Development of a paddy parboiling simulation computer program in Sinhala language.

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The breakage of rice kernels during milling operation is the major loss occurring in rice post harvest processing. Broken kernels are essentially a loss, because they have much lower market value than head rice. Parboiling of paddy is an ancient traditional process of Asian countries. Generally, parboiling process consists of three stages: soaking the cleaned raw rough rice to saturation moisture content, gelatinization of rice starch by adding heat to the moist kernels through steaming, and drying the product to moisture content suitable for milling or storage. It is reducing the level of grain breakage and increase in head rice yield during milling. It also improve nutritives and some sensory qualities of rice' However, parboiling of rough rice associated some drawbacks that reduce rice kernel whiteness and increase in kernel hardness. Also, some consumers, especially those who are used to eating un-parboiled rice, dislike the cooking and eating qualities of parboiled rice. this research study was carried out to develop a paddy parboiling simulation computer programme in order to optimize paddy parboiling process by minimizing its drawbacks. This computer programme was developed based on the paddy parboiling mathematical model developed by Gunathilake (2009). Computer programme can also be used to predict the rice qualities such as kernel whiteness, broken grain%, head rice yield % and kernel hardness by the function of parboiling treatments i.e. soaking water temperature & duration and steaming pressure & duration. However, the predicted values need to be verified with actual values to check its accuracy for prediction. Hence, the predicted values of rice qualities were verified with actual values obtained by parboiling of two Sri Lanka paddy varieties namely BG 358 (Samba), and BG 352 (Nadu). Goodness of fit of predicted values with actual value was reported 7.51. It was less than 10 hence, it was revealed, that the computer programme (mathematical model) was capable to predict values Similar to actual values. Therefore paddy parboiling simulation computer programme was suitable and capable for

obtaining the rice quality parameters such as rice kernel whiteness, broken grain percentage, head rice yield and rice kernel hardness modify with parboiling treatments i.e. soaking water temperature &duration and steaming pressure &duration and also This programme can be successfully adopted to overcome drawbacks of parboiling process such as loss of color and texture by optimizing the parboiling treatments according to the consumer requirement that the parboiling treatments required for producing quality rice can be directly determined by this computer programme. It is also useful to minimize parboiling cost while increasing the rice quality in rice processing. This computer programme also includes all information of paddy parboiling. One of the main advantages of this computer programme is functioned in sinhala language therefore it is user-friendly for most of Sri Lanka users.