

Title Milling and particle size characterization of pin milled legumes
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Citation 2005 ASAE Annual International Meeting, Tampa Convention Center, Tampa, Florida, 17-20 July
2005, Paper Number 056077, 14 p.
Keywords Milling; Lentils; Yellow Peas; Geometric Mean Diameter; Particle Size Index; Size Distribution
Coefficient; Pin Mill

Abstract

Pin milling characteristics of decorticated red lentil and yellow pea, and brown lentil seeds were studied. The particle size indices 1) geometric mean diameter (GMD)/geometric standard deviation (GSD), 2) size distribution coefficient (Cm) and 3) particle size index (PSI) were compared to characterize the particle size of the legume flours. It was found that legume type, speed of rotation and interaction of legume type and speed significantly affected the particle size of the flours. GMD of decorticated red chief lentil flour decreased linearly with speed and that of decorticated yellow pea flour decreased with second order polynomial relationship. GMD of (brown) lentil flour was lowest at 2600 rpm. GSD of decorticated red chief lentil flour was lower at all speeds. Similarly, the GSD of decorticated yellow pea and brown lentil seed flours were lower at higher milling speed. The Cm for red chief lentil flour was not significantly affected by different milling speeds. However, the Cm of brown lentil flour was reduced slightly and that of yellow pea flour decreased linearly, with an increase in milling speed. PSI of red chief lentil flour increased linearly with milling speed, while PSI of brown lentil flour followed a second order polynomial relationship with speed. Contrary to PSI of red chief lentil flours, the PSI of yellow peas was non linear with milling speed. The PSI described the grind quality more effectively taking into consideration both grind size and its distribution.