EFFECT OF STORAGE DURATION ON PHYSICAL PROPERTIES, MILLING, NUTRITIONAL AND COOKING QUALITIES OF SELECTED IMPROVED RICE VARIETIES

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This study evaluated the effects of the duration of storage on the physicochemical properties of improved rice varieties; BG-300, BG-358, BW-367, and BG-359 at ambient conditions. Breeder's paddy samples of selected varieties were stored at ambient conditions (temperature 28±2°C, relative humidity 72±2%). Physical properties and milling qualities were measured at two-weeks intervals and cooking and nutritional qualities were measured at one-month interval during a five-month storage period. Results showed that bulk density (266.64-278.83 g m^{-3}) and thousand-grain mass (15.10-24.65 g) decreased ($p<0.05$) during storage to 256.12-264.75 g m^{-3} and 14.05-22.25 g, respectively. The reduction was highest in BW-367 and BG-300. Hardness was significantly increased ($p<0.05$) from 2.26-3.50 to 4.10-4.90 kg with the highest increase in BW-367. There was no significant difference in the length, breadth, and thickness during the storage period. Total milling yield and head rice yield were significantly decreased ($p<0.05$) during the storage by 4.83% and 10.37%, respectively. The highest decrease was reported in BW-367 and BG-358. Results indicated that cooking qualities such as water uptake ratio (2.86-3.22), volume expansion ratio (1.00-1.25), grain elongation (1.60-3.15), and amylose content (15.91-24.73%) has significantly increased ($p<0.05$) during storage to 3.96-4.19, 1.25-1.44, 2.16-4.08, and 43.55-46.28%, respectively. Alterations in cooking qualities were highest in BW-367. Stickiness has significantly decreased ($p<0.05$) with the highest decrease in BG-359. There was no significant difference in alkaline spreading value during storage. In average, nutritional qualities of all varieties; crude fat (1.35%) and total carbohydrate (90.68%) significantly decreased ($p<0.05$) to 1.22% and 90.63%, respectively during storage while crude fibre (0.1%) significantly increased ($p<0.05$) to 0.19%. However, there was no significant difference in crude protein (6.5%) and ash content (1.06%). In conclusion, during the five-month storage, the weight loss increased with improved cooking qualities and decreased milling qualities of the selected paddy varieties.

K***eywords*****:** Amylose content, Bulk density, Grain elongation, Stickiness, Water uptake ratio