tive susceptibility in terms of leaf spots established, it was determined that 'Emerald Gem' was most susceptible, 'Green Gold', moderately susceptible, and 'Cream Giant' least susceptible.

A comparison of the effiicacy of the two fungicides tested indicates that although the inoculated control plants contained approximately twice the number of leaf spots as the plants sprayed with M45 and approximately three times the number of leaf spots as the plants sprayed with Daconil, there were still a sufficient number of leaf spots established on the fungicide-treated plants so as to leave some question as to the effectiveness of the treatments in controlling the disease.

The Pathogen

A critical study of the Cephalosporium isolates used in this work establishes beyond any doubt that the fungus is *Cephalosporium cinnamomeum* as originally described by Linn (2). Its cultural characteristics and fructifications are identical to *C. cinnamomeum*. The pathogenic relationship to *Syngonium* has also been confirmed.

Conclusions

The presence in Florida of *C. cinnamomeum* as the causal agent of leaf spot of *S. podophyllum* has been clearly established. That it is a rather serious disease of *Syngonium* has been noted as revealed by its prevalence in many areas throughout the State of Florida. The fungicidal effectiveness of M45 and Daconil, though reducing disease incidence, requires additional study in terms of disease control under cultural conditions peculiar to its vegetative propagation.

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BACTERIAL LEAF SPOT OF DRACAENA SANDERIANA

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Abstract

Dracaena sanderiana Hort. Sand. ex. Rev. often suffers from a leaf spot disease which disfigures the plants and makes them unsalable. The disease is characterized by dark green, water-soaked spots which gradually enlarge up to 20 mm in diameter and often involve the whole width of the leaf. Older spots have a light brown, necrotic center with a wide, irregular, water-soaked margin which is especially conspicuous on the undersurface of the leaves. A white bacterium was consistently isolated from the diseased leaf tissue and proved to be pathogenic on *Dracaena sanderiana*. Physiological and biochemical tests indicate that the bacterium is a *Pseudomonas*, which is unlike any of the described species. Preliminary tests indicated that both Agri-Strep and copper-maneb reduced disease incidence.

Introduction

Species of the genus *Dracaena* grown in Florida as a foliage ornamentals are valued at over three-quarters of one million dollars[1]. *D. sanderiana* Hort. Sand. ex. Rev. is a durable plant with a rosette of light-green leaves and broad marginal bands of white[2]. Its popularity as a foliage ornamental is increasing, and it is also used as a component in "dish-gardens," which are made up of several species of plants in the same container.

In 1969, specimens of *D. sanderiana* from Apopka, Clarcona, and Miami exhibited water-soaked leaf spots which contained bacteria. Upon isolation and subsequent inoculations the bacterial isolates proved to be pathogenic. This paper reports on the disease symptoms, description of the pathogen and preliminary data relative to control.

[1]Dr. C. N. Smith, Gainesville, Personal Communications.
[2]Graf, A. E. 1959, Exotica. Roehrs Co., Rutherford, N. J., p. 989.

Description of the Disease

The disease is first seen as circular to irregular water-soaked spots which may form any where on the leaf blade. A thin, reddish-brown margin occasionally forms around the water-soaked centers (Fig. 1). Diffuse chlorotic patterns develop around the lesions. The spots continue to enlarge and the affected area turns papery and dry. Severely infected leaves become brown and necrotic (Fig. 2). Infection does not seem to progress into the canes.

The Pathogen

The bacterium is a short rod, motile by one polar flagellum. On lima bean agar the colonies are dirty white, turning light brown with age. It does not produce acid from lactose and is not fluorescent on King's Medium B. Gelatin is not liquified, and milk turns slightly alkaline in 4 days. It is considered to belong to the genus *Pseudomonas*, but its physiological characteristics do not conform to those of any described species.

Materials and Methods

Young potted plants of *Dracaena sanderiana* were used as host plants in the experiments. Inoculum was prepared by suspending the bacteria from 2 to 4 day old slant cultures on potato dextrose agar or lima bean agar in sterilized tap water. Two methods of inoculation were employed. One consisted of placing drops of the bacterial suspension on the leaves and puncturing through the drops with a ring of fine insect needles in order to provide wounds for entrance into the leaves. The second method involved spraying the bacterial suspension onto the leaves of plants without wounding. Following either method of inoculation, the plants were covered immediately with polyethylene bags and placed in a mist chamber to maintain high humidity. The bags were removed after 48-72 hours.

