EVALUATION OF MORPHOLOGICAL TRAITS OF SELECTED PAPAYA (*CARICA PAPAYA* L.) VARIETIES AT THE VEGETATIVE STAGE IN THE WET ZONE OF SRI LANKA

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Papaya (*Carica papaya* L.) is a commercially significant tropical fruit crop cultivated in Sri Lanka. This study was conducted at the University of Sri Jayewardenepura to morphologically characterize nine papaya varieties at the vegetative stage in the wet zone of Sri Lanka. The varieties comprised two locally developed cultivars (*Rathna* and *Horana Papaya Hybrid 01*), six imported commercial hybrid varieties (*Tainung 01, Tainung 02, Red Lady, Sun Lady, Maradona,* and *Vinayak*), and one local wild accession. The field experiment was laid out in an RCBD with two blocks, and three replicates each for four months period. Plant height, stem diameter, leaf length, leaf width, and chlorophyll content (SPAD) were recorded monthly over three consecutive months. ANOVA revealed significant varietal differences ($p \leq 0.05$) across all traits. At month 6, *Tainung 01* recorded the highest plant height (154±4.4 cm), while the local wild cultivar exhibited the greatest stem diameter (5±0.1cm), leaf length (32.90±1.7cm), and leaf width (43.40±1.2cm). *Vinayak* demonstrated superior chlorophyll content (63.80±1.1 SPAD) and the highest leaf count. *Rathna* consistently recorded the lowest values across most parameters. Leaf length and leaf width showed a moderate positive correlation at month 4 ($r = 0.63$), strengthening to $r = 0.72$ by month 5, while a weak negative association between chlorophyll content and plant height ($r = -0.13$) was observed. Principal Component Analysis revealed PC1 (65.5%) and PC2 (15.7%) together explained 81.2% of total variance, with PC1 representing an overall plant vigor axis. Hierarchical cluster analysis (k=3) differentiated varieties into three groups based on overall vigor, stem thickness, and leaf dimensions. These findings highlight substantial morphological diversity, with *Tainung 01, Vinayak*, and the local wild accession as best-performing varieties, providing a baseline for variety selection and crop improvement in the wet zone of Sri Lanka.

Keywords: *Carica papaya*, morphological characterization, vegetative stage, papaya hybrids, wet zone, Sri Lanka