SOME DISEASES ON ORNAMENTALS IN NEW BRUNSWICK[1]

G. B. Orlob[2]

Abstract

Of the numerous diseases of ornamentals a few were found in New Brunswick, while others may have escaped observation. Among the diseases most frequently encountered were: ringspot virus on peony, aster yellows on various hosts, bacterial leaf blight on larkspur, bacterial leaf spot on iris, Botrytis cinerea on different plants, fire on tulips, Didymellina leaf spot on iris, Alternaria blight on zinnia, Septoria leaf spot on phlox, and various powdery mildews and rusts.

Introduction

Generally, disease was not a factor in New Brunswick's home-gardens. Although some of the more common diseases were rarely absent from ornamental plants, they received little attention because of a general low disease incidence or because they appeared too late to interfere with the decorative purpose of the crop, Florists seemed more concerned with certain insect pests.

Ornamentals are an extremely heterogeneous group of plants and their disease producing organisms can be expected to be likewise plentiful. In the present report a few diseases are recorded that were found in New Brunswick, especially at the Research Station and some home gardens in the Fredericton area.

Ornamental plants are of little economic importance in the province; there are few commercial growers and the great majority of ornamentals are to be found in the small garden of the amateur florist. Growing conditions in the 1960 season were particularly suitable and allowed an early preparation, sowing, and planting of the flower beds. During May and June plenty of moisture was present but there was less than an inch of rain in August, Mild weather during September and early October favoured a long bloom period for several late summer and fall flowers. Generally, as in most years, the season was favorable for the development of several bacterial and fungal diseases.

[1] Supported by a grant from the National Research Council, Ottawa, Ont.

[2] National Research Council Postdoctorate Fellow, Department of Biology, University of New Brunswick, Fredericton, N. B.

I. Virus Diseases[1]

a. Rinspot on Paeonia

The disease was generally distributed in the Fredericton area but incidence was rather low. In flower beds at the Research Station several varieties were lightly affected. It has been reported (1.) that peony ring-spot is caused by a double infection of tobacco mosaic virus and potato virus X. In the present work mechanical transmission of the disease by means of sap obtained from diseased peony leaves to various tobacco species was not successful.

b. Mosaic on Rosa

A few plants of the variety "Grussen Teplitz" appeared to be infected with rose mosaic virus. Leaf mottling was distinct and plants were dwarfed.

c. Streak on Phlox

This disease has been described from Fredericton in 1941 (2). It was named phlox streak because of the necrotic stripes which developed along the leaf veins and the petioles. Transmission was achieved only by grafting. A 1% infection developed in the 1960 season in the same locality. Infected plants were severely affected and died after several weeks,

d. Mosaic on Dahlia

Symptoms indicative of dahlia mosaic were seen on several varieties, especially Alma Kelly, at the Research Station. Infected plants were of bushy growth and considerably reduced in size. The disease caused some damage since susceptible varieties developed up to 100% infection. In addition to mosaic, some plants developed leaf rolling along with light mottling which possibly could indicate another virus disease.

e. Aster yellows

Aster yellows was the most common and conspicuous virus disease in the area. It was mostly found on Callistephus but was also present on Tagetes and Zinnia. In early September 90% of the China asters grown in a small bed in the Fredericton area were infected. Nearby Gladiolus, although a host plant of the virus, did not produce any sign of infection. Six-spotted leafhoppers, Macrosteles fascifrons (Stal), were first noted in early June, Some weeks later counts in grain fields averaged seven per net sweep. Thereafter, populations of M. fascifrons continued to be high and were found almost everywhere.

f. Streak on Gladiolus

Several viruses could possibly be responsible for white and yellowish streaks found on leaves or petals in beds of Gladiolus at Fredericton. At least three different viruses have been reported to produce somewhat similar symptoms in gladiolus; these axe white break, mild mosaic caused by bean yellow mosaic virus, and streak caused by cucumber mosaic virus (1, 3).

---

[1] All virus diseases have been identified on the basis of symptoms only. Proof of virus identity is therefore lacking.

II. Bacterial Diseases

a. Pseudomonas delphinii on Delphinium

In the Fredericton area bacterial blight appeared on larkspur on July 6 and was found thereafter in most localities where an appreciable number of the host was grown. Leaf spotting of infected plants was generally light and no serious damage resulted, Bacterial blight was not found on monkshood (Aconitum).

b. Pseudomonas syringae on Syringa

In late May buds of some lilac bushes at the Research Station turned black, and the blossoms and young shoots wilted. The occurrence of the disease appeared to be associated with wet weather. To prevent further spread of the disease, dead or diseased twigs were removed.

c. Pectobacterium carotovorum on Iris

Soft rot was detected on "Blue Rhythm" and other iris varieties in early May. The disease was again noticeable on June 26 but infection was light.

d. Bacterium tardicrescens on Iris

Like soft rot, spread and development of bacterial leaf blight was favoured by wet weather during May. In two flower beds at the Research Station 20% of the plants were infected and developed light to moderate leaf symptoms. The disease was also found in some other localities of the province. Leaf blight continued to be present during most of the growing period but caused little concern.

