

P. E. I. Infections ranged from 0.1 to 11.7% with a mean of 1.5%. Approximately 500-2000 plants per field were individually examined. Ten new plantings set with growers own stock had infections ranging from 0.2 to 14.6% with a mean of 4.2% infected plants. While it is thus obvious that plants from certified growers carry significantly less green petal, they are by no means free of the disease. Only 1/18 picking fields examined was free of the disease and infection in the others ranged from 0.5 to 30%. The heaviest infections seen were at Durham, Pictou Co., N. S. and at Smithport, P. E. I. It was noted that infected plants seldom survived beyond late September. In addition to Macrosteles fascifrons Stål, Aphrodes

bicinctus (Schrank) was found in association with strawberry plants in sufficient numbers to be considered an important vector in the Maritime Provinces (H. T. S., A. A. McN.). Incidence in P. E. I. was particularly high in 1966. Varieties in replicated trials at Charlottetown showed 5-100% infection. (C. B. W., L. S. T.). See Willis & Thompson. Can. Plant Dis. Surv. 46:4. 137. 1966 (Ed.).

CHEMICAL INJURY. Some injury was seen in simazine-treated fields in N. B. where overlapping of applications occurred. At Blissville, the herbicide eptan caused severe injury to mother plants and their ability to runner (S. R. C.).

## DISEASES OF TREES AND SHRUBS

### ACER - Maple

CANKER (Cytospora ambiens) caused damage on 10% of the trees of A. saccharinum in a nursery at Peterborough, Ont. (A. E. S.).

ANTHRACNOSE (Gloeosporium apocryptum). Infection was severe on A. saccharum in a stand at Ottawa West and moderate on the same host at Ridgeway, Ont. (A. E. S.). It caused severe browning of individual trees of A. saccharum and A. rubrum throughout the Annapolis Valley, in Inverness Co., and in most villages from Glenholme to Parrsboro, N. S. Less severe infections were seen in s. e. N. B. (G. A. V. S.).

LEAF SPOT (Phleospora aceris). Specimens of affected A. saccharum were received from Ste. Germaine, Dorchester Co., Que. (D. L.). This fungus, reported as Ascochyta ? aceris Lib. should be assigned to Phleospora as pointed out by Savile. Can. Plant Dis. Surv. 25:101. 1946 (Ed.).

LEAF SPOT (Phyllosticta minima). Many trees of A. saccharum had moderate infections at Ridgeway, Ont. (A. E. S.).

CHEMICAL INJURY. Drift from herbicide applications caused distortion of leaves and marginal leaf scorching of A. negundo at Kinistino and Saskatoon, Sask. (R. M.).

DETERIORATION of roadside maples was recorded throughout s. Ont. but was less conspicuous than in previous years (B. W. D.). In Que., many of the

roadside maples that were severely affected in 1965 died in 1966. Leaf scorch and early leaf fall on the remaining trees were, however, much less severe than in preceding years (G. B. O.).

### AESCULUS - Horsechestnut

LEAF BLOTCH (Guignardia aesculi) was commonly seen but generally light in intensity throughout N. S. (G. A. V. S.).

### AMELANCHIER

RUST (Gymnosporangium clavariiforme). Slight to moderate infections were observed at La Pocatière and St. Pacome, Que. (D. W. C.) and at St. John's West, Nfld. (O. A. O.).

### CARAGANA - Pea tree

LEAF SPOT (Septoria caraganae) was common on C. arborescens in Man. and Sask., especially in the grasslands areas where the host is widely used in shelterbelts. It completely defoliated a number of hedges in s. w. Sask. seriously reducing their effectiveness as windbreaks (J. G. L.).

FROST INJURY was responsible for twig and bud mortality of Caragana shrubs in a nursery nr. Chicoutimi, Que. (G. B. O.).

### CATALPA

WILT (Verticillium dahliae). The pathogen was isolated from an affected branch of C. speciosa at F'enticton, B. C. (G. E. W.).

