiosa, Everlasting (Helichrysum), Sweet Sultan (Centaurea moschata) and Marigold (Tagetes), 100 per cent of the plants infected and common in York county; Calendula, 100 per cent, disease widespread and destructive; Chrysanthemum and Thrift (Statice) 100 per cent; Bartonia (Mentzelia aurea), 5 per cent, severe; Gaillardia, 5 per cent; Butterfly flower (Schizanthus) and Zinnia, 2 per cent. In addition, 90 per cent of the plants of Sonchus arvensis were affected in the test plot and the disease was widespread and destructive on this host and Leontodon autumnalis.

Yellows is very common on cultivated asters in Prince Edward Island and it is so destructive that it is now considered useless to attempt their culture. This disease was also observed on several other ornamentals as follows: Calendula, one per cent of the plants were affected in a garden at Charlottetown, the diseased plants being severely damaged; Dahlia, destructive on Jane Cowl, Jersey Beauty and Ambassador varieties; Larkspur (Delphinium), one plant yellowed at the Experimental Station; Marigold (Tagetes) 2 and 25 per cent of the plants affected at the Station and in a city garden respectively; Zinnia, 15 per cent of the plants affected in a city garden, Charlottetown.

CHRYSANTHEMUM

Powdery mildew (Oidium Chrysanthemi Rabh.) was common on plants at the Experimental Station, Fredericton, N.B.

CLEMATIS

Yellows (?Virus). Some ornamental Clematis plants at the

Agricultural College, Winnipeg, developed spindly yellow leaves and branches.

Septoria leaf spot (S. Clematidis Rabh.) was severe on the lower leaves of Clematis vines at the Experimental Farm, Indian Head, Sask.

DAHLIA

Crown gall (Pseudomonas tumefaciens (Sm. & Towns.) Duggar) was observed on dahlia plants sent from Scotland, Ont., to the Ottawa laboratory.

A tuber rot of bacterial origin was widespread on several varieties of dahlia in New Brunswick; the damage was severe.

GERANIUM (Pelargonium)

Grey mould (Botrytis cinerea Pers.) was destructive in a greenhouse at Charlottetown. Occasional outbreaks of this disease occur in local greenhouses (R. R. Hurst).

GLADIOLUS

Infection by hard rot (Septoria Gladioli Pass.) was general but light on Vancouver island and in the lower Fraser valley, B.C.

Hard rot caused a trace to moderate infection in Queens county, P.E.I.; the damage was slight to moderate. This is the first report of hard rot from this province.

Specimens affected with dry rot (Sclerotium Gladioli Massey) were received from Saanichton, B.C.

Scab (Bacterium marginatum McCull.) infection was slight, but affected plants died at Saanichton, B.C.

Scab was found at Vermilion, Alta.

Two specimens affected with scab were found at Fredericton, N.B.

Scab was common and destructive in 1930 in Queens county, P.E.I. The damage was slight to severe.

HOLLY (Ilex)

An unknown trouble, which causes the normal red berries to turn black, has been found at 3 different places in the Victoria district, B.C. (W.R. Foster)

HOLLYHOCK (Althaea)

Rust was general and caused severe damage at Saanichton, B.C. It was also reported from Summerland and Penticton.

Rust blighted the blossoms of hollyhock in a garden in Victoria county and severely defoliated the plants in a garden at Gananoque. It was also very general in Lincoln county.

Hollyhock rust was general in the Montreal district, Que. Damage is generally slight as the plants do not become rusted until the end of the summer. It was also reported from Macdonald College and Lennoxville, Que.

About 2 dozen plants were found heavily infected in a garden in Annapolis county, N.S.

Hollyhock rust slightly to severely damaged the plants in Queens county. Lime sulphur and sulphur used to control the rust were injurious to the plants.

HONEYSUCKLE (Lonicera)

Powdery mildes (Microsphaera Alni (Wallr.) Salm. var Lonicera (Schlecht.) Salm.) slightly infected L. tatarica on Sept. 25 in Queens county, P.E.I.

IRIS

Leaf spot (Didymellina macrospora Kleb. (Heterosporium gracile Sacc.) was reported as follows: Saanichton, B.C., general, causing severe damage; University gardens, Saskatoon, Sask., severe late in the season; Winnipeg, Man., prevalent as usual on iris; Lincoln county, Ont., moderate infection on iris; Macdonald College, Que., slight infection, first observed on June 16; Queens county, P.E.I. every garden slightly to heavily infected, some damage usually after the blooms have faded.

