

Study on Morphological Traits of Wild Rice Species Collected from Different Agro-ecological Regions in Sri Lanka

T.M.S.A. Tennakoon¹, P.S. Sandamal^{1*}, D. Ratnasekera¹ and D.A.B.N. Amarasekera²

¹Department of Agricultural Biology, Faculty of Agriculture, University of Ruhuna, Sri Lanka

²Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Sri Lanka

Abstract

Wild relatives of genus *Oryza* play an important role in rice breeding program worldwide. To achieve sustainable crop improvement, wild relatives of rice are important as a genetic resource. The objective of this study was to explore the promising traits in species identification to distinguish wild rice species in Sri Lanka in terms of morphology. In this study, the rootstocks of five wild rice species (*O. nivara*, *O. rufipogon*, *O. eichingeri*, *O. rhizomatis* and *O. granulata*) available in Sri Lanka were collected from their natural populations representing different ecological conditions. To search for variation patterns and distinguish features which can be utilized for identification among species, plants were established in a common garden. Morphological diversity was measured by 11 quantitative traits following rice descriptor of IRRI. A considerable variation of morphological characteristics was found among the five wild rice species for the most of the traits measured. The results of the analysis of variance indicated that the total evaluated quantitative traits showed more variations among the species ($P < 0.05$). The significantly highest plant height (184.75 cm) with seedling height (100.00 cm), culm length (152.25 cm) and culm diameter (7.3 mm) were showed in *O. rufipogon*. In contrast, *O. nivara* had significantly the highest grain width (2.625 mm) and 100-grain weight (1.955 g) compared to the other species. However, *O. eichingeri* and *O. rhizomatis* had a lower value of 100-grain weight than the other species. Whereas both *O. rufipogon* and *O. nivara* exhibited, significantly the highest flag leaf length and grain length than the other species. Moreover, flag leaf width of the *O. nivara* and *O. rufipogon* were significantly lower than the other species. In contrast, *O. granulata* had significantly larger flag leaf width (2.05 cm) but significantly the lowest plant height, culm diameter, panicle length, and flag leaf length compared to the other species. *O. eichingeri* exhibited significantly the shortest culm length (42.0 cm). Therefore, the morphological diversity information of wild rice species could be useful in rice breeding program and species identification in field level.

Keywords: Diversity, Field identification, Quantitative traits, Wild rice

*Corresponding Author: pssandamal@gmail.com