### CHAMAECYPARIS - Cypress

ROOT ROT (Phytophthora cinnamomi). Foliar symptoms were evident on 12/183 shrubs of C. lawsoniana var. elwoodii in a planting at Victoria, B. C. The affected plants will eventually die (R. G. A.).

\* The diseases reported in this section are mainly those of shade trees and ornamental shrubs, although occasional reference is made to diseases of native forest trees. For a more comprehensive report of tree diseases in Canada the reader is referred to the Annual Reports of the Forest Insect and Disease Survey published by the Canada Department of Forestry, Ottawa, Ontario.

COTONEASTER

FASIATION (genetic). Symptoms reappeared on the terminal growth of shrubs tentatively identified as C. horizontalis on the University campus, Vancouver, B. C. The condition was present before 1964 but affected growth was killed by severe winter temperatures and it did not occur in 1965 (H. N. W. T.).

CRATAEGUS - Hawthorn

FIRE BLIGHT (Erwinia amylovora) was observed in 3 nurseries in Que. (J.R.). Infected shrubs were found, adjacent to infected pear trees, at 4 locations in the Annapolis Valley, N.S. (C. O. G., C. L. L., R. E. C. L.).

LEAF SCALD (Fabraea maculata). Infection was severe on older trees in the greater Vancouver area, B. C. Summer defoliation was heavy (H. N. W. T.).

RUST (Gymnosporangium clavariiforme) was heavy on C. succulenta and light on other species at the Horticultural Station, Brooks, Alta. (A. W. H., D. S.). Trace infections were common at St. Pacome, Que. (D. W. C.).

DAPHNE

ANTHRACNOSE (Gloeosporium mezereum Cke.). Slight infections were seen on 225 shrubs of D. mezereum in a nursery at Brockville, Ont. (A. E. S.). This disease has not previously been reported from e. Canada but has been observed in B. C. (Ed.).

FRAXINUS - Ash

ANTHRACNOSE (Gloeosporium aridum) was severe on F. americana at some localities in Guysborough, Pictou and Hants counties, N. S. Elsewhere in mainland N. S. and s.w. N. B. infection was common but light. (G. A. V. S.). A heavy infection was seen at Kentville, N. S. and a lighter one at Acaciaville, Digby co. (C. O. G.).

RUST (Puccinia sparganioides). Infections were much more severe in N. S. than in 1965. It caused severe browning of foliage at South Maitland, Hants Co. and New Canaan, Kings Co. (G. A. V. S.). It was severe at Wolfville, N. S. causing heavy defoliation by late August (C. O. G.).

HYDRANGEA

POWDERY MILDEW (Erysiphe polygoni). Slight infections occurred on 700/1000 rooted cuttings of H. macrophylla at Champigny, Que. (A. E. S.).

JUGLANS - Walnut

WHITE MOLD (Microstroma juglandis). Infection was moderate on a single specimen tree of J. cinerea nr. Kingston, Ont. (D. W. C.).

JUNIPERUS - Juniper

RUST (Gymnosporangium spp.). G. clavariiforme was severe on J. hibernica at Burnaby, B. C. and light infections of both G. clavipes and G. juniperi-virginianae were recorded on J. virginiana in a nursery at Islington, Ont. (A. E. S.).

TWIG BLIGHT (Phomopsis juniperovora) caused a moderate amount of damage to mature plants and cuttings of J. sabina var. tamariscifolia in the Lower Fraser Valley, B. C. In a nursery at Victoria 75% of 1826 rooted cuttings of J. sabina and 40/1880 cuttings of J. sabina cultivar 'Blue Danube' were infected. The cuttings had been taken from diseased parent stock (R. G. A.). It also seriously affected 75/150 plants of J. scopulorum cultivar 'Dewdrop' in a nursery at Hornby, Ont. (A. E. S.).

