be considered. The recommendations which may eventually evolve from future research in root-knot nematode control must generate additional profit in order to find favor with gladiolus growers. For this purpose eradication of root-knot nematodes within the corm stocks is not imperative. Parathion dips, as recommended, have reduced populations of infective root-knot nematodes and increased crop production consistently. However, parathion does not provide nematode-free corms and cormels for planting in fumigated soil, precluding maximum benefit from soil fumigation. Cynem shows promise for this purpose. As organophosphates, both parathion and cynem share the disadvantage of having a low LD₅₀, requiring stringent safety measures in handling. The relatively greater mammalian safety of MBR 5667 and MBR 6168, coupled with the data presented here, suggests that further work with these materials may be profitable in evolving not only a less hazardous preplant dip, but also an effective method of controlling root-knot nematodes harbored within the corm tissue.

LITERATURE CITED

CEPHALOSPORIUM LEAF SPOT OF SYNGONIUM PODOPHYLLUM SCHOTT

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ABSTRACT

Syngonium podophyllum Schott, commonly referred to as Nephthytis, in commercial channels ranks fourth in economic importance in the ornamental foliage industry of Florida and has a sales value of approximately $350,000 annually. Of the relatively few diseases which affect Syngonium, a leaf spot caused by Cephalosporium cinnamomeum Linn has been observed to occur with not uncommon frequency and has been a persistent and troublesome problem to ornamental foliage growers. This work establishes the presence and the pathogenicity of C. cinnamomeum as the cause of one of the more important diseases of Syngonium in the foliage industry of Florida.

INTRODUCTION

Syngonium, commonly referred to as Nephthytis, is grown as a very popular foliage ornamental. It varies in leaf forms and degrees of variegation among its varieties. Of the approximate 14.5 million dollar annual sales of all foliage ornamentals in Florida as of 1967¹ Syngonium constitutes close to $350,000 of this amount.

Syngonium is vegetatively propagated and considered to be afflicted with relatively few serious plant disease problems. In this regard, Wehlburg (8) reported a marginal leaf necrosis of Syngonium caused by Xanthomonas vitians (Brown) Dows., and more recently, Knauss and Wehlburg (1) have established the occurrence of a stem and leaf rot disease of the same plant. More closely related to the work presented in this paper is the report of Linn (2) who in 1940 conducted the initial investigation of a leaf spot of Syngonium caused by Cephalosporium and established its pathogenic relationship. It is in this connection that this work was undertaken and has endeavored to relate the occurrence of this fungus on Syngonium in Florida, to define its severity, and to determine the most effective methods of its control.

During 1969 many specimens of Syngonium exhibiting leaf spots were collected from various nurseries in the State. The disease was found to be fairly common and present at various levels among Syngonium plantings. In every case a species of Cephalosporium was isolated from the rather small reddish brown, circular to slightly

¹Personal communication with Dr. C. N. Smith, Agricultural Economist, University of Florida, Gainesville.
irregular, necrotic leaf spots surrounded by a rather prominent yellow border, particularly when present on green, nonvariegated varieties.

**MATERIALS AND METHODS**

Pathogenicity of the isolate of *Cephalosporium* was tested on three varieties of *Syngonium*. These were 'Emerald Gem,' 'Green Gold' and 'Cream Giant.' Young plants of each variety, approximately 8 in. tall, were inoculated by atomizing with a spore suspension produced from 7 day-old cultures grown on 2 per cent potato dextrose agar (PDA). Control plants were atomized with 2 per cent liquified PDA. All plants were placed in a moist chamber immediately following inoculation. The same varieties of *Syngonium* were used in testing the fungicidal effectiveness of two materials, viz., M45 and Daconil. The fungicides were applied to the plants as a spray at the concentration of 1½ lb per 100 gal water, allowed to dry, then inoculated. The control plants were not sprayed with a fungicide and were inoculated at the same time as the two groups of plants that received a fungicide. Leaf spot counts were made on all inoculated plants and the fungicides evaluated.

**RESULTS**

Plants which were inoculated with a spore suspension of *Cephalosporium* developed leaf spots in as early as 3 days and the lesions became well established in 8 days. No increase in the number of leaf spots occurred after this time. The leaf spots appear as very tiny circular to slightly irregular, reddish brown lesions with a conspicuous yellow border (Fig. 1). These leaf spots enlarge slowly but seldom reach a diameter of more than 3-4 millimeters. They are more prevalent on the youngest leaves and occur infrequently on older, more mature leaves. Seldom, if ever, are the fruiting structures of the fungus found on the necrotic tissue of the lesions.

Of the three varieties tested and their rela-

![Figure 1.—Cephalosporium leaf spot of Syngonium: A) Emerald Gem, B) Green Gold.](image-url)
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 efficacy 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.

LITERATURE CITED


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 dollars1. *D. sanderiana* Hort. Sand. ex. Rev. is a durable plant with a rosette of light-green leaves and broad marginal bands of white2. 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.

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1Dr. C. N. Smith, Gainesville, Personal Communications.