

ID 49

Development of disease assessment key for bacterial rot disease and identification of high performing growth media for selected commercially grown *phalaenopsis* cultivars

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Abstract

Phalaenopsis is one of the major high value orchids with increasing demand and are cultivated as cut flower and pot plants in Sri Lanka. Production of quality planting material is significant to compete in global and local market. These plants are highly susceptible to bacterial rot and the growth media support the spread of the disease. The objectives of this study were, (a) to develop an assessment index for estimating bacterial rot disease severity of *Phalaenopsis* and (b) to estimate the growth performance of *Phalaenopsis* cultivars in different growth media in order to establish a suitable low-cost growth medium. The experiments were carried out in a selected plant nursery and the growth performance was assessed using number of leaves per plant, length, and width of the leaves as growth parameters. A disease severity scale was developed, by assessing the intensity of bacterial rot considering the colour change of the leaf due to the infection. Colour change indicates the breakdown of photosynthesis pigments leading the development of pale green colour on the leaf surface. Growth performances of two stages of two *Phalaenopsis* cultivars; *Phalaenopsis amabilis* and *Phalaenopsis* Antonio Caruana ("Roma") grown in four growth media; T₁- charcoal with coconut husk pieces (1:1), T₂ - pine bark with mosses (1:1), T₃ cemented regifoam boards and T₄- metal chips with coir dust (1:1) were evaluated. Among the four-growth media, T₄ has shown the highest growth performance. Based on the observations made using the developed disease severity index, it can be recommended that, the application of control measures at or early stage of 50% of disease severity is needed for the successful control of the bacterial rot in *Phalaenopsis*.

Keywords: Disease severity, Growth media, Growth parameters, *Phalaenopsis*

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