Physical Properties of Widely Cultivating New Improved and Traditional Rice (*Oryza sativa* L.) Varieties of Sri Lanka

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Physical properties of rice are important for rice varietal identification and one of the important aspects of the rice grain quality. This study evaluated the physical properties (PP) of 24 widely cultivated new improved and traditional rice varieties (RVs) of Sri Lanka. The selected RVs included 13 new improved (Bg 300, Bg 352, Bg 358, Bg 94-1, At 362, Bg 359, At 353, Bg 357, Bg 360, Bg 379-2, Bg 366, Bg 403, and At 307) and 11 traditional RVs (Suwandal, Kuruluthuda, Pachchaperumal, Kahawanu, Kalu Heeneti, Sudu Heeneti, Goda Heeneti, Madathawalu, Dik Wee, Pokkali, and Masuran). As PP, grain length (n=6), width (n=6), size (n=5), shape (n=5), and colour (n=5) were evaluated using internationally accepted standard protocols. The grain length, width and length to width ratio of selected RVs ranged from 3.97±0.04-6.25±0.04 mm, 2.08±0.03-2.87±0.03 mm, and 1.56±0.00-2.82±0.00, respectively. The size of the selected RVs was mostly short (62.5%), while rest were medium (37.5%). The short grain RVs were Bg 352, Bg 358, Bg 359, Bg 360, Bg 379-2, Bg 403, At 307, Suwandal, Kuruluthuda, Pachchaperumal, Kahawanu, Kalu Heeneti, Goda Heeneti, Madathawalu, and Masuran. The shape of the selected RVs was mostly bold (83.3%), while rest were round (16.7%). The round shape RVs were Bg 358, Suwandal, Kuruluthuda, and Kahawanu. The L*, a*, and b* values of whole grain (pericarp) and paddy (husk) ranged from 34.15±0.64-69.63±1.36, 34.15±0.41-69.63±0.35 and 18.25±0.29-23.57±0.24, and 37.59±0.94-59.87±0.80, 4.41±0.15-13.66±0.54 and 14.95±0.76-32.66±0.39, respectively. The pericarp colour was either white (54.2%) or red (45.8%). The white pericarp RVs were Bg 300, Bg 352, Bg 358, Bg 94-1, Bg 359, Bg 357, Bg 360, Bg 379-2, Bg 366, Bg 403, At 307, Suwandal, and Kahawanu. The husk colour ranged from light brown to black. Only Kalu Heeneti had black husk colour, while Masuran, Pokkali, and Suwandal had dark brown husk colour. It can be concluded that the selected RVs of Sri Lanka were mostly short and bold.

Keywords: Physical properties, Pachchaperumal, Traditional rice varieties