Rhizome rot (Bacillus carotovorus L. R. Jones), along with damage caused by an "iris root borer" caused moderate damage in the horticultural plots, Rosthern, Sask. Rhizome rot caused considerable damage at the Manitoba Agricultural College in 1932. It also caused slight damage in Lincoln county and at Brampton, Ont., and in gardens at Charlottetown, P.E.I.

Leaf spot (Phyllosticta Iridis Cke.) was reported from Saanichton, B.C.

Bulb nematode (Tylenchus dipsaci Kühn) was found in several rotted bulbs at Saanichton, B.C. (See Phytopath, 23:103-106. 1933)

Mosaic (virus) was found on iris in a garden and greenhouse at Edmonton, Alta.

Storage rot (Penicillium sp.) was noticed at Saanichton, B.C. in shipments of bulbs from Washington state. Six per cent of the bulbs were destroyed.

LADYSLIPPER (Cypripedium)

Streak (Virus). Ladyslippers in the gardens of J.C. Bennett, a specialist in the production of rare plants, were found to be affected with what appears to be an infectious virus disease. The leaves of infected plants first show pale green streaks and are somewhat stiff and harsh in texture, later reddish brown streaks appear. Only yellow flowering species were found diseased (Wm. Newton).

LARKSPUR (Delphinium)

Powdery mildew (Erysiphe Polygoni DC.) was general and caused severe damage to white varieties, resulting in defoliation of some plants, at Saanichton, B.C. Some blue varieties were definitely resistant. This disease was also reported from Penticton.

Ninety per cent of the plants were affected with powdery mildew at the Experimental Station, Fredericton, N.B.

Bacterial blight (Pseudomonas Delphinii (E.F. Sm.) Stapp) caused severe damage to 90 per cent of the plants at the Experimental Station, Fredericton, B.C. This disease was found in several gardens at Kentville, N.S. It is apperently on the increase. Bacterial blight caused severe damage at the Experimental Farm, and slight to severe damage in city gardens, Charlottetown, P.E.I.

LILAC (Syringa)

Powdery mildew (Microsphaera Alni (Wallr.) Salm.) moderately infected the lilacs at Macdonald College, Que. It was general in the Montreal district. Traces of mildew were also found in the 3 counties of Prince Edward Island.

LILY (Lilium)

Mosaic (Virus) was reported on L. auratum at Saanichton, B.C. The leaves showed brown streaks and were much twisted.

Blight (Botrytis elliptícta (Berk.) Cke.) was less prevalent than last year at Saanichton, B.C. The following species were attacked: severely, L. Chalcedonicum and L. Hansonii; slightly, L. martagon, L. Baryi, L. canadense rubrum and L. Grayi.

LOBELIA

The root knot nematode (Caconema radicicola) was found infecting lobelia, which was growing along with the common geranium (Pelargonium hortorum) the ivy-leaf geranium (P. peltatum), marguerites (Chrysanthemum frutescens) and Nepeta glechoma in window boxes at Saanichton, B.C. The characteristic knots or

galls were abundant on the roots of the lobelia, but no root knots or other symptoms were found on the other plant species in spite of their intimate association. Evidently the nematode species was not a specialized form for inoculum from the lobelia roots transferred to healthy tomato seedlings resulted in the development of the characteristic symptoms of root knot on the tomatoes. (J. E. Bosher & Wm. Newton)

LUPINE (Lupinus)

Powdery mildew (Erysiphe Polygoni DC.) was reported on lupine from Summerland, B.C.

NARCISSUS

Blight (Ramularia Vallisumbrosae Cav.) was very destructive about Cowichan Station, B.C. The leaves were killed from the tips to the ground. The disease was observed at Saanichton in a number of private gardens where the bulbs had not been dug and plants were growing in large clumps. It was very rare in commercial plantings. It was also reported from Abbotsford, B.C. This is the first report of this disease in Canada.

Leaf scorch (Stagonospora Curtisii (Berk.) Sacc. (=S. Narcissi Hollós) was very general in the Saanichton district, B.C., but it caused no significant damage. It was also found at Whonnock, B.C.

Smoulder (Botrytis narcissicola Kleb.). Infection from smoulder was general, but little damage occurred except in weedy patches or among closely planted bulbs at Saanichton, B.C.

Root decline (Tylenchus pratensis) was observed in two plantings in the Gordon Head district, B.C. The nematode is considered to be the cause of the root rot, but associated with it is a Cylindrocarpon sp., which is reported as the cause of root decline in Europe. This is the first record of Tylenchus pratensis on narcissus roots (see U.S. Plant Disease Reporter, vol. 16, No. 11, Aug. 1, 1932)

Ring disease (Tylenchus dipsaci (Kühn) Bast.) was found in 6 out of 11 plantations examined in the Saanichton district. The losses are heavy. The following varieties were attacked: Spring Glory, L. Koster, Henry Irving, Elvira, King Alfred, Emperor, Golden Spur, Glory of Sassenheim, Madame de Graaf, Victoria, Sir Watkin, Ornatus and Mrs. Langtry.