WINTER INJURY. Severe browning and, in many cases, killing of ornamental junipers and cedars occurred in the Quèbec City, Que. area (G. B. O.).

LARIX - Larch

CHEMICAL INJURY. Drift of 2,4-D caused needle distortion of L. laricina in a home garden at Ottawa, Ont. (A. E. S.).

LIGUSTRUM - Privet

CHEMICAL INJURY. Fumes of a growth regulating chemical caused distortion of terminal growth, leaf crinkle and chlorosis and injury at bases of stems in a 1-acre planting of privet in a nursery at Pickering, Ont. (A. E. S.).

LONICERA - Honeysuckle

LEAF BLIGHT (Herpobasidium deformans). Slight to moderate infections were seen in 16 of the Quebec nurseries inspected in 1966 (J. R.).

MALUS - Ornamental Crab

POWDERY MILDEW (Podosphaera leucotricha) was slight to moderate in 6 Quebec nurseries in 1966 (J. R.).

SCAB (Venturia inaequalis). Infection was moderate to severe in 14 nurseries inspected in Que. in 1966 (J. R.).

PICEA - Spruce

WITCHES' -BROOM (Arceuthobium pusillum). Some trees had been killed in a stand of P. glauca at La Pocaticre, Que. and there were many brooms in those still living (D. W. C.).

NEEDLE RUST (Chrysomyxa ledicola). A moderately infected specimen was received from Tisdale, Sask. (R. D. T.).

CHEMICAL INJURY. Drift from herbicidal chemicals was seen at Stony Plain, Alta. (A. W. H., D. S.) and caused severe browning of white and blue spruce near cultivated fields at Grand Falls, N.B. (G. A. V. S.).

#### PINUS - Pine

GALL RUST (Cronartium coleosporioides) was seen on P. spp. at Millet, Alta. (A. W. H., D. S.). Infection was moderate to severe on a planting of Scot's pine nr. La Pocatière, Que. Some trees had been killed. The disease has been known in this planting for 20 years and galls of all ages were present. It was also observed on P. banksianain in the same general area (H. G., L. D.).

GALL RUST (Cronartium quercuum) was found on 4/151 Scot's pine Christmas trees destined for export at Pontypool, Ont. (A. E. S.).

NEEDLE BLIGHT (Scirrhia pini Funk & A. K. Parker) continued to cause mortality in exotic pine plantations on Vancouver Island, B. C. Monterey pine in these plantations has essentially been eliminated. Bishops and cluster pines have suffered smaller losses (A. C. M.).

#### POPULUS - Poplar

INK SPOT (Ciborinia whetzeli). Affected specimens were received from Loretteville, Que. (D. L.).

CANKER (Cytospora chrysosperma) was reported causing damage at Vauxhall, Claresholm, Red Deer, La Glace, Milo and Camrose, Alta. (A. W. H., D. S.).

CANKER (Dothichiza populea). Infected Lombardy, Carolina and silver poplars ranging in size from 1-8 inches in diameter were observed at scattered locations throughout s. Ont. and on Manitoulin Island (B. W. D.). A few trees of P. balsamifera were infected in a 1-acre nursery planting nr. Toronto, Ont. (A. E. S.). Cankers were common on Lombardy poplars in Que. (G. B. O.).

ANTHRACNOSE (Marssonina populi). Infected leaves of P. deltoides were received from La Pocatière, Que. (D. W. C.).

RUST (Melampsora medusae) was observed at Vulcan, Claresholm, Edmonton, Carlsland, Wrentham and High River, Alta. (A. W. H., D. S.). It was widespread in s. w. Sask. in 1966. It was particularly noticeable at Leader, D'Arcy and Maple Creek (R. J. L.).

RUST (Melampsora occidentalis). Trace to slight infections were seen in shelterbelt plantings at Nobleford and Barons, Alta. (F. R. H.).