III. Diseases caused by Phycomycetes

a. Peronospora grisea on Veronica

In the Fredericton area downy mildew, was located on speedwell several plants of which were moderately infected. Later on, powdery mildew Sphaerotheca humuli, appeared on the same plants.

IV. Diseases caused by Fungi Imperfecti

a. Botrytis cinerea

Gray mold is of general distribution on a great variety of garden plants **(4).** At the Research Station a few German iris showed symptoms of blossom blight but there was no serious damage since infection occurred at the end of the blossom period. Late in summer a trace of blossom blight developed on Cosmos and a 20% infection was present in a border of pansies, B. cinerea was also found attacking leaves and berries of Lonicera in a Fredericton garden.

b. Botrytis paeoniae on Paeoniae

Botrytis blight was found in different localities of the province. "Snow Queen" and various other varieties were attacked at the Research Station at Fredericton but rate of infection averaged not more than 5%.

c. Botrytis tulipae on Tulipa

Fire was first found on "Red Emperor" tulips on May 20, in the Fredericton area. One flower bed of various varieties was severely (80%) infected and damaged by the fungus. In this particular instance, tulips had been grown for several years and no sanitary precautions for the elimination of the disease had been taken.

d. Heterosporium iridis (Didymellina macrospora) on Iris

Leaf spot was another common disease of Iris where it was often associated with bacterial leaf spot. H. iridis was present throughout the growing period, especially after blooming, in several areas where Iris was cultivated. Infection, however, was usually light (10%). The perithecial stage was not found.

e. Cercospora rosicola (Mycosphaerella rosicola) on Rosa

Several rose bushes near Woodstock were moderately (40%) infected on July 27. An incidence of leaf spot was also found in the eastern part of the province. Perithecia, which form in fallen leaves (4), were not found.

f. Alternaria dianthi on Dianthus

Blight was frequently seen in some gardens at Fredericton on Sweet William. Rate of infection was quite variable but did not exceed 40%.

g. Alternaria zinniae on Zinnia

Alternaria blight of Zinnia was more destructive than was the blight on Dianthus and caused some damage in home gardens at Fredericton. Frequently, flowers were blighted.

h. Septoria divaricata on Phlox

This leaf spotting disease was present early in the season on perennial phlox and a 10% infection developed in one flower bed at the Research Station. In August the fungus was isolated from annual phlox where leaf symptoms were generally more severe.

i. Septoria lychnidis on Lychnis

Pycnidia of *S.* lychnidis were abundantly formed on two plants of Rose Campion. No other—plants were present for observation.

V. Diseases caused by Ascomycetes

a. Erysiphe cichoracearum

First symptoms of this common disease appeared in early July on Phlox. By August it was quite general on the host and large areas of the leaves were often covered with the mycelium. The same fungus was present, but was less conspicuous, on Helianthus and Chrysanthemum. Sulfur spraying was often applied too late to do much good.

b. Microsphaera alni

This mildew was present on lilac in all localities inspected. Since it occurred later in the season, after flowering of lilac, most gardeners did not pay much attention to the disease. M alni also infected species of Lonicera without becoming very injurious.

c. Sphaerotheca pannosa on Rosa

Rose mildew was commonly found but only in one locality at Fredericton was infection serious enough to have caused some damage. At the Research Station powdery mildew was effectively controlled with Karathane.

d. Diplocarpon rosae on Rosa

In early August scattered spots were found on several varieties at the Research Station and other places in the province. In no instance was black spot troublesome enough to have caused great damage. Frequent spraying of rose beds with Captan reduced black spot incidence at the Research Station.

e. Sclerotinia sclerotiorum on Salvia

The fungus caused a stem rot on sage at Fredericton. About 10% of the plants in a single bed were affected, the leaves wilted, and plants soon died. Sclerotia formed within the cottony mycelium.

VI. Rusts

a. Puccinia dioicae on Oenothera

Early in July leaves of Evening Primroses developed orange coloured spots caused by the aecidial stage of the fungus. All plants found in a mixed flower bed were lightly (15%) infected.

b. Puccinia malvacearum on Althaea

In New Brunswick this rust was very common, of general distribution, and caused some damage. First symptoms were noted in early July and increased successively until an average rate of 70% infection was reached late in August.

c. Puccinia millefolii on Achillea

A 50% infection developed on most Sneezeworts (variety "Pearl") in mixed plantings at the Research Station,

d. Coleosporium asterum on Aster

This common rust was observed on asters in the Fredericton area late in September. Infection was widely scattered and too low to have been of any importance.

Literature Cited

1. KÖHLER, E., and M. KLINKOWSKI. 1954. Viruskrankheiten. Vol. 2, Handbuch Pflanaenkrankh., Parey, Berlin. 770 pp.
2. McLEOD, D. J. 1941. in 21st Annual Report, Can, Plant Disease Survey: 96.
3. PIRONE, P. P., B. O. DODGE, and H.W. RICKETT. 1960. Diseases and pests of ornamental plants. Ronald Co., New York. 774 pp.

4. WESTCOTT, CYNTHIA. 1950. Plant disease handbook. D. van Nostrand, New York, 746 pp.

DEPARTMENT OF BIOLOGY,
THE UNIVERSITY OF NEW BRUNSWIGK,
FREDERICTON, N. B.