Morphological Characterization of Drupes Reveals a Higher Diversity of *Phyllanthus emblica* Germplasm in Anuradhapura, Kandy and Kurunegala Districts of Sri Lanka

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**ABSTRACT**

*Phyllanthus emblica* L. is a commercially important fruit species and its plant parts are indispensable in indigenous herbal medicine. A total of 475 *P. emblica* drupes harvested from 66 trees in Anuradhapura, Kandy and Kurunegala districts of Sri Lanka were used for characterizing morphological features. For each drupe, seven morphometric data (height, width and weight of drupes, mesocarp thickness, width, height and weight of stones) were measured. Sixty one drupes were used for the quantitative analysis of the epicarp color of drupes. Bitterness, an organoleptic property was analyzed in relation to drupe size by using a taste panel of independent human subjects. The stone traits showed a lower correlation with other drupe traits suggesting that drupe and stone traits may be governed by two separate sets of genes. The cluster analysis based on drupe size traits characterized the *P. emblica* germplasm into four clusters. Number of cells in the mesocarp of smaller and larger fruits was more or less the same but the cell size was larger in larger fruits (p<0.05). There were significant differences in quantitative color metrics between small and large drupe groups. Thus, *P. emblica* germplasm has a significantly higher morphological diversity in Sri Lanka but the drupe traits did not vary with respect to their locations or the climate.

**Keywords:** epicarp colour; intraspecific variation; mesocarp cell size