

Alternaria Leaf Spot of *Calathea* spp.

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ABSTRACT

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Alternaria alternata was identified as the cause of a leaf spot of *Calathea* spp. The disease was most severe on *C. bella*. Two cultivars of *Maranta leuconeura* were found to be resistant to the pathogen.

Species of the family Marantaceae form an important segment of the indoor foliage industry. Although *Calathea* spp. are less common than *Maranta* spp., they are popular foliage plants, tolerating the low light and humidity levels found in most interior environments. Diseases of *Calathea* and *Maranta* spp. have not been described extensively in the literature.

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A leaf spot disease of *Calathea* spp. has been present for several years in commercial nurseries and is characterized by small (1–2 mm), reddish brown, circular lesions (Fig. 1). These lesions differ in size, shape, and coloration from the more common Drechslera (= Helminthosporium) leaf spot caused by *Drechslera setariae* (Saw.) Shoemaker, which was also found on members of the Marantaceae (7). The purpose of this research was to determine the cause of this leaf spot.

MATERIALS AND METHODS

Lesions excised from leaves of *Calathea bella* (Bull) Regel, *C. insignis* Peterson, and *C. picturata* (Linden) C. Koch & Linden cv. Argentea were washed in tap water and surface-

disinfested in 0.52% sodium hypochlorite for 2–3 min. Tissue was rinsed in sterile deionized water (SDW) prior to plating on the following media: V-8 juice agar (V-8; 18% V-8 juice, cleared with 4.5 g of calcium carbonate, and 15 g of agar per liter), potato-dextrose agar (PDA; extract from 250 g of boiled potatoes, 20 g of agar, and 20 g of dextrose per liter), and V-8 and PDA amended with 100 µg/ml of streptomycin sulfate (V-8S and PDAS, respectively). Plates were incubated at 24–26 C with approximately 2.2 klux of light from fluorescent light bulbs (12 hr daily) for 5–10 days.

Single hyphal tip transfers were maintained on PDA slants and used as a source of inoculum for the pathogenicity trials. Inocula were grown on V-8 plates under the conditions described above for 2 wk. Conidia were removed from the surface of the culture plate using SDW and a sterile glass rod, counted using a hemacytometer, and adjusted to 1×10^4 conidia per milliliter. The conidial suspension or SDW was sprayed onto the leaf surfaces to the point of runoff, using

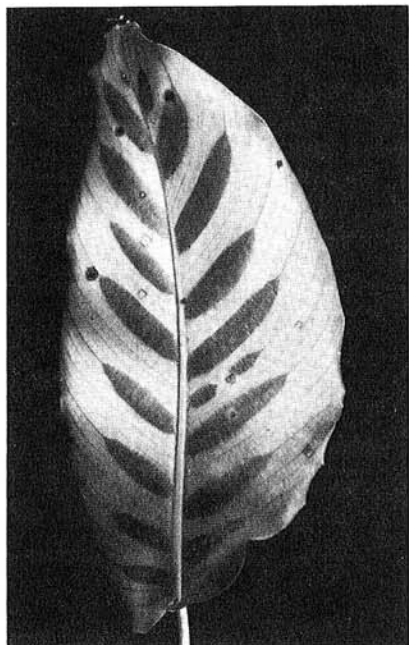


Fig. 1. *Alternaria* leaf spot of *Calathea bella* resulting from natural infection with *Alternaria alternata*.

a pump action hand sprayer. All plants were individually sealed in polyethylene bags for 48 hr. Plants were obtained from a grower as divisions with or without roots and planted in 15-cm plastic pots containing the following steam-sterilized potting medium: Canadian peat, cypress shavings, and pine bark (2:1:1 by volume) amended with 4.4 kg of Osmocote (19:6:12; Sierra Chemical Co., Milpitas, CA), 4.2 kg of dolomite, and 0.9 kg of Micromax (micronutrient source; Sierra Chemical Co., Milpitas, CA) per cubic meter. Plants were grown on raised benches in a glasshouse receiving

approximately 10 klux of light and temperatures ranging from 20 to 30 C. Three to five plants each of the following were inoculated with SDW or the conidial suspension: *C. bella*, *C. insignis*, *C. picturata* cv. Argentea, *Maranta leuconeura* E. Morr. cv. Kerchoviana (green maranta), and *M. leuconeura* Bunting cv. Erythroneura (red maranta). The test was repeated three times.

One test was performed using an isolate of *D. setariae* obtained from red maranta to compare lesion formation with the suspect pathogen. Inoculation was made using the method and materials described above.

RESULTS AND DISCUSSION

Alternaria alternata (Fr.) Keissler (= *A. tenuis* Nees) (2) was isolated consistently from leaf spots on all three species of *Calathea*. No other organism was isolated from these leaf spots, although *Drechslera* sp. was isolated from other, larger lesions on the same leaf. Lesions developed on all three *Calathea* spp. in each test but not on either cultivar of *Maranta* sp. and appeared within 48 hr as tiny, water-soaked areas. At no time did symptoms develop on plants inoculated with SDW. *A. alternata* was reisolated only from plants with symptoms of *Alternaria* leaf spot. Lesions on *Calathea* averaged 1 mm in diameter and were reddish brown with a very narrow, yellow halo. In contrast, lesions incited by *Drechslera* sp. were 1–10 mm wide, irregularly shaped, and tan with a wider (1 mm) yellow halo on some plants.

Alternaria spp. cause diseases of various other ornamentals including roses (*Rosa* spp.), chrysanthemums (*Chrysanthemum* spp.), and King asters

(*Callistephus* spp.) (3); ivy (*Hedera* spp.) (4); geranium (*Geranium* spp.) (6); and scheffleras (*Brassaia* spp.) (1,5). This is the first report of an *Alternaria* leaf spot of *Calathea* spp. During these studies, eight other species and cultivars of *Calathea* were examined for *Alternaria* leaf spot, but only the three species tested showed commercially significant levels of infection. This disease is not as serious commercially as *Drechslera* leaf spot because the host range of this pathogen is narrower (7) and the damage incited is less severe. However, *Alternaria* leaf spot has been uncontrollable on *C. bella*, and culture of this plant has been discontinued by the primary producer in central Florida. Control of *Alternaria* leaf spot is difficult when plants are irrigated from overhead, but applications of several commercially available fungicides can reduce disease severity.

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