ABSTRACT

Although, pigeonpea processing is an old practice, the milling industry and the farmers in particular, are suffering to a great extent from the loss in terms of brokens and powder. This recoverable loss can be reduced by using an appropriate technology for which the objectives were framed alongwith the plans for experimentation, using response surface method. The major thrust was given to determine the frictional, strength and dehulling properties of pigeonpea grain, scarce in the literature. The levels of chemicals, scarification and heating as per treatment were optimized in order to get the maximum dehulling efficiency within minimum dehulling time using tangential abrasive dehulling device. With the optimized pretreatment, the machine parameters such as rotational speed and emery grade were optimized. The behaviour of grain with respect to flat, cylindrical and conical abrasive rotors was studied. On this basis, a small capacity prototype was designed, fabricated and tested for different feed rates. Comparison of the results indicated that the losses could be reduced to about fifty per cent resulting into higher product recovery.

Key words

Coefficient of friction
Heat treatment
Emery grade
Grain behaviour
Chemical pretreatment
Dehulling index
Abrasive rotor
Dehulling time