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068 Assessment of genetic diversity of some finger millet accessions using morphological and SSR markers

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Finger millet is the main food grain for many people, especially in dry areas of Sri Lanka and India. Protein, fat and mineral content of finger millet is higher than that of rice, corn and sorghum. Conservation and utilization of available finger millet genetic resources are very important. Germplasm characterization is an important link between conservation and utilization of plant genetic resources. The study was conducted to characterize randomly selected 20 finger millet germplasm accessions obtained from Plant Genetic Resource Center, Sri Lanka using morphological and SSR markers. Morphological study was carried out using Randomized Complete Block Design (RCBD) and 31 morphological markers were recorded. ANOVA results for quantitative morphological characters revealed that all quantitative morphological characters measured differed significantly ($p < 0.05$) among the accessions used for the study, indicating higher levels of morphological diversity. According to the ANOVA results, days to flowering and days to maturity show high level of predictive capability while flag leaf length and number of productive tillers show comparatively low level of predictive capability. Principal component analysis indicated that morphological characters such as days to flowering, finger number, weight of sun dried ear, weight of grains per ear, 1000 grain weight and yield per plant were the important traits contributing for the overall variability implying that breeding effort on those traits can meet the targeted objective. The clustering pattern of studied finger millet accessions based on morphological markers comprised of two major clusters. Both clusters comprised of Indian accessions those conserved at PGRC, Gannoruwa and as well as Sri Lankan accessions. The genetic relatedness of studied accessions was assessed using 4 SSR markers. Out of these markers, three markers were found to be polymorphic. The polymorphic Information Content (PIC) of developed markers ranged from 0.00 to 0.37 with the mean PIC value of 0.226. A total of 8 alleles were scored, with an average of 2 alleles per locus. This study revealed gamut information about genetic relationships of studied germplasm accessions and which could be used in crop improvement programmes.

Keywords: finger millet, morphological markers, microsatellite, Germplasm, characterization