

## **Evaluation of physical, Milling, Cooking, Eating & Nutritive Qualities of some recently recommended & traditional rice varieties in Sri Lanka**

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The physical properties, milling, nutritive, cooking and eating qualities of three traditional rice varieties (pokkali, pachchaperumal, Murungakayan) in Sri Lanka were evaluated in the laboratory of Institute of Post Harvest Technology, Jayanthi mawatha, Anuradhapura with the aim of appraising rice breeders, millers and consumers on relative merits of different traditional rice varieties to improve the quality of rice, optimize rice processing operations and to provide information to consumers. Significant differences of lengths were noted among tested varieties. Murungakayan had the highest length of 8.93mm, whereas pokkali had the smallest kernel with a length of 7.40mm. Other physical properties such as true and bulk densities, porosity, and hardness varied significantly among tested varieties.

Significant varietal influence on total milling yield and head rice yield was observed. The total milling yield showed a perfectly negatively correlated to paddy husk content ( $r = - 0.9$ ). The Head Rice Yield showed a negative correlation ( $r = - 0.6$ ) with the length of the grains examined while Total Milling Yield showed a strong negative correlation ( $r = + 0.57$ ). A mild positive correlation ( $r = 0.14$ ) was observed between grain hardness and the head rice yield (similarly a mild negative correlation ( $r = 0.24$ ) exists between grain hardness and the broken %).

Pachchaperumal contained relatively high protein percentage (6.03%) than that of the Pokkali and Murungakayan and the least protein percentage was recorded in Murungakayan rice variety. The protein content shows a strong negative correlation ( $r = - 0.8$ ) to the fat content. The result obtained for fat content, three rice varieties ranged from 2.98 - 3.56% in brown rice and from 1.24 - 2.27% in polished rice. The fat contents were significantly varied ( $\alpha = 0.05$ ) among tested varieties (in both brown and polished rice)

Cooking time varied from 15.33 to 19.06 minutes, which the highest from Murungakayan and lowest for Pokkali. Cooking time was observed to have a strong positive correlation with

grain hardness ( $r = 0.93$ ). Pokkali rice fell in to the category of intermediate gelatinization temperature rice (70-74 °C) while other two varieties (Murungakayan and Pachchaperumal) fell in to the category of high gelatinization temperature rice (75-79 °C) Pokkali showed the highest water uptake of 3.92g/g while Pachchaperumal cultivar showed the least value of 2.71g/g. the water uptake of three varieties varied significantly ( $\alpha = 0.05$ ). There was a significant difference in elongation ratio ( $\alpha = 0.05$ ) among tested varieties. The highest elongation ratio of 1.47 was recorded for Pokkali and lowest ratio of 1.34 was recorded for Murungakayan. In the present study, volume expansion ranged from 0.024 to 0.028 ml/g. Murungakayan showed the highest volume expansion while Pachchaperumal showed the least. All the traditional varieties examined fell in to the category of high amylase content (>25%). The Amylose content had a positive correlation with water uptake ( $r = 0.57$ ). According to the results, Murungakayan had obtained the highest max viscosity (3100B.U) while Pachchaperumal had obtained the least (1730B.U).

The overall acceptability clearly showed that more consumer preference was for Pokkali variety and similar preferences were observed for Pachchaperumal and Murungakayan.