



Physical properties of sunflower seeds and kernels related to harvesting and dehulling

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The performances of the sunflower de-hulling machines, no matter what the method, is mostly affected by physical and mechanical properties of the seeds and kernels.

The specific objective of this study was to determine some physical properties of sunflower seeds and kernels related to harvesting and dehulling in the moisture range of 5.9–20% (w.b).

At moisture content of 5.9% (w.b), the average length, width, thickness and unit mass of the seed were 20.1 mm, 7.51 mm, 3.95 mm and 0.144 g respectively.

Corresponding values for the kernel were 12.71 mm, 4.66 mm, 2.43 mm and 0.079 g.

The mean geometric mean diameter and sphericity of the seed were 8.37 mm and 0.42 respectively, while corresponding values for the kernel were 5.22 mm and 0.41. surface area and volume of the seeds and kernels have been also reported.

The true density increases linearly from 475 to 536 kg/m³ as the seed moisture content increases from 5.9% to 20%, while the bulk density increases nonsignificantly from 323 to 326 kg/m³ with increasing moisture content from 5.9% to 10% and then decreased to 300 kg/m³ at 20% moisture content.

Moisture content had an increasing effect on porosity, 1000-seed mass and static coefficient of friction.

While, it had a decreasing effect on angle of repose.