CANKER (Septoria musiva) was reported from

Vauxhall, Eaglesham, Calmar, Vulcan, Two Hills, Peace River, Wetaskiwin and Spirit River, Alta. (A. W. H., D. S.).

LEAF BLISTER (Taphrina populina) was slight on about 10% of the trees of P. nigra var. italica in a nursery nr. Oshawa, Ont. (A. E. S.) and a moderate infection was seen at Port Rexton in the Trinity Bay district of Nfld. (O. A. O.).

SHOOT BLIGHT (Venturia populina) was observed on P. sp. at Ponoka, Calgary and Willingdon, Alta. (A. W. H., D. S.).

#### PRUNUS - Native and Flowering Cherries

BLACK KNOT (Apiosporina morbosae). P. padus was infected at Calgary, Alta. (A. W. H., D. S.). It was recorded in all regions of Ont. on chokecherry, pin cherry, black cherry, red cherry and domestic plum (B. W. D.). Current infections on pin cherry were common in the Maritime Provinces (G. A. V. S.) and in Nfld. (G. L. W.).

SHOT HOLE (Higginsia hiemalis) was common on chokecherry and pin cherry in Man. and Sask. (J. G. L.). Slight infections were observed on 100/500 trees in a nursery at Carlisle, Ont. (A. E. S.).

IRON DEFICIENCY CHLOROSIS was seen on P. padus at Calgary and Crossfield, Alta. (A. W. H., D. S.).

#### QUERCUS - Oak

STEM CANKER (Diaporthe leiphaemia) was found on a young tree of Q. robur in a nursery at Peterborough, Ont. The saplings had been imported from Europe in the spring of 1965 (A. E. S.).

ANTHRACNOSE (Gloesporium quercinum). An 80% infection occurred on white oaks at London, Ont. Trees along about a mile of street were affected (A. E. S.).

LEAF BLISTER (Taphrina caerulescens). A moderate infection was seen on Q. borealis at Orsainville, Que. (D. W. C.).

#### RHAMNUS - Buckthorn

CROWN RUST (Puccinia coronata). Buckthorn bushes along fence rows nr. Guelph, Ont. carried infections. Oats were growing in the area (A. E. S.).

#### RHUS - Sumac

LEAF SPOT (Cladosporium ? aromaticum Ell. & Ev.). A specimen, affected by a Cladosporium believed to be this species, was received from St. Bruno, Que. (D. L.).

#### RIBES - Flowering Currant

ANTHRACNOSE (Drepanopeziza ribis). Heavy infections occurred on a gooseberry hedge at Forestville, Saguenay Co., Que. (G. B. O.).

ANTHRACNOSE (Drepanopeziza variabilis) was more severe in nurseries in Que. than usual. Ratings in 21 nurseries inspected were 3-81. 6-mod. 12-sev. (J. R.).

#### ROSA - Rose

BLACK SPOT (Diplocarpon rosae). Slight infections were seen at Saskatoon, Sask. (R. J. L.), it was moderate on hybrid tea roses at La Pocatière, Que. (H. G., L. D.) and a severe infection was seen at Moncton, N. B. (S. R. C.).

POWDERY MILDEW (Sphaerotheca pannosa). Infection was severe on most cultivars throughout the season at Summerland, B. C. (M. F. W.).

DAGGER NEMATODES (Xiphinema diversicaudatum) caused slight to moderate reduction in growth of roses in two greenhouse benches at St. Bruno, Que. (A. E. S.).

IRON DEFICIENCY CHLOROSIS was observed at Vauxhall, Alta. (A. W. H., D. S.).

#### SALIX - Willow

STEM CANKER (Cryptodiaporthe salicella) was found affecting 5/20 trees of S. babylonica in a nursery at Port Hope, Ont. (A. E. S.).

