Thin layer drying characteristics of grain sorghum

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Abstract

Drying characteristics of both naturally moist and.rew.etted grain sorghum were studied. Three varieties of Kenyan grain sorghum were used. The drying air temperature and its flow rate were varied. Relative humidity of the air and the initial moisture content of the sorghum grains were determined. Moisture content of the grains was determined at various times during the thin-layer drying process. Thin layer drying equations based on Pabis and Henderson equation and Page model were developed. Drying air temperature was the major factor affecting drying rates of sorghum grains. The difference in sorghum varieties also influenced the drying rates. The relationship between parameter k in Pabis and Henderson equation (MR=exp (-kt)) and drying air temperature iuas found to be of Arrhenius type. Parameter K in Page equation (MR=exp (-KfI)), for naturally moist grains, was expressed as an exponential function of temperature terms. But for rewetted grains, it was an exponentiaI function of temperature terms, air flow rate, relative humidity and initial moisture content. Parameter N in Page equation was expressed as and exponential function of temperature temis. Page equation fitted drying data better than Pabis and Henderson equation.