

Determination of Physical and Engineering Properties of Ceylon Nutmeg (*Myristica fragrance*)

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Abstract

The physical and engineering properties of Nutmeg are important for developing harvesting and different process equipment, for its mass handling and storage. The study was undertaken to determine the physical and engineering properties of Ceylon Nutmeg. Samples were collected from the districts of Kegalle, Kandy, and Matale. Three locations from each district were chosen based on high availability. Length, breadth, and thickness of the Kernel were measured with Vernier caliper (Mitutoyo, Japan) and, size, sphericity, unit volume, projected area, and surface area were calculated using formulae. All the data was analyzed statistically. The highest average values of length, breadth, and thickness were found in the Kandy district (31.17±2.9mm, 24.51 ± 2.18mm, 22.70 ± 1.80mm) and the lowest values were found in Kegalle(28.01±1.65mm,22.34±1.25mm,20.10±1.43mm) (p<0.05). The diameter or equivalent size (25.86±2.03mm), sphericity (0.83±0.04mm), unit volume (9246.64±2076.34cc), projected area (529.64±80.48mm²), and surface area (2116.82±321.67mm²) found in samples taken from the Kandy district and were reported to have the highest value for engineering properties. Results indicate that there were significant differences in these properties between different districts for engineering properties. The technical data obtained in this study may be useful in the design of machines for the handling and processing of nutmeg seeds.

Keywords: *Ceylon Nutmeg, Engineering properties, Physical properties, Projected area, Sphericity, Unit volume*