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RESEARCH PAPER

Engineering properties of turmeric crop for development of a digger

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Abstract : Three variety of turmeric crop were selected for determination of physical and engineering properties for developing root crop digger. Fresh turmeric crop sample was selected for determination of linear dimensions *viz.*, length, width and thickness, geometric mean diameter, sphericity, surface area, bulk density and found as the average of 68.99, 35.76 and 24.72 mm, 37.55, 0.55, 4592.25 mm^2 and 476.50 kg/mm^2, respectively for Suparbha variety sample and 68.99, 35.76 and 24.72 mm, 38.59, 0.53, 4697.93 mm^2 and 479.42 kg/mm^2, respectively for Surma variety and 61.09, 32.12 and 23.25 mm, 34.30, 0.56, 3815.63 mm^2 and 468.32 kg/mm^2, respectively for Prathibha variety. The co-efficient of static friction for plywood, mild steel (MS), aluminium galvanized iron (GI) and stainless steel was found to be 0.34, 0.53, 0.43, 0.42 and 0.28, respectively in Supabha variety, 0.31, 0.52, 0.41, 0.0.39 and 0.26 in Surma variety and 0.37, 0.59, 0.51, 0.48 and 0.32 and Prathiba variety, respectively. The average peak load required for crushing and cutting of turmeric crop was found to be 438.49 N and 80.69N for Suparbha variety, 402.71N and 69.28N for Surma variety and 486.58N and 97.18N for Prathibha variety, respectively.

Key Words : Linear dimension, Geometric mean diameter, Sphericity, Surface area, Bulk density

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