

Mechanical property and quality aspects of rice dried in industrial dryers

ABSTRACT

The influence of drying methods on selected mechanical properties and qualities of MR219 rice variety has been investigated. The results showed significant effects of drying methods on bending strength and head rice yields while the average bending strength of paddy were 28.6–31.8 MPa. The effect of drying methods on apparent modulus of elasticity of rice was not significant (204.5–222.4 MPa). The fracture energy of rice varied significantly under control drying but not with industrial drying methods. Higher temperature in drying by IBD contributed in making the grains tougher, where the effect of FBD temperature was positive toward the development of fracture energy inside rice kernel. IBD at temperature above 40 °C resulted in lower bending strength in rice kernels which affected head rice yield. Two stage paddy drying practices with FBD using temperature of 115–125 °C as first stage is still acceptable, and inclined bed dryer either as single stage or as second stage after FBD should be operated at temperature of <40 °C to maintain head rice yield. The whiteness and milling recovery of rice achieved from different drying methods were comparable.

Keyword: Industrial paddy drying; Inclined bed drying (IBD); Fluidized bed drying (FBD); Mechanical properties; Rice quality