NASTURTIUM (Tropaeolum)

Blight (Pseudomonas aptata (Br. & Jamies.) Stapp) moderately

infected nasturtium at Lethbridge, Alta., causing browning and death of the plants.

PANSY (Viola)

Rust (Puccinia Violae (Schum.) DC.) was recorded on pansy from Victoria, B.C.

PEONY (Paeonia)

Blight (Botrytis Paeoniae Oud.) was recorded on peony at Saanichton, B.C. as follows: severely infected, Jeanne Gaudechau, Marie Jacquin and Galatea; moderately, Splendida; slightly, Adolphe Rousseau, L'Etincelante, Sarah Bernhardt, Lamartine and Venus. It was probable that the heavy dressing of leaf mould on the beds and wet weather favoured the disease. (R. J. Hastings)

Blight occurred in almost epidemic form on peonies at Winnipeg, Man., causing much rotting of the lower stems.

Although blight was severe in 1931, only a small amount was present this year at Macdonald College, Que. Rotation and burning of the dead tops last year was apparently beneficial. Diseased specimens were also received at the Ottawa laboratory from Chateauguay, Que.

The disease was widespread, but the damage was slight in New Brunswick, while it caused moderate damage in all 3 counties in Prince Edward Island.

Ring spot (?Virus). A very few plants were seen in 1931 with the striking leaf markings of ring spot at Man. Agricultural College. In 1932 the disease appeared on many adjacent plants.

PETUNIA

Stem rot (Sclerotinia Sclerotiorum (Lib.) de Bary) was destructive in several flower beds in Jacques Cartier county; wherever the disease was observed the damage was severe.

Late blight (Phytophthora infestans (Mont.) de Bary) was present in a number of gardens in Charlottetown. In one, 22 per cent of the plants were infected and moderately damaged. This is the first time it has been observed on petunia in Prince Edward Island (R. R. Hurst).

PHLOX

Leaf spot (Cercospora omphakodes Ell. & Holw.) was destructive to P. divaricata in a garden in Ottawa. Dr. Charles Chupp kindly verified the determination of the causal organism (I. L. Conners).

Powdery mildew (Erysiphe Cichoracearum DC.) was very prevalent in several gardens in Lincoln county, Ont., stunting and weakening the plants. It was also destructive in one garden in Ottawa.

Traces of powdery mildew were reported in a garden in Queens county, P.E.I.

RHODODENDRON

Leaf spot (Pestallozia Rhodendri (D. Sacc.) Guba) caused a trace of damage on rhodendron at Sardis, B.C;

ROSE (Rosa)

Black spot (Diplocarpon Rosae Wolf. (Marssonina Rosae (Lib.) Died.). Infection was general on Vancouver island and in the lower Fraser valley. The fungus was already fruiting on leaves collected April 28 at Saanichton.

Black spot heavily infected certain yellow flowered varieties in the University garden, Saskatoon, Sask. It was especially heavy on Persian Yellow and Austrian Yellow.

This disease was prevalent, causing partial defoliation on Daily Mail, Frau Karl Druschki, Pernet, Talisman and Shot Silk in a garden in Lincoln county, Ont.

Black spot is often observed on roses in the Montreal district, Que.

Black spot was widespread in New Brunswick; the damage was slight.

This spot moderately infected Frau Karl Drushki and Persian Yellow and slightly infected Lady Astor, Alfred Colomb and A. E. Williams at the Experimental Station, Charlottetown, P.E.I.

Powdery mildew (Sphaerotheca pannosa (Wallr.) Lév.) was general on Talisman, Pernet and Mrs. Van Rossem, in a garden in Lincoln county, Ont.

It caused slight damage at Macdonald College, Que., and in New Brunswick.

Powdery mildew caused severe damage, chiefly on climbing roses, in the 3 counties of Prince Edward Island. Dusting the plants was useless in controlling the disease.

Rust (Phragmidium spp.) was reported on Pauls Scarlet Climber at Saanichton, B.C. It was also reported from Kelowna.

Rose rust was widespread in New Brunswick, but the damage was slight.

The aecial stage of Phragmidium americanum caused up to 5 per

cent damage in a garden at Kentville.

Rust infections varied widely on cultivated roses at Charlottetown, P.E.I. It was heavy on Duke of Edinburgh, Star of Waltham, Margaret Dickson, and Louise Crette. Moderate on Lady Astor, General Jacqueminot, Frau Karl Druschki and A. E. Williams; and light on Edith Cavell, Crimson Rambler and Captain Hayward. It caused some damage where the leaves were heavily infected. Rust was also abundant on wild roses.

