Interaction of *Calibrachoa* and Selected Root and Foliar Pathogens in Greenhouse Settings

Calibrachoa (*Calibrachoa* x *hybrid)* is a popular ornamental plant similar to petunia and was introduced to the greenhouse industry in 1990. Little to no information has been published about its interaction with pathogens commonly encountered in greenhouse production. This study investigates the susceptibility of *Calibrachoa* to common greenhouse pathogens *Pythium aphanidermatum (P. aphanidermatum)*, *Pythium ultimum (P. ultimum)*, *Phytophthora cactorum (P. cactorum)*, *Phytophthora cinnamomi (P. cinnamomi)*, *Phytophthora citrophthora (P. citrophthora)*, *Phytophthora nicotianae (P. nicotianae)*, *Botrytis cinerea (B. cinerea)*, and *Verticillium dahliae (V. dahliae)*.

Rooted *Calibrachoa* 'Colorburst Violet' cuttings were exposed to the different pathogens by their varying modes of infection. *Phytophthora* and *Pythium* species cultured on potato dextrose agar were inserted into the potting medium at transplant, saturated, and left to stand in water to allow for the dispersion of zoospores and sporangia. Microsclerotia of *V. dahliae* were incorporated into the potting mix, and a *B. cinerea* conidial suspension was applied via foliar spray. The trial was repeated three times, and plants were rated on the basis of symptoms (Trial 1) or the percent disease severity (Trials 2 and 3). The area under the disease progress curve (AUDPC) values were calculated using the mid-point analysis.

High disease severity was observed on plants infected with *P. citrophthora*, moderate disease severity was apparent on plants infected with *B. cinerea*, *P. cinnamomi*, and *V. dahliae*, while little to no symptoms developed from *P. cactorum*, *P. ultimum*, and *P. aphanidermatum* (Figure 1A). In the second trial, an additional pathogen, *P. nicotianae*, caused the most severe symptomology, whereas, all but *P. aphanidermatum* showed moderate progression (Figure 1B).

Calibrachoa is prone to infection by a diverse group of pathogens. Three of the *Phytophthora* species tested (*P. nicotianae, P. citrophthora,* and *P. cinnamomi*) killed the plants within 2-5 weeks. Symptoms of Botrytis blight appeared 3 days after inoculation, and after three weeks were deemed unmarketable due to gray mold infection. Wilting caused by *V. dahliae* occurred within 4-5 weeks after infection. In addition to wilting, chlorosis of lower leaves, and stunting growth, a delay in onset of blooming was observed for plants treated with *P.* nicotianae, *P. citrophthora*, and *P. cinnamomi*. In comparison, the *Pythium* species had little to no effect on *Calibrachoa*, possibly attributable to its woody nature.

Greenhouse managers and clinicians should be aware of the susceptibility of *Calibrachoa* to these common plant pathogens and should regularly scout for them. Steps should be taken to reduce the instances of plant infection by eliminating the use of infested soil, contaminated tools, infected cuttings, and contaminated irrigation water.

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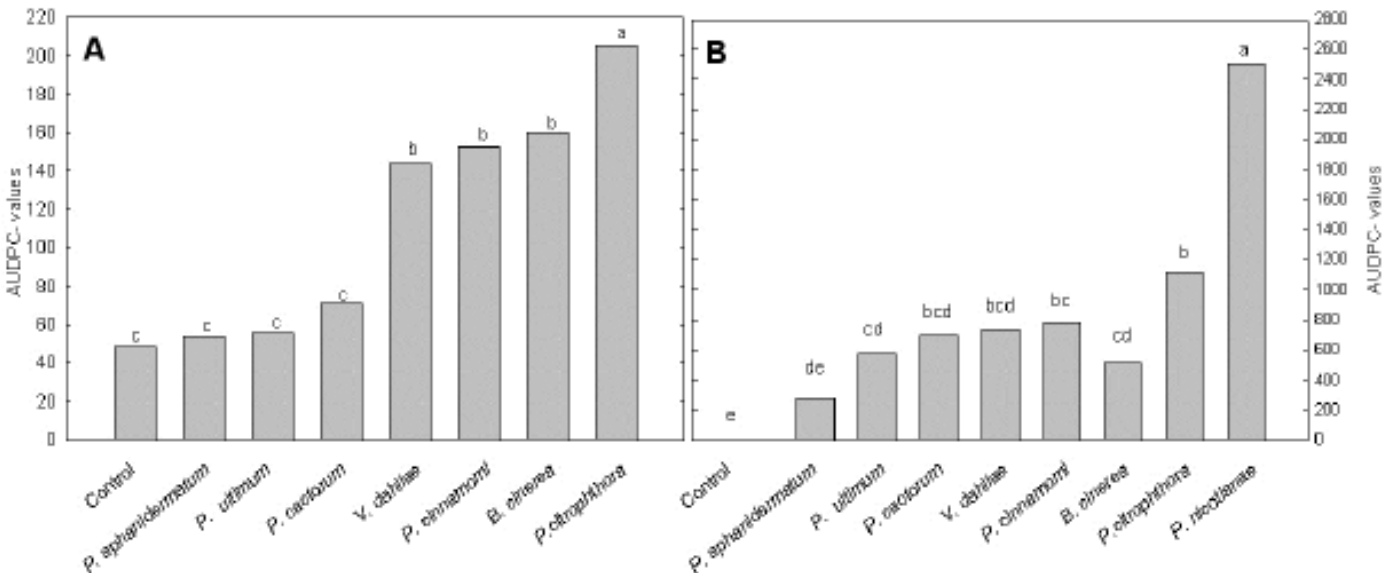

Figure 1. Disease severity in response to challenge with pathogens. Symptoms were visually rated on a scale of 1 to 6 (A), and 0 to 100% (B). The area under disease progress curve (AUDPC) was calculated using the mid point analysis. Bars with the same letter are not significantly different (P<0.05). Treatments included an uninoculated control, *Pythium aphanidermatum*, *Pythium ultimum*, *Phytophthora cactorum*, *Phytophthora cinnamomi*, *Phytophthora citrophthora*, *Phytophthora nicotianae*, *Botrytis cinerea*, and *Verticillium dahliae*.

Omer, M., Locke, J.C., Frantz, J.M., Horst, L.E. and Krause, C.R. 2011. Interaction of Calibrachoa and Selected Root and Foliar Pathogens in Greenhouse Settings. Acta Hort. (ISHS) 893:1301-1307.