

**SEX DETERMINATION OF NUTMEG (*Myristica fragrans* Houtt)
USING MORPHOLOGICAL CHARACTERISTICS AND
MOLECULAR MARKERS**

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Nutmeg (*Myristica fragrans* Houtt) is cultivated as a minor export agricultural crop in Sri Lanka. The sex determination is difficult at the juvenile stages of Nutmeg. Determination of nutmeg sexuality at an early stage is crucial to optimize land productivity. This study was carried out at the Central Research Station, Department of Export Agriculture, *Matale* (Mid Country Wet Zone-WM3b), Sri Lanka to determine the sex of Nutmeg using morphological characteristics and a molecular study using Inter Simple Sequence Repeats markers. Quantitative morphological data and leaf shape were analyzed by Least Significance Difference (LSD) method using SAS and assessed through Approximate Covariance Estimation for CLUSTERing (ACECLUS) procedure with arithmetic mean using SAS and summarized by a dendrogram. The mean separation results showed no significant difference in leaf width, petiole length, and leaf shape except in leaf length, corolla length, and corolla diameter. The cluster analysis showed that male trees are significantly different from female and hermaphrodite trees showing a closer relationship in the dendrogram. Further, the mature and tender leaf colour, corolla colour, and microscopic cross-sections did not significantly differ while the flower shape and arrangement were different among different sexes. However, results indicated that the morphological characteristics of nutmeg trees are poor indicators of sex determination at early stages before flowering. Failures in the molecular characterization process revealed no conclusive results. Therefore, the study has to be continued along with molecular characterization for seedling plants.

Keywords: Sexuality, Leaf morphology, Flower shape, Arrangement