



**ASSESSMENT OF PHYSICAL, FRICTIONAL AND AERODYNAMIC PROPERTIES OF CHAROLI (*Buchanania Lanzas Spreng*) NUT AS POTENTIALS FOR DEVELOPMENT OF PROCESSING MACHINES**

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**ABSTRACT**

Charoli (*Buchanania lanzan Spreng*) has a sustainable economic potential due to its nutritional and medicinal values. The moisture dependent physical, frictional, and aerodynamic properties play a key role while processing food and designing a processing machine. This study determined various physical, frictional, and aerodynamic properties of Charoli (*Buchanania lanzan Spreng*) nut at increasing moisture content, and the importance of processing, machine designing were discussed. Different properties of Charoli nut were examined at 9.06, 10.92, 12.51, 15.29, and 17.86 % (d.b) moisture content. Various axial dimensions as length, width, and thickness revealed a linear increment by nut moisture content. The value of true and bulk density reduced as of 657.23 to 578.32 kg m<sup>-3</sup> and 917.94 to 851.21 kg m<sup>-3</sup>, respectively, while sphericity and porosity increased from 86.42 to 88.64 %, and 28.40 to 32.06 %, respectively. The coefficient of static friction increases linearly and found highest for rubber. The value of static and dynamic angle of repose increased significantly as of 16.52° to 22.31° and 27.91° to 33.23° respectively. Also, the linear increment was noted in terminal velocity from 13.21 to 14.94 m/s by increasing moisture content. Data obtained by this study will be very much helpful for the development of novel equipment, which will be valuable for operations like separation, grading, cleaning, sorting, deshelling, packaging, and storage structures for Charoli (*Buchanania lanzan Spreng*) nut.