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Analysis of selected rice varieties in Sri Lanka by randomly amplified polymorphic DNA (RAPD)

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Rice is a major food crop in Sri Lanka. Rice as the staple food constitutes the single most important crop occupying nearly 29% of the total agricultural land in Sri Lanka, about 1.8 million farm families engaged in rice cultivation. Molecular characterization of germplasm diversity and genetic relationships of local developed, mutant, and traditional rice varieties were analyzed in this study. Objective of this study is to detect the relationship among the selected rice varieties for future breeding purposes. Rice seeds of twenty five traditional and improved rice varieties were taken from regional rice research and development center in Bombuwala and rice research station in Ambalantota. DNA was extracted using modified CTAB method. Extracted DNA was amplified using RAPD markers, OPI6, OPJ4, OPO19 and OPE14. The presence of a particular band was denoted as 1 and absence was denoted as 0.

Data were analyzed using cluster analysis of SPSS package and clusters were represented in the form of a dendrogram. According to SPSS cluster analysis there are two major clusters except mu-1-2 mutant variety. Economic importance of this mutation must be studied in future. Information of the dendrogram can be utilized for selecting parents in the development of intercluster crossing program.

Keywords: RAPD (randomly amplified polymorphic DNA), DNA (deoxyribose nucleic acid), CTAB (cetyltrimethyl ammonium bromide)