ROSE OF SHARON (Hibiscus)

A leaf spot severely affected the bushes in a garden in St. Catharines. The leaves were spotted and turned yellow. Alternaria sp. was isolated from the diseased spots.

SNAPDRAGON (Antirrhinum)

Rust (Puccinia Antirrhini Diet. & Holw.) infection was general at Saanichton, B.C. in Sept. 1932.

Snapdragons were moderately rusted at Saskatoon, Sask., late in the season. Rusted specimens were also received from Regina,

Rust was severe on snapdragons at Souris, Manitoba.

Rust was prevalent on snapdragons in August in Lincoln county. Rusted plants were also sent to the Ottawa laboratory from East Windsor.

Rust was present in a greenhouse at Macdonald College, Que. It spread to gardens in the vicinity by the sale of diseased young plants. The period of profitable bloom was reduced about 35 per cent.

Verticillium wilt (Verticillium sp.) appeared on young plants in a greenhouse in Lincoln county, Ont. on Jan. 11, shortly after they had been transplanted.

A root rot (Fusarium sp.) caused some damage in Winnipeg, Man.

One large bed of snapdragons in a greenhouse on the Island of Montreal was a total loss on account of root knot (Caconema radicicola (Greef) Cobb).

SNOWBERRY (Symphoricarpos)

Traces of powdery mildew (Microsphaera diffusa Cke. & Pk.) was observed in Queens county, P.E.I.

STOCK (Matthiola)

Stocks affected with root rot (Rhizoctonia sp.) was sent to the University, Saskatoon from a garden at Canora, Sask. The stocks had been grown in the same location for several years.

SWEET PEA (Lathyrus)

Powdery mildew (Microsphaera diffusa Cke. & Pk.) was found in a garden at the Experimental Farm, Fredericton, N.B.

Sweet pea was slightly affected with powdery mildew in a garden in Queens county, P.E.I.

Leaf spot (Ascochyta Lathyri Trail) caused slight damage at Saanichton, B.C.

White mould (Erostotheca multiformis Martin & Charles (Cladosporium album Dows.) severely infected sweet peas here and there at North Cowichan, B.C. and caused considerable damage. White mould was heavy, but the damage was slight at Westholme.

A heavy infection of streak (Bacillus Lathyri Manns. & Taub.) was present in a garden in Edmonton, Alta. It was also observed in several other gardens.

Black root rot (Thielavia basicola Zopf caused moderate to severe damage to sweet peas in a city garden, Saskatoon, Sask. The root system was extensive, but blackened. The dark brown chlamydospores were present in abundance. The trouble developed some time after an excessively heavy application of superphosphate.

A stem and root rot due to Rhizoctonia sp. caused moderate damage to sweet peas in the University garden, Saskatoon, Sask. A trace of Thielavia basicola was also present.

A root rot due to Fusarium sp. caused moderate damage in many gardens in Saskatoon, Sask. The flowers dropped off before being fully formed and the diseased plants were slightly shorter than healthy ones. Climatic conditions appeared to be unfavourable for sweet peas in 1932 and the weakened plants were attacked by Fusarium or Rhizoctonia.

Wilt caused by Fusarium Solani (Mart) App. & Wol. var. Martii (App. & Wol.) Wol. and possibly other species of Fusarium caused severe damage to sweet peas at Morden and Winnipeg, Man. and Keewatin, Ont. (W.L. Gordon)

Bud drop (cause undetermined) was common at Fredericton, N.B.; the damage was moderate.

TULIP (Tulipa)

Blight (Botrytis Tulipae (Lib.) Lind) was very general at Saanichton, B.C. and caused severe damage. The sclerotia on dead flower stalks germinated and produced spores by Feb. 10. Soil infected shoots were noticed on March 1. (R.J. Hastings)

Blight caused severe damage to late varieties in a garden in Lincoln county, Ont.

Blight caused slight to severe damage in gardens and at the Experimental Farm, Charlottetown, P.E.I. From a few to 50 per cent of the plants were affected.

Storage rots mainly due to Penicillium spp. caused heavy losses again this year at Saanichton, B.C.

ZINNIA

Wilt (cause undetermined) caused the death of about 35 per cent of the plants in a breeding block at the Experimental Station Summerland.

Stem rot (Sclerotinia Sclerotiorum (Lib.) de Bary) was reported on zinnia in Manitoba.

In one large bed of zinnias all the plants were killed by stem rot at Macdonald College, Que.