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COMPARISON OF MYROTHECIUM SP. AND CORYNESPORA CASSIICOLA LEAFSPOTS ON TWO CULTIVARS OF APHELANDRA SQUARROSA NEES[1]

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Abstract. **Dark brown to black leafspots, 1-2 cm (1/2-1") in diameter were found on lower leaves of** Aphelandra squarrosa **Nees 'Dania' resembling those incited by** Corynespora cassiicola **(Berk. & Curt.) Wei. Leafspots contained black and white fruiting bodies of** Myrothecium **Tode sp. Inoculations of both** A. squarrosa **'Dania' and** A. squarrosa **'Apollo' were made using isolates of both organisms. Leafspots were more numerous and larger on plants of both cultivars inoculated with the** Myrothecium **sp. than on plants inoculated with** C. cassiicola. **In addition, plants inoculated with** Myrothecium **sp. had lesions in nonwounded tissue.**

Aphelandra squarrosa Nees is a widely grown foliage plant in central Florida. In the past, aphelandras have been comparatively disease-free with respect to other flowering foliage plants. In 1973, McRitchie and Miller reported a leafspot disease of aphelandra incited by *Corynespora cassiicola* (Berk. & Curt.) Wei (3) and determined that the organism was an obligate wound pathogen. Corynespora leafspot is characterized by black to brown spots of varying sizes on the lower leaves of plants. Occasionally, these spots also were found on upper leaves.

Since that time other organisms have been isolated from leafspots of aphelandras. Records of the Division of Plant Industry show a high number of reports of *Myrothecium* sp. from aphelandra leafspots. This leafspot was characterized by dark brown to black lesions on the lower leaves of plants in contact with the potting medium although they also occurred on upper leaves under conditions of high inoculum pressure. Black and white fruiting bodies of a fungus were found in concentric rings in the necrotic tissue. Occasionally lesions reached several cm in diameter extending from the tip of the blade into the petiole. Most lesions began on the edge of the leaf in contact with the soil but occurred in the center of the blade as well. The purpose of this research was to determine the causal agent of this leafspot of aphelandra and to compare it to Corynespora leafspot of the same plant on the 2 Aphelandra cultivars.

Materials and Methods

Diseased aphelandra were obtained from several commercial nurseries and leaf tissue was excised and surface disinfested in 0.5% sodium hypochlorite for 3 min, rinsed in sterile deionized water (SDW) and plated on: potato dextrose agar medium (PDA) (extract from 250 g boiled potatoes, and 20 g each of agar and dextrose), PDA amended with 100 μg per ml of streptomycin sulfate (PDAS), or V-8 juice agar medium (V-8) (18% V-8 juice cleared with 4.5 g $CaCO_3$, and 15 g agar). Plates were incubated at 24-26C in 2152 lux light (12 hr daily) for 7-10 days.

Pathogenicity trials were combined with the comparison of the suspected pathogen to *C. cassiicola*. Single conidium isolates of both organisms were maintained on PDA slants throughout the study. Inoculum was started on PDA plates and grown under the same conditions used for isolation. Conidia were collected from 2-week old cultures by adding SDW to the surface of the culture plate and gently rubbing with a sterile rubber policeman (spatula). The resulting conidial suspension was counted using a hemacytometer and adjusted to 1 x 10^4 conidia per ml. Aphelandra plants of both cultivars were obtained by rooting tip cuttings in steam sterilized medium consisting of Canadian peat, cypress shavings, and pine bark (2:1:1 by volume). The medium was amended with 6 kg Osmocote® (14:14:14 slow-release fertilizer), 4 kg dolomite, and 1 kg Perk® (micronutrient source), per m^3 of medium. Five plants of each cultivar in 15 cm pots were each inoculated with *C. cassiicola, Myrothecium* sp. or water. Five wounds were made on each of 6 leaves prior to inoculation by spraying a spore suspension or water to the point of run-off. Plants were sealed in polyethylene bags for 48 hrs and then maintained under intermittent mist (30 sec every 30 min from 8:00 a.m. through 8:00 p.m.). Ratings were made weekly for 6 weeks, and included the number, size, and location of any lesions. Reisolation was performed using the methods described for the initial isolation of the pathogen. The test was performed 3 times.

Results and Discussion

Isolations from diseased aphelandras yielded *Myrothecium* sp. (5) consistently. Leafspots formed on wounded leaves of plants inoculated with *C. cassiicola* and on wounded and nonwounded leaves of plants inoculated with *Myrothecium* sp. In tests two and three, 1 or 2 leafspots formed at wound sites of the water inoculated plants and *Myrothecium* sp. was isolated from them. Both fungi were isolated from leafspots which they incited but never from the same leafspot.

The results of the comparison of the 2 organisms on the 2 cultivars of the aphelandra are given in Table 1. In each test the greatest leafspot development occurred on Apollo plants inoculated with *Myrothecium* sp. while the least occurred on the water inoculated plants. Myrothecium leafspots were larger than Corynespora leafspots (Figure 1), and resulted in greater leaf abscission (Corynespora

Table 1. Effect of inoculation with *Myrothecium* sp., *Corynespora cassiicola*, or water on development of leafspots greater than 3 mm in diameter.

Plant cultivar	Inoculum	Mean number lesions over 3 mm per replicate[z] Test 1	Test 2	Test 3
Apollo	*Corynespora*	0.0 a[y]	6.4 b	2.2 a
Dania	*Corynespora*	0.6 a	0.2 a	0.4 a
Apollo	*Myrothecium*	3.6 b	12.0 c	16.6 c
Dania	*Myrothecium*	2.4 b	0.8 a	10.6 b
Apollo	Water	0.0 a	0.2 a	0.0 a
Dania	Water	0.0 a	0.2 a	0.6 a

[z]A total of 30 lesions at wound sites were possible per replicate.
[y]Numbers in the same column followed by the same letter were not significantly different using DMRT at the 5% level.

