Susceptibility of *Calathea* Species and Cultivars to *Bipolaris setariae*[1]

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Abstract

Relative susceptibility of five species of *Calathea* to *Bipolaris setariae*, the cause of Helminthosporium leaf spot, was tested under greenhouse conditions. *Calathea louisae* 'Green Feather' and *C. roseo-picta* were highly resistant, while *C. makoyana* 'Peacock Plant' was moderately resistant. The most susceptible species were *C. argentea* 'Silver Portrait' and 'Vandenheckei', and *C. insignis* 'Rattlesnake'.

Index words: *Drechslera setariae*, helminthosporium leaf spot, disease susceptibility

Introduction

Foliage plants are affected by a variety of diseases caused by bacteria and fungi. Differences in relative susceptibility of different species or cultivars of a specific genus have been identified for many crops allowing for choice of the most resistant cultivars. Some cultivars or species are so susceptible that they are not recommended for production under normal growing conditions. Research in the area of genetic resistance has been reported for some foliage plants such as *Hedera helix* (English ivy) (2, 3), *Spathiphyllum* (1), and *Saintpaulia ionantha* (African violet) (5, 6) but not for the majority of popular foliage plants grown today. The following research was performed to identify relative susceptibility of species and cultivars of *Calathea* to Helminthosporium leaf spot caused by *Bipolaris setariae* (=*Drechslera setariae*) (4).

Materials and Methods

Mature calatheas were obtained from commercial growers and propagated by division to produce the plants used in these tests. The following species and cultivars were used: *Calathea argentea* 'Silver Portrait', *C. argentea* 'Vandenheckei', *C. insignis* 'Rattlesnake', *C. louisae* 'Green Feather', *C. makoyana* 'Peacock', and *C. roseo-picta*. Divisions were potted in steam-treated (90°C [190°F] for 1.5 hr) potting medium consisting of Canadian peat and pine bark (1:1 by vol). The medium was amended after steam-treatment with 4.2 kg (7 lbs) dolomite, 5.9 kg (10 lbs) Osmocote 19N-2.6P-10K (19-6-12), and 0.9 kg (1.5 lbs) Macromax per m^3 (1 yd^3). Plants were grown in 15 cm (6 in) pots in a glasshouse receiving approximately 1500 ft-c maximum light and temperatures between 22° and 35°C (70° and 95°F). Ten fully grown 6-month-old plants of each of at least five of the varieties listed were used in each of four trials conducted between April 2 and September 2, 1986.

Inoculum of *B. setariae* was produced on potato-dextrose agar medium prepared fresh (filtrate from 250 g boiled potatoes, 20 g dextrose, and 10 g agar). Cultures were incubated for 14 days under intermittent light (100 ft-c for 12 hr/day) at 24°–26°C (75°–79°F). Conidia were harvested from plates by adding sterilized-deionized water to plates and gently rubbing the surface of the colony with a sterilized rubber policeman. The resulting conidial suspension was counted using a haemocytometer and adjusted to 1×10^4 conidia/ml. Plants were inoculated with this suspension by spraying with a pump action hand sprayer to runoff and enclosing in a plastic bag for 3 days. Plants were exposed to intermittent misting (5 sec/30 min for 12 hr/day) starting 24 hr before inoculation and continuing until the end of each trial. The number of lesions per plant was recorded approximately 2 weeks after inoculation in each trial.

Results and Discussion

Calathea species and cultivars reacted consistently to inoculation with *B. setariae* in these trials. The most susceptible cultivars were the *C. argentea* cultivars 'Silver Portrait' and 'Vandenheckei' (Table 1). Rattlesnake plant was moderately susceptible with Peacock plant generally less susceptible. The most resistant species tested were *C. roseo-picta* and *C. louisae*.

Significance to the Nursery Industry

This information should allow researchers to choose the most resistant plants for future breeding work on Calatheas. Producers should consider using the cultivars, *C. roseo-picta* and *C. louisae*, which exhibited the least damage due to *Bipolaris* leaf spot, for commercial production.

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Table 1. Susceptibility of *Calathea* species and cultivars to *Bipolaris setariae*.

Species/Cultivar	Mean Number of lesions/plant			
	Test 1	Test 2	Test 3	Test 4
C. argentea 'Silver Portrait'	14.3 b[z]	31.5 c	20.0 b	34.5 c
C. argentea 'Vandenheckei'	11.2 b	11.5 ab	12.0 ab	35.0 c
C. insignis 'Rattlesnake'	—	15.0 b	37.5 c	—
C. makoyana 'Peacock Plant'	11.0 b	4.7 a	4.3 a	20.3 b
C. roseo-picta	3.0 a	11.6 ab	—	0.5 a
C. louisae 'Green Feather'	0.0 a	3.9 a	3.4 a	0.2 a

[z]Means (10 replicates in each test) within a column followed by the same letter are not significantly different at the 5% level as measured by Duncan's new multiple range test.

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