

COMPILATION OF AN INFORMATIVE SSR MARKER SET FOR MOLECULAR CHARACTERIZATION OF FINGER MILLET (*ELEUSINE CORACANA* L.) GERMPLASM ACCESSIONS OF SRI LANKA

P W Wakista¹, P N Dasanayaka², R J Illeperuma¹, S A C N Perera³, S. P Bandara⁴

¹ Genetech, No 54, Kitulwatta Road, Colombo 08, Sri Lanka

² Department of Botany, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

³ Genetics and Plant Breeding Division, Coconut Research Institute, Lunuwila, Sri Lanka

⁴ Plant Genetic Resource Center, Gannoruwa, Sri Lanka

Finger millet (*Eleusine coracana* L.) commonly known as “Kurakkan” in Sri Lanka and has been cultivated since ancient times as the second staple food after rice. Because of its high nutritional value, excellent storage qualities and its ability to adapt to a wide range of adverse agro-ecological conditions, it is worthy to have continuous efforts on improvement of the productivity and conservation of crop genetic diversity. The germplasm identification and characterization is an important link between the conservation and utilization of plant genetic resources. Molecular markers have provided a powerful tool for breeders to identify the new sources of variation. 82 SSR (Simple Sequence Repeats) markers have been published by Dida et al (2007) for finger millet and only 31 of them are mapped. This study was conducted to compile an informative set of SSR markers out of mapped 31 markers using 48 different finger millet germplasm accessions with different geographical origins. Polymorphism, efficiency of amplifying the target loci and ease of scoring on polyacrylamide gels were evaluated for the markers. Nine markers out of 31 were monomorphic (UGEP06, UGEP08, UGEP26, UGEP52, UGEP56, UGEP76, UGEP104, UGEP107 and UGEP108). UGEP 01 could not amplify the target loci for most of the samples and scoring of additional three markers (UGEP53, UGEP60 and UGEP65) was difficult. Two markers (UGEP03 and UGEP21) amplified duplicate loci were scored as two separate markers each. This resulted in a set of 20 informative markers (UGEP03.1, UGEP03.2, UGEP05, UGEP10, UGEP11, UGEP12, UGEP15, UGEP18, UGEP21.1, UGEP21.2, UGEP24, UGEP31, UGEP68, UGEP77, UGEP78, UGEP81, UGEP90, UGEP102, UGEP106 and UGEP110). Across the 48 accessions, the total number of alleles amplified by the selected 20 markers was 69, ranging from 2 to 7 alleles per locus. The major allele frequency ranged from 0.66 to 0.98. The Polymorphic Information Contents (PIC) ranged from 0.04 to 0.60 and heterozygosity ranged from 0.016 to 0.044. The selected set of markers was successfully used to assess the genetic diversity of 48 finger millet germplasm accessions of Sri Lanka. The selected set of markers was successfully used to assess the genetic diversity of 113 finger millet germplasm accessions of Sri Lanka and will be used to assess the remaining accessions available at PGRC, Gannoruwa as future work.

Keywords: Finger millet, SSR markers, genetic diversity, germplasm, *Eleusine coracana*