

Işık E, İzli N (2007). Moisture Dependent Physical and Mechanical Properties of Dent Corn (*Zea mays* var. *indentata* Sturt.) Seeds (Ada-523), American Journal of Food Technology, 2(5): 342-353

Abstract

The physical and mechanical properties of dent corn seeds were determined as a function of moisture content in the range of 11.14-24.07% dry basis (d.b.). The average length, width and thickness were 10.890, 8.173 and 4.466 mm, at a moisture content of 11.14% d.b., respectively. In the above moisture range, the arithmetic and geometric mean diameters and sphericity increased from 7.843-8.448 mm, from 7.352-7.943 mm and from 0.675-0.689, respectively, in the moisture range from 11.14-24.07% d.b. Studies on rewetted dent corn seeds showed that the thousand seed mass increased from 430-542 g, the projected area from 54.46-68.90 mm², the true density from 995.09-1100.10 kg m⁻³, the porosity from 29.60-44.51% and the terminal velocity from 6.20-7.50 m sec⁻¹. The bulk density decreased from 700.50-610.50 kg m⁻³ with an increase in the moisture content range of 11.14-24.07% d.b. The static coefficient of friction of dent corn seeds increased the logarithmic against surfaces of six structural materials, namely, rubber (0.42-0.51), aluminum (0.41-0.49), stainless steel (0.31-0.36), galvanized iron (0.31-0.39), glass (0.27-0.33) and MDF (medium density fiberboard) (0.28-0.35) as the moisture content increased from 11.14-24.07% d.b. The shelling resistance of dent corn seeds decreased as the moisture content increased from 116.13-80.44 N.