

PSF.AGR.20

PLASTIC RESPONSES IN MORPHO-PHYSIOLOGICAL TRAITS OF *Codiaeum variegatum* ‘Pictum’ IN RESPONSE TO LIGHT HETEROGENEITY

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Codiaeum variegatum ‘Pictum’ is an evergreen shrub of the family Euphorbiaceae which is highly popular among tropical landscape gardeners valued for its striking foliage. As most of the tropical landscapes demand low maintenance, it is important to evaluate the suitability of ‘Pictum’ as a low maintenance landscape (extensively managed garden) plant.

Phenotypic plasticity is one of the phenomena that can be used to measure whether an individual can maintain stability in the face of environmental stresses. Plants that can tolerate varying environmental influences without altering much of their aesthetics are the best performers for low-maintenance landscapes. Therefore, this study was conducted to assess the suitability of *C. variegatum* ‘Pictum’ as a low maintenance landscape plant using the phenotypic plasticity index (PPI).

The research was carried out at Kiribathkumbura, Kandy. Uniform sized export quality plants were planted in plastic containers filled with the standard medium. The plants were exposed to different levels of light; full sunlight (open), garden green shade net (green), commercial 50 % black and 80 % black shade nets. Different morphological and physiological parameters were measured and PPI's were calculated for all the parameters. Finally the aesthetic quality was assessed.

The results of this study revealed that total leaf area and total leaf dry weight were the traits that showed the highest plasticity among all phenotypic traits measured under the four light conditions ($p < 0.05$). Plants had highest adaptability to alter root length under all light levels except 50 % shade, having high PPI values. Under open field and green net conditions, plant height showed a higher plasticity while a moderate plasticity was observed under 50 % and 80 % shades.

Furthermore, leaf length was moderately plastic for all the treatments while leaf width was moderately plastic only for green and open fields. In addition, shoot dry weight was a rigid trait under all light conditions. Interestingly, total chlorophyll content under open field condition was almost non-plastic ($PPI < 0.15$) compared to other three treatments. However, the overall PPI values of total chlorophyll were less plastic.

All the traits assessed in the experiment showed variable degrees of phenotypic plasticity in response to different light conditions. A higher number of traits tested were highly or moderately plastic without compromising its aesthetic quality revealing that the plant can be established in different light environments, showing its suitability to low maintenance landscapes.