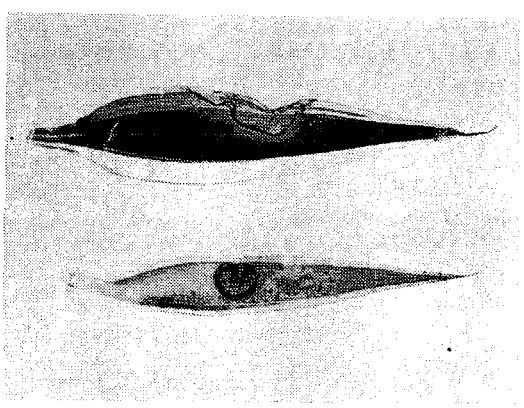

Figure 1.—Dracaena sanderiana leaves showing bacterial spots.

Figure 2.—Dracaena sanderiana 27 days follow inoculation of an unwounded plant; the lower leaves have become necrotic.

The effectiveness of two bactericides, Agri-Strep (100 ppm streptomycin sulfate) and copper-maneb (3 lb tribasic copper sulfate + 1½ lb Dithane M-45 in 100 gal water), was tested for disease control. Two treatments were used in the test. In one treatment, plants were inoculated by both methods described above, followed by spraying with the chemicals one day later. In the second treatment, the plants were sprayed with the chemicals first, allowed to dry, and then were inoculated via the two methods. Checks were inoculated by both methods, but received no chemical sprays. Final disease evaluations were made 26-27 days after inoculation.

Results

Following either method of inoculation, lesions usually developed in 3-4 days. In the control experiment, the check plants developed water-soaked spots which continued to spread rapidly. Many of the non-injured inoculated leaves became necrotic. Lesions on plants sprayed with either chemical developed more slowly and usually did not become as severe as in the checks. In treatments where plants were

inoculated first and chemically treated one day later, disease was more severe than in plants which were sprayed first and then inoculated. Agri-Strep appeared to give better control than copper-maneb.

The disease possibly originated on plants imported from Puerto Rico, since in one case it was reported that seemingly diseased tip cuttings were observed upon arrival in this country. Thus, roguing out the infected tips before planting should help control this disease. Chemical treatment was not wholly successful in providing adequate control in our experiment. Although disease incidence was reduced and development of the lesions was retarded, no effective chemical control can, as yet, be recommended.

In two attempts to repeat the experiment in late September and early October, our spray inoculations were unsuccessful. These failures could have been due to either lack of high enough temperatures or to the condition of the plants. It had previously been noted that as the leaves became more mature or "hardened," inoculations were increasingly unsuccessful.

THE DISTRIBUTION AND PATHOGENICITY OF ERWINIA CHRYSANTHEMI BURKHOLDER ET AL. TO SYNGONIUM PODOPHYLLUM SCHOTT

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ABSTRACT

The rapid decay of propagative stem cuttings has often been a limiting factor in the production of plants belonging to the genus *Syngonium* (Nephthytis). Isolations from rapidly rotting leaves of stock plants and from propagative stem cuttings have yielded primarily bacteria. Of these, only *Erwinia chrysanthemi* Burkholder *et al.* was found to be abundant and to incite consistently the rapid rot of *Syngonium* leaves. On one occasion, *Erwinia carotovora* was isolated and found to be capable of rotting wounded *Syngonium* leaves but its infrequency of isolation suggests a minor role in this disease. A survey of 5 foliage nurseries revealed *E. chrysanthemi* common to *Syngonium* at all locations. Culture indexing of nursery stock indicates that *E. chrysanthemi* may be present within *Syngonium* stem tissue at the time of propagation. Inoculations of *Syngonium* with isolates obtained from other foliage species indicate that more than one host may act as a reservoir for the pathogen and this should be considered in the overall planting design of a stock area.

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INTRODUCTION

In 1968, the foliage plant industry of Florida had a yearly wholesale value of approximately 15 million dollars (1, 9). This figure accounted for over one half of the total net value resulting from foliage plant production in the United States (1).

Although many plant species are grown for commercial foliage, only a small number of these account for the major portion of the total number of plants grown (9). One such group of plants are members of the genus *Syngonium*, commonly called "Nephthytis". Within this genus, the species *S. podophyllum* Schott predominates in sales importance. In 1967 (9), *Syngonium* sales accounted for approximately 2.4 percent of total foliage sales, thus placing it among the important foliage plant types.

Propagation of *Syngonium* is either by seed collected in the tropical Americas or by stem cuttings (eyes) taken from canes grown in ground beds under slat shed culture. Although reproduction by seed would in all probability