ISSN: 1391-8796
Proceedings of 7th Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
January 22, 2020

Identification of sugarcane inter-specific hybrid progenies through conventional and molecular methods

Koshila H.V.A.S.[1], Hemamali K.K.G.U.[1]*, Wijesuriya A.[2] and Perera A.M.M.S.[2]

[1]*Department of Botany, University of Ruhuna, Matara, Sri Lanka*
[2]*Department of crop Improvement, Sugarcane Research Institute, Udawalawe, Sri Lanka*

True hybrid identification through molecular analysis has become a more reliable approach in plant breeding. Four inter-specific hybrid families (Badila x Mandalay, Korpi x IS 76 219, SLC 92 72 x SLC 92 51, SLC 12 96 x Irrity 03) with 12 progenies from each of *Saccharum officinarum* and *Saccharum spontaneum* established in the field were evaluated to identify true hybrids for the purpose of sugarcane variety improvement. Morphological characteristics namely stalk length, stalk diameter, number of millable stalks per clump, field brix, rind hardness, number of internodes per stalk, stalk weight per clump, leaf length and width were used to identify true hybrids. A total of 21 progenies were identified as hybrids under conventional breeding. Molecular analysis was performed to confirm the results of conventional breeding. Genomic DNA was extracted from the progenies and the respective parents of each inter-specific cross. Eight microsatellite loci were amplified from the DNA extracts of each sample using primers which were designed and developed by the International Consortium of Sugarcane Biotechnology (ICSB). Two primers namely SMC1814LA and mSSCIR74 were amplified the DNA extracts of both parents and the progenies. The PCR products were resolved through Poly-Acrylamide Gel Electrophoresis (PAGE). A total of twelve inter-specific hybrid progenies namely 1-1, 1-3, 1-4, 1-6, 2-2, 2-3, 2-4, 2-5, 2-6, 2-9, 3-2 and 3-10 were identified as true hybrids out of 48 hybrid progenies by using both conventional and molecular biological analysis for use in the future back crosses in sugarcane crop improvement.

Keywords: hybridization, hybrid identification, molecular analysis and sugarcane

*Corresponding author: upekshahe@yahoo.com