

Physicochemical Properties of Selected Wild *Oryza* (Wild Rice) Species in Sri Lanka

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Crop wild relatives are taxonomically related to domesticated crop cultivars that survive in the wild and serve as possible contributors to crop improvement. The genus *Oryza* has 22 wild *Oryza* species with a broad geographic range; out of which, five wild *Oryza* species have been reported in Sri Lanka. Some wild *Oryza* species have been studied for growth and yield attributes in rice crop improvement to ensure food security globally. However, limited studies focused on the physicochemical properties of the wild *Oryza* species, which has a direct relevance to the grain quality. Thus, the objective of the present study was to evaluate the physicochemical properties of selected wild *Oryza* species in Sri Lanka. *Oryza nivara*, *Oryza rufipogon*, *Oryza eichingeri* and *Oryza granulata* were used in the study. Physicochemical properties such as grain length, width, length to width ratio, size, shape, colour and gelatinization temperature were studied using internationally accepted standard protocols. The results showed that physicochemical properties varied significantly ($p<0.05$) among the studied species. The grain length, width and length to width ratio of selected species ranged from 3.8 ± 0.1 to 6.4 ± 0.0 mm, 1.6 ± 0.0 to 1.9 ± 0.0 mm and 2.2 ± 0.0 to 3.6 ± 0.0 , respectively. The size of the grains ranged from short (*O. eichingeri* and *O. granulata*) to medium (*O. nivara* and *O. rufipogon*), while shape ranged from bold (*O. eichingeri* and *O. granulata*) to slender (*O. nivara* and *O. rufipogon*). The grain colour of the species varied from red to reddish-brown having L^* , a^* and b^* values in the ranges of 38.7 ± 1.3 to 49.1 ± 0.8 , 8.0 ± 0.3 to 13.0 ± 0.4 and 19.9 ± 0.5 to 24.3 ± 0.5 , respectively. All the selected species demonstrated high gelatinization temperature ($74.5 - 80^\circ\text{C}$). In conclusion, the studied wild *Oryza* species had varying desirable physicochemical properties. Thus, the selected wild *Oryza* species could be useful in rice crop improvement to ensure global food security.

Keywords: Crop improvement, Food security, Physicochemical properties, Wild Rice