

**LEAF AND FRUIT TRAIT DIVERSITY OF RAMBUTAN
AT FIELD GENE BANK OF
FRUIT RESEARCH AND DEVELOPMENT INSTITUTE,
HORANA, SRI LANKA.**



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ABSTRACT

Rambutan (*Nephelium lappaceum* L.) is one of the commercially important tropical fruit crops grown in Wet and Intermediate Zone in Sri Lanka. Malwana Special is the only locally selected officially released variety by the Department of Agriculture. Hence present study was carried out to find the fruit and leaf trait diversity of selected 30 diverse accessions with 3 recommended varieties (AC11-Malwana Yellow), 56 (Malwana Yellow), AC62, AC64, AC65, AC66, AC99, AC100, AC103, AC105, AC108, AC110, AC114 (Malwana Red), AC115, AC121, AC124, AC132(Javan), AC135(Javan), AC139, AC144, AC149, AC300, AC301, AC74(RV6), AC80, RV1, RV10, RV11, RV13, RV9) at field gene bank of FRDI, Horana, Sri Lanka. Rambutan accessions were characterized using 18 fruit traits and 11 leaf traits to identify distinguishing characteristics of accessions from recommended varieties ('Malwana Special,' 'Malwana Yellow,' 'Malwana Red') and to identify promising accessions in breeding program. Descriptive statistics were used to explain general diversity of germplasm and Principal Component Analysis (PCA) (Minitab 17, 2010) and cluster analysis was done to identify the clustering pattern of accessions in different heterotic groups. Evaluation of 33 accessions revealed significant genetic variability, especially in fruit hair and rachis length. The studied accessions were clustered in 5 clusters based on fruit traits. Cluster 2 consisted with accessions with the highest Brix value (sweetness) and flesh thickness. Accessions were grouped into 3 clusters based on leaf traits. Cluster 2 consisted of accessions with leaf structures better suited for efficient light capture. Importantly, two accessions, RV6 and RV11, showed distinct characteristics compared to the 'Malwana' reference variety. RV6 was unique with its obovate leaf shape, dark red rind, and acid-sweet taste. RV11 featured a reddish-orange rind, thicker/fleshier arils, high Brix value, and fewer leaflets. These unique and desirable traits position RV6 and RV11 as strong candidates for future breeding programs and potential commercialization.

Key words: Fruit trait, Leaf trait, Promising accessions, Brix value, Field gene bank.

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