TWIG CANKER (Cytospora chrysosperma) was reported, causing varying degrees of injury, from Edmonton, Taber, Cadogan, Brooks, Stettler and St. Paul, Alta. (A. W. H., D. S.). Nursery inspections showed slight to moderate damage to S. babylonica at Barrie, Ont. and slight damage to S. & var. tristis at Ottawa and S. tortuosa at Montreal (A. E. S.).

WILLOW BLIGHT (Pollacia saliciperda, Physalospora miyabeana). Heavy infections occurred on young weeping willow trees in a nursery at Champigny, Quebec Co., Que. (G. B. O.). Infections were common in N.B. and N.S. Damage was moderate in Northumberland, York, Kings and St. John's counties in N.B. as well as in the Annapolis Valley, N.S. More severe damage was seen at a few locations in Inverness, Pictou, Cumberland, Halifax and Hants counties, N. S. (G. A. V. S.).

IRON DEFICIENCY CHLOROSIS was observed at Vauxhall and Gadsby, Alta. (A. W. H., D. S.).

#### SAMBUCUS - Elder

POWDERY MILDEW (Microsphaera penicillata). A heavy infection affected 75% of the new growth of Sambucus sp. at Annapolis Royal, N. S. (C. O. G.).

CROWN ROT (Phytophthora citricola) was observed at Two Hills, Edmonton, Leduc, Bon Accord, Three Hills and Fairview, Alta. The organism was isolated from affected shrubs at Three Hills and Fairview (A. W. H., D. S.). See Henry and Stelfox, Can. Plant Dis. Surv. 46: 146, 1966 for a discussion of this disease (Ed.).

#### SORBUS - Mountain Ash

CANKER (Cytospora spp.) was seen at Two Hills, Lunnford and Edmonton, Alta. (A. W. H., D. S.). A specimen received at Winnipeg, Man. bore abundant pycnidia of C. rubescens (W. A. F. H.). C. leucostoma was identified from cankered S. americana in a nursery at Highland Creek, Ont. (A. E. S.).

FIRE BLIGHT (Erwinia amylovora) was reported from Edmonton and Wetaskiwin in n. Alta. and specimens were received from Lethbridge and Medicine Hat in s. Alta. (P. E. B.). It was found in 23 nurseries in Que. in 1966 with up to 60 trees per nursery affected (J. R.).

RUST (Gymnosporangium cornutum) was commonly seen on mountain ash in e. Nfld. (G. L. W.).

IRON DEFICIENCY CHLOROSIS was observed at Red Deer, Camrose, Edmonton and Cremona, Alta. (A. W. H., D. S.).

#### SYMPHORICARPOS - Snowberry

POWDERY MILDEW (Microsphaera diffusa). Infection was heavy on a planting of snowberry on the University Campus, Vancouver, B. C. Premature defoliation occurred (H. N. W. T.).

#### SYRINGA - Lilac

BACTERIAL BLIGHT (Pseudomonas syringae) caused moderate to severe damage to lilacs in St. John's, Nfld. (O. A. O.).

IRON DEFICIENCY CHLOROSIS was observed on lilacs and other ornamentals at Calgary, Alta. (A. W. H., D. S.).

#### THUJA - Cedar

CHEMICAL INJURY. A mixture of 2, 4-D and 2, 4, 5-T used near a planting of T. compacta and T. occidentalis at Beauport, Que. caused distortion of growth and longitudinal bark splitting (A. E. S.).

FROST caused considerable damage to native and ornamental cedars in Qu'ebec City and in the Montreal, Que. area (G. B. O.).

WINTER DRYING. Hedges of cedar, pine and yew were affected at many localities in Ont., especially in the Sault Ste. Marie district (B. W. D.). It was observed in the Quebec City area and was espec-

ially severe at Thetford Mines and Black Lake in Megantic Co., Que. (D. L.).

#### TILIA - Basswood

LEAFSPOT (*Cercosporamicrosora*). Moderate infections were seen on T. americana at Orsainville, Que. (D. W. C.).

#### ULMUS - Elm

DUTCHELM DISEASE (*Ceratocystis ulmi*). For the first time in several years no significant range extensions occurred in Ont. Infections ranged from 3% in the Kemptville area to 60% in the Lake Huron district. At Port Stanley 22/29 trees of English elm, U. procera were infected (B. W. D.). In N. B. the disease was found, for the first time, at Moncton

and Sussex, bringing its eastward extension to within 10 miles of the N.S. border. Within its known range, especially in the St. John River watershed, suspect and dead trees are becoming increasingly common (C. A. V. S.).

TAR SPOT (*Gnomonia ulmea*). All 50 trees of U. parvifolia in a nursery at Campbell's Bay, Ont. bore slight infections (A. E. S.).

CORAL CANKER (*Nectria cinnabarina*) was reported from Que. on G. pumila at St. Jean (R. C.), Mont Joli (D. L.), Québec City, L'Assomption and St. Pierre (G. B. O.).

CHEMICAL INJURY. Herbicide drift caused a severe marginal leaf scorch on elms at Kinistino, Sask. (R. M.).

## DISEASES OF HERBACEOUS ORNAMENTALS

#### ALTHAEA - Hollyhock

RUST (*Puccinia malvacearum*) occurred throughout the Okanagan Valley, B. C. but infection was much lighter than usual probably because of the warm, dry summer (G. E. W.). It was seen in several plantings at Sackville, N. B. (S. R. C.).

#### AQUILEGIA - Columbine

POWDERY MILDEW (*Erysiphe polygoni*) was general in the Okanagan Valley, B. C. Infection did not appear until late in the season (G. E. W.).

IRON DEFICIENCY CHLOROSIS was observed on columbine as well as on Iceland poppy, Papaver nudicaule at Baleac, Alta. (A. W. H., D. S.).

#### BEGONIA

POWDERY MILDEW (*Erysiphe cichoracearum*) caused moderate damage to tuberous begonias at Saskatoon, Sask. It has become a recurring problem in the area (R. J. L.).

#### CALLISTEPHUS - China Aster

ASTER YELLOWS (aster yellows virus) occurred on C. chinensis at Alexandria, Pemberton and Vancouver, B. C. (H. N. W. T.).

WILT (*Fusarium oxysporium* f. callistephi) was seen at Calmar, Alta. (A. W. H., D. S.) and nr. North Battleford, Sask. (R. M.).

#### CHRYSANTHEMUM

GRAY MOLD (*Botrytis cinerea*) caused traces of damage in a half million chrysanthemum cuttings for export at Leamington, Ont. (A. E. S.).

RUST (*Puccinia chrysanthemi*). Trace infections were seen in one bed in a greenhouse at Leamington, Ont. (A. E. S.).

LEAF ROT (*Stemphylium floridanum* Hannon & Weber) caused a rotting of the lower leaves of newly rooted plants in a greenhouse at Rosemere, Que. The cuttings originated in Florida. The isolate was determined by R. A. Shoemaker and confirmed by Weber (A. E. S.). See *Phytopathology* 53: 749. 1963 (Ed.).

#### COSMOS

ASTER YELLOWS (aster yellows virus) was observed on C. bipinnatus at Alexandria, Pemberton and Vancouver, B. C. (H. N. W. T.).

#### DAHLIA

GRAY MOLD (*Botrytis cinerea*). Affected buds were received from Levis, Que. (D. L.).

MOSAIC (virus). Eleven / 30 plants in a garden at Gagetown, N. B. were affected and were removed (S. R. C.).

#### DELPHINIUM - Larkspur

POWDERY MILDEW (*Erysiphe polygoni*). Infections were seen at Spirit River and Warburg, Alta. (A. W. H., D. S.).

ASTER YELLOWS (aster yellows virus). Affected specimens were observed at Turtleford, Sask. (R. M.).

#### DIEFFENBACHIA

BACTERIAL BLIGHT (*Xanthomonas dieffenba-*