

Title An Experimental Study of the Gravity Flow of Sorghum
Author S. A. Elaskar, L. A. Godoy, D. Mateo and G. Seeber
Citation Journal of Agricultural Engineering Research, Volume 79, Issue 1 , May 2001, Pages 65-71
Keywords sorghum; gravity flow

Abstract

Experiments have been carried out in order to identify some features of the flow of sorghum through an inclined channel. A channel was constructed using acrylic plates so that the flow could be recorded. Two conditions of the sliding surface of the channel were simulated: a smooth surface (an acrylic plate) and a rough surface (a rubber sheet attached to the base of the channel). Some of the grains were painted white so that they could be tracked during the video recording. Thus, the velocity at the different elevations were measured and velocity profiles obtained for different slopes of the channel. The results show that the conditions of the sliding surface of the channel (rough or smooth) is a main factor to affect the flow. For a rough surface and small angles, the results show an S-shaped curve of velocity profile, with a small layer at the bottom which does not flow. As the slope of the channel increases, the depth of the section during steady-state flow decreases and the mean velocity increases. The flow discharge reaches a maximum at a slope larger than the angle of friction of sorghum.