

Tekin Y, Işık E, Ünal H, Okursoy R (2006). Physical and Mechanical Properties of Turkish Göynük Bombay Beans (*Phaseolus vulgaris* L.), ANSI, Pakistan Journal of Biological Sciences, 9(12): 2229-2235.

Abstract

The physical properties of Turkish Göynük Bombay bean grains were determined as a function of moisture content in the range of 10.25-25.6% dry basis (d.b.). The average length, width and thickness were 22.60, 13.57 and 10.25 mm, at a moisture content of 10.25% d.b., respectively. In the above moisture range, the arithmetic and geometric mean diameters increased from 15.477 to 16.283 mm and from 14.617 to 14.825 mm, respectively, while the sphericity decreased from 0.734 to 0.599. In the moisture range from 10.25 to 25.6% d.b., Studies on rewetted Turkish Göynük Bombay bean grains showed that the thousand grain mass increased from 1700 to 2170 g, the projected area from 185.80 to 225.44 mm², the true density from 1301.60 to 1452.80 kg m⁻³, the porosity from 46.287 to 63.047% and the terminal velocity from 6.20 to 6.98 m sec⁻¹. The bulk density decreased from 664.95 to 536.19 kg m⁻³ with an increase in the moisture content range of 10.25-25.6% d.b. The static coefficient of friction of Turkish Gunk Bombay bean grains increased the linearly against surfaces of six structural materials, namely, rubber (0.41-0.60), aluminum (0.33-0.48), stainless steel (0.29-0.40), galvanized iron (0.32-0.43), glass (0.28-0.40) and mdf (medium density fiberboard) (0.24-0.36) as the moisture content increased from 10.25 to 25.6% d.b. The shelling resistance of Turkish Göynük Bombay beans grain decreased as the moisture content increased from 100.76 to 59.01 N.