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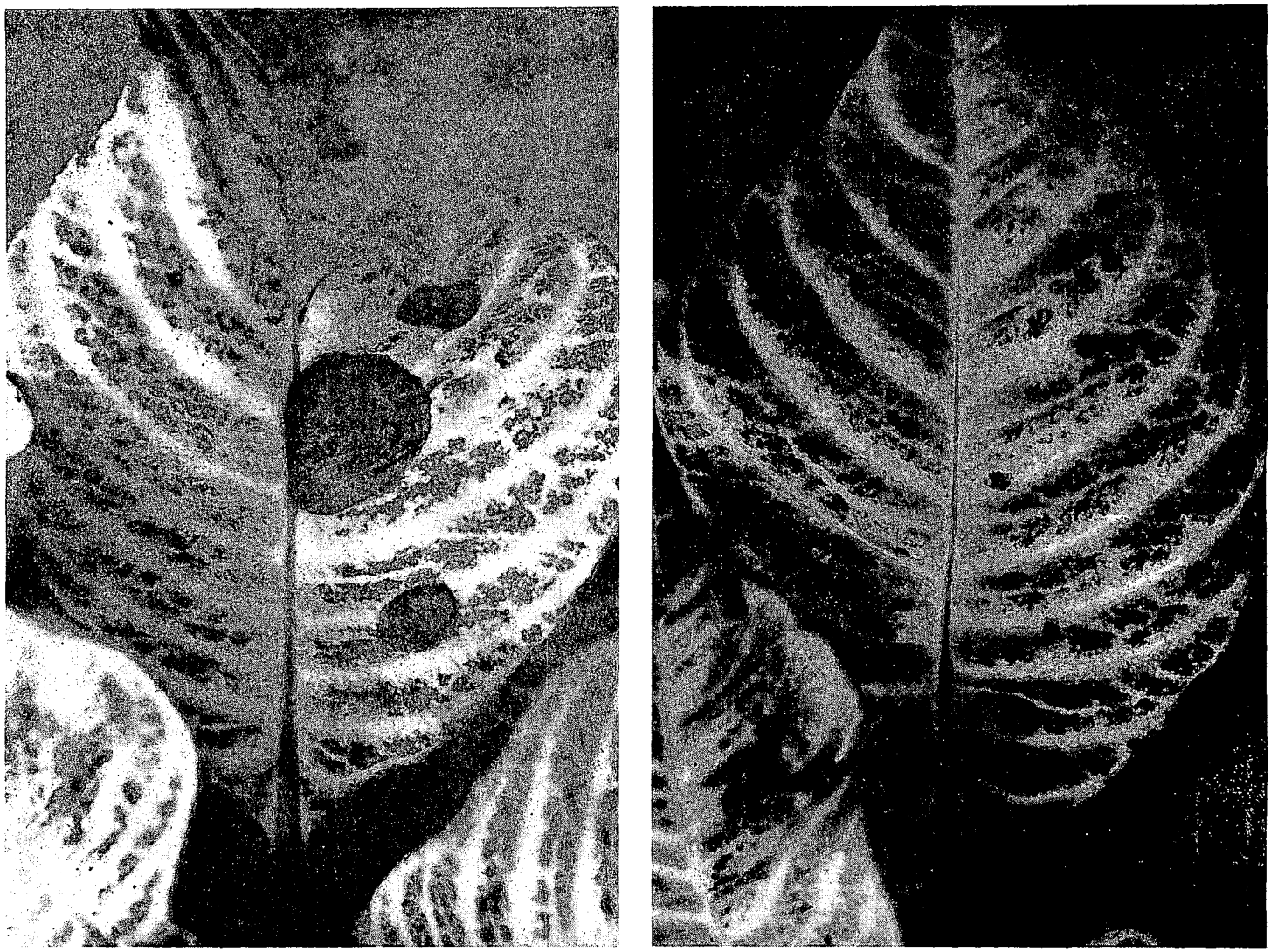

Fig. 1. Leafspots of *Aphelandra squarrosa* 'Apollo' incited by *Myrothecium* sp. (left) and *Corynespora cassiicola* (right).

leafspot = 2.2%, Myrothecium leafspot = 31.1%). In addition, leaf abscission on Apollo (30%) was greater than that of Dania (2%).

Leafspots developed at nonwounded sites in *Myrothecium* sp. inoculated plants, along leaf margins of any age leaf and in the centers of the youngest leaves. This was distinctly different from the location of leafspots incited by *C. cassiicola* (wound sites only). *Corynespora cassiicola* is primarily a wound pathogen of aphelandra (3) but these tests show that *Myrothecium* sp. is not as dependent upon wounding as the former. *Myrothecium* sp. causes diseases of many other greenhouse ornamental crops (1, 2, 4, 6) as well as numerous foliage plants (Chase, unpublished data). These tests have established its role in a serious leafspot disease of aphelandra which was more severe than Corynespora leafspot. There were 2 general trends seen in these tests: 1) Apollo was more susceptible to either pathogen, and 2) *Myrothecium* sp. caused more severe leafspots (2 out of 3 tests) than did *C. cassiicola*. Field observations indicate that both diseases are most severe during propagation when plants are subjected to high humidities and are frequently wounded through the process of cutting removal. Control of aphelandra leafspots should be based upon minimizing these conditions as well as chemical sprays when necessary.

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