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Morphological delimitation of *Durio dulcis* Becc. and *Durio graveolens* Becc. based on comparative leaf traits

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Abstract

This study presents a comparative analysis of leaf morphology in *Durio dulcis* and *Durio graveolens*. A total of 12 accessions were analysed using 35 leaf morphological parameters, including leaf organisation, structure, and surface characteristics. The leaf specimens were obtained from the MARDI gene bank in Jerangau, Terengganu, and examined using standardised botanical methodologies. Cluster analysis using the unweighted pair group method with arithmetic mean (UPGMA) method based on Gower's similarity coefficient demonstrated clear interspecific separation, indicating clear morphological differentiation between the two species. Although both species exhibited similar characteristics, including simple leaf type, petiolate attachment, and entire margins, significant variations were observed in petiole width (broader in *D. graveolens*), leaf sizes

(larger in *D. graveolens*), apex and base morphology, leaf shape variability, venation clarity, and trichome distribution (denser abaxial indumentum in *D. graveolens*). Fourteen morphological characteristics were identified as key diagnostic markers for species delimitation, including petiole width (upper and base), leaf length and width, apex angle and shape, and venation clarity. These findings highlight the significance of detailed leaf morphology in *Durio* classification and provide vital baseline data for conservation, phylogenetic analysis, and future crop enhancement research. © 2026 UMK Publisher. All rights reserved.

Author keywords

cluster analysis; diagnostic characters; *Durio dulcis*; *Durio graveolens*; germplasm characterization; taxonomic delimitation

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