

The Effects of Varieties and Moisture Content on Some Physical and Aerodynamic Properties of Sesame Seeds (*Sesamum indicum L*) as Related to Cleaning

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Abstract

Some physical and aerodynamic properties of two varieties of sesame seeds (Yandev -55 and E8) were determined at varied moisture content levels. These properties are factors in the design and selection of sesame seed-cleaning machines. For the Yandev-55 and E8 varieties, major diameters ranged from 2.8 mm to 3.3 mm and 3.4 mm to 3.8 mm, intermediate diameters ranged from 1.8 mm to 2.1 mm and 2.2 mm to 2.5 mm, and minor diameters ranged from 0.7 mm to 0.9 mm and 0.6 to 0.9 mm, respectively. Their geometric means ranged from 1.5 to 1.8 mm and 1.7 to 2.0 mm, their spheroids ranged from 0.5 to 0.6 and 0.5 to 0.6, and their frontal areas ranged from 1.8 to 2.6 and 2.2 to 3.2, respectively. The terminal velocities of Yandev-55 were 2.9, 3.6, 4.7 and 5.4, while the terminal velocities of E8 were 3.4, 4.12, 5.1 and 6.3 at a moisture content level of 8.0, 10.3, 15.9 and 21.2 % (w.b.), respectively. The drag coefficients were in the range of 0.4 to 2.7 while Reynolds number varied from 2775.0 to 7840.7. The terminal velocities of the associated materials within the seeds were 1.5, 2.3, 3.1, and 3.6 at a moisture content level of 8.0, 10.3, 15.9 and 21.2%, respectively. The studied properties significantly varied with the varieties of sesame seeds. Also, the effects of moisture content are non negligible.