

EVALUATION AND COMPARISON OF PHYSICAL PROPERTIES, MILLING, SENSORY AND NUTRITIVE QUALITIES OF FEW IMPORTANT RICE VARIETIES

N. JAYARATNE,¹ D.G.N.G. WIJESINGHE¹ AND W.M.C.B. WASALA²

¹*Department of Food Science & Technology, Faculty of Agriculture,
University of Peradeniya,* ²*Institute of Postharvest Technology, Jayanthi
Mawatha, Anuradhapura*

The study was undertaken to evaluate the physical, milling, sensory and nutritive qualities of some improved (including long and short type) and some traditional rice varieties.

The physical properties such as grain hardness, length, thickness, moisture content, true and bulk densities and porosity were used to get the grain shape and the storage related inferences. Total milling yield (TMY) and head rice yield (HRY), husk percentage and the percentage broken were assumed as milling qualities. For testing sensory qualities, a preference test using a trained panel was employed to assess odour, texture, taste, cohesiveness and overall acceptability of the cooked rice. The nutritive qualities were assessed in both brown rice and the polished rice in order to get an idea of the loss of nutrients occurring during the milling process and to compare the magnitude of the loss among varieties selected. The crude protein, crude fat, total ash, starch and crude fiber contents were assessed as major nutritive qualities. In addition, Ca, Fe and B-group vitamins of the rice varieties and their milling losses were evaluated.

Results indicated that traditional varieties had higher contents of all major nutrients (except crude protein), than improved varieties. TMY and HRY varied from 71% - 73% and 56.5% - 62.5% respectively among the varieties examined. The broken% and husk content varied from 8.8% - 14.7% and 19.3% - 21.8% respectively among the varieties. On the average 12% loss of protein occurred during milling in traditional varieties compared to the 26% loss in improved varieties. The acceptability and the grain hardness were high for improved varieties. In nutritive losses, both fat and thiamine were found to reduce by 75% and niacin by nearly 66% due to milling. Furthermore crude fiber, total ash, Ca, Fe and niacin contents were found to decline by approximately 50% due to milling. The important correlations found among grain quality parameters were; the grain length positively correlating with porosity and broken content, the hardness negatively correlating with broken content and the crude fat content negatively correlating with crude protein content.

The inferences obtained can be used in improving storage quality, nutrient retention, designing transportation for different grain types and developing specifications for individual varieties.

