

Effect of vacuum pressure on moisture absorption characteristics of paddy

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The prolonged soaking of paddy in water resulting various biochemical changes in grains and contamination of water due to fermentation. These adverse effects can be removed if a shorter soaking process is practiced. This study was aimed to investigate the effect of vacuum pressure level and duration of pressure applied on moisture absorption characteristics of paddy.

A freshly harvested cleaned paddy stock of variety BG 358 was selected for the study. Samples were subjected to different vacuum pressure levels of 4 cm-Hg, 10 cm-Hg and 16 cm-Hg for durations of 5 min, 10 min and 15 min. At the end of vacuum pressure application, soaking water was introduced. Moisture contents of samples drawn from soaked paddy were determined after soaking periods of 2 h, 3 h, 4 h and 6 h. Soaking was done under the atmospheric pressure for the control.

A comparison among the treatments indicated that both vacuum pressures applied and soaking period did produce more significant effect on moisture absorption ($p=0.0001$) than duration of vacuum pressure application ($p=0.0081$). A significant effect on moisture absorption was given only by the interaction between the vacuum pressure applied and duration of vacuum pressure application ($p=0.0001$). No other interactions between treatments had significant effects.

The vacuum pressure of 16 cm-Hg could not result in 30% moisture content in grains for a soaking period up to 6 hours. The required moisture content of 30% can be achieved from a vacuum pressure of 4 cm-Hg with 4-hour soaking period or 10 cm-Hg with 6-hour soaking period.

Based on the experimental results obtained on the rice variety BG 358, the vacuum pressure of 10 cm-Hg applied for a duration of 5 minutes followed by a 6-hour soaking will produce moisture absorption adequate for parboiling of the paddy variety BG 358. This seems to be a better option than 4 cm-Hg due to practical difficulties in obtaining high vacuum pressures.