

**Title** Evaluation of Lisianthus Cultivars for Resistance to *Botrytis cinerea*  
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### Abstract

Lisianthus (*Eustoma grandiflorum*) is a high-value cut flower. However, major yield losses often result from gray mold caused by *Botrytis cinerea*. Various techniques were used to evaluate 12 lisianthus cultivars for resistance *B. cinerea*. Disease evaluations from detached leaf, leaf disc, cut stem, and in vivo growth chamber stem (GC) assays were correlated with those from an in vivo greenhouse stem (GH) assay, in which commercial greenhouse production of lisianthus was simulated. In all assays, stems or leaves were wounded before inoculation with spores or mycelia of *B. cinerea*. There was a significant ( $P \leq 0.03$ ) positive correlation between stem lesion length in the GH assay and disease incidence in the same assay ( $R = 0.74$ ), stem lesion length from spore spray inoculation in the GC assay ( $R = 0.62$ ), and percent necrosis from spore spray inoculation of detached leaves ( $R = 0.71$ ). Correlations between stem lesion length in the GH assay and disease evaluations from spore drop and mycelial inoculation of detached leaves, leaf discs, and cut stems were not significant at  $P = 0.05$ . Considering only screening methods with significant correlations, 'Magic Champagne' was the most resistant cultivar (mean rank [mr] = 2 of 12). 'Echo White' and 'Echo Lavender' were the least resistant cultivars (mr = 11). The other cultivars were 'Magic White' (mr = 4); 'Avila Ivory', 'Balboa Yellow', 'Echo Pink', and 'Magic Rose' (mr = 5); 'Balboa Blue' (mr = 6); 'Avila Blue Rim' (mr = 8); and 'Avila Purple' and 'Catalina Purple' (mr = 9). The results from this study indicate that in vivo disease incidence, in vivo stem assays, and detached leaf assays, all initiated with wounding followed by spore spray inoculation, may be more reliable in evaluating lisianthus cultivars for resistance to *B. cinerea* than spore drop and mycelial inoculation of detached leaves, leaf discs, and cut stems. The results also indicate that lisianthus cultivars with moderate resistance to *B. cinerea* are commercially available. These cultivars have potential for use as germplasm in breeding lisianthus for resistance to the pathogen.