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RESEARCH ARTICLE

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Effect of drying on physical properties of nutmeg

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ABSTRACT

Nutmeg (*Myristica fragrans* Houtt.) is an important tree spice, which produces two distinctly different spices namely nutmeg and mace. The area under nutmeg cultivation in India is 3763 ha with the production of 3457 MT. To design and development of different process equipments there is a need of engineering properties of nutmeg. The properties are also important for developing machineries for mass handling and storage of these nutmegs. By keeping in view the importance of these properties a study on measurement of physical properties of nutmeg was undertaken. The average values of dimensions of nutmeg were 26.33, 21.49 and 18.76 mm length, breadth and thickness, respectively. Where as the average value of sphericity, flatness ratio and elongation were 0.78, 1.35 and 1.05, respectively. The unit volume, surface area and projected area of the nutmeg were found to be 5237.56, 1419.65 and 359.80, respectively. The average value of the bulk density and the true density was 481.8 and 1006.1 Kg/m³, respectively.

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Key words : Nutmeg, Drying, Physical properties of nutmeg

INTRODUCTION

Nutmeg (*Myristica fragrans* Houtt.) is an important tree spice, which produces two distinctly different spices namely nutmeg and mace. Nutmeg is the kernel of seed and mace is the dried aril that surrounds the single seed within the fruit. It belongs to the family Myristicaceae. Nutmeg is a native of Moluccas (North-West Borneo) and parts of South-East Asia.

Nutmeg performs well under humid tropical climate and grows upto an elevation of 1000 m above mean sea level (MSL). The Nutmegs are available in the season from July to September. The availability of nutmeg fruits

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in rainy season is more than the other months of the year. The Nutmeg Fruit consist of three parts *viz.*; kernel, rind or pericarp and mace. The distribution of nutmeg plantation is at Courtallam of Tirunelveli, burlier on eastern slopes of Nilgiris at Tamilnadu, Ernakulam, koottayam, Thiruvanadapuram at kerala. It is also cultivated on small scale in Andhra Pradesh and Assam, Karnataka, Goa and Konkan region of Maharashtra state.

The area under nutmeg cultivation in India is 3763 ha with the production of 3457 MT. The nutmeg was introduced by Portuguese, in Konkan region of Maharashtra.

The chemical composition of nutmeg seed kernel is, moisture content (14.3%), protein (7.5%) ether extract (36.4%), carbohydrates (28.5%), fiber (11.6%), mineral matter (1.7%), calcium (0.12%), phosphorus (0.24%), iron (4.6 mg/100g), the principle constituents of nutmeg are fixed oil (fat), volatile oil and starch. The flavours and therapeutic action is due to the volatile oil, whose content varies from 6 to 16% (Gopalkrishnan, 1992). Oil of nutmeg is used for flavouring food products and liquor.

The traditional method of drying of nutmeg is drying on the Chula. This is a cumbersome, unhygienic and laborious method. This method leads to the contamination of products by smoke and dusts. The other method is an