

MOISTURE-DEPENDENT PHYSICAL PROPERTIES OF CHICKPEA SEEDS

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ABSTRACT

This study was carried out to determine the effect of moisture content on several handling and bulk properties of two varieties of chickpea seeds, Arman and Hashem. Five levels of moisture content ranging from 5 to 35 (% wet basis) were used. The length, width, thickness and unit mass of the Arman variety increased from 8.46 to 9.71 mm, 6.66 to 7.81 mm, 6.99 to 8.36 mm and 0.28 to 0.42 g, respectively, as the moisture content increased. The respected values for the Hashem variety varied from 8.46 to 9.3 mm, 6.65 to 7.42 mm, 6.93 to 7.85 mm and 0.22 to 0.38 g, respectively. In the Arman variety, the sphericity increased from 86.64 to 88.47%, the geometric mean diameter increased from 7.33 to 8.59 mm, bulk density decreased from 813 to 710 kg/m³, true density decreased from 1,336 to 1,236 kg/m³, porosity increased from 39.15 to 42.55% and the coefficient of static friction increased linearly against all the tested surfaces as the moisture content increased. In the Hashem variety, the sphericity increased from 86.35 to 87.65%, the geometric mean diameter increased from 7.3 to 8.15 mm, bulk density decreased from 816 to 713 kg/m³, true density varied from 1,338 to 1,236 kg/m³, porosity increased from 38.97 to 42.31% and the coefficient of static friction increased linearly against all the tested surfaces as the moisture content increased. Individual volume and angle of repose for filling and emptying increased linearly with increasing moisture content for both varieties.

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