

Effect of parboiling methods on milling yield and soaking time of two Sri Lankan rice varieties

P. Darsana^{1*}, M. Prabhakaran¹ and S. Balakumar²

¹Department of Agricultural Engineering, Faculty of Agriculture, University of Jaffna, Sri Lanka

²Department of Biochemistry, Faculty of Medicine, University of Jaffna, Sri Lanka

* dddarsa@gmail.com

Parboiling is one of the popular rice processing methods in Sri Lanka where rice is the staple diet of Sri Lankan consuming around 90% of parboiled rice. Two Sri Lankan rice varieties with short white pericarp (Bg360) and medium red pericarp (Bg 406) were used for this study. Paddy & brown rice of used varieties with the initial moisture content of $13.6 \pm 0.1\%$ (wb) were parboiled in four different methods; traditional parboiling (TP), pressure parboiling (PP), central food technological research institute parboiling (CFTRIP) and dehusked rice parboiling (DRP). The moisture content was measured in fixed time intervals during soaking, at the end of steaming and drying. Samples were dried before milling to a final moisture content of $13 \pm 1\%$ (wb). In milling yield analysis, percentage of brown rice, hull, total milled rice, head rice and degree of milling were estimated to unit of rough rice and compared among various method of parboiled rice and non-parboiled rice (NPR). A factor factorial experiment was carried out to determine the soaking time and milling yield considering the grain type and parboiling method. Short grain rice variety required 25% to 50% less soaking time compared to medium grain. Optimum soaking duration for different parboiling methods were varied from 25 minutes to 24 hours for Bg360 and 45 minutes to 48 hours for Bg 406. The main effect of both methods of parboiling and rice variety and interaction effect were significant ($p < 0.05$) for both headrice yield (HRY) and optimum soaking time. HRY was lowest for NPR compared to parboiled rice in both varieties and HRY was greater in NPR of Bg360 variety ($50.86 \pm 1.05\%$) than NPR of Bg406 variety ($38.54 \pm 1.07\%$). CFTRI Price of both varieties had highest HRY ($71.35 \pm 1.26\%$) among rice parboiled by different methods. CFTRIP and DRP are suitable parboiling methods to get high percentage of head rice with short soaking duration.

Keywords: Milling yield, Parboiling, Rice, Soaking time.