

Determination of Genetic Purity of the Yellow Dwarf Coconut Seedlings Rejected from Nurseries Using SSR Markers

W.L.H. Wijewickrama^{1*}, M.K. Meegahakumbura², D.P.S.T.G. Attanayaka¹ and L.M.H.R. Alwis¹

¹*Department of Export Agriculture, Uva Wellassa University, Badulla, Sri Lanka*

²*Genetic & Plant Breeding Division, Coconut Research Institute, Lunuwila, Sri Lanka*

Hybrids coconut cultivars usually produce 40% higher yields over commonly grown