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Study of density of local paddy varieties

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The objective of this research was to investigate the density of Sri Lankan paddy varieties. The true density, bulk density and porosity were the properties measured at the moisture content of 10% (dry basis). Information related to moisture content, volume, true density, bulk density and porosity are the basic parameters for studying the drying and storage of agricultural products. Specific gravity bottle together with water, coconut oil and Toluene (C_7H_8) were used to determine the true density. Due to the lack of affinity to water and low surface tension make Toluene a better liquid to investigate true density of paddy using liquid displacement method. Toluene is not absorbed by the paddy seeds and it fills even shallow groves in the seeds (due to low surface tension). Investigations revealed that the true density increases with the moisture content. The highest true density of 1221 kgm^{-3} was obtained for BG 300, while the lowest true density of 1205 kgm^{-3} was found for BG 357. Although the bulk density and porosity was found to depend on the dimensions and the shape of the seeds, the dominant factor which determines the bulk density was found to be the true density. Moreover, the investigations also revealed that the bulk density of paddy increases with the diameter of the container used to store paddy and there is no significant difference in their bulk densities with respect to the height of the seed columns. Bulk densities and true densities of BG 300, BG 358, BG 352 and BG 357 were in decreasing order and porosities of BG 300, BG 358, BG 352 and BG 357 were in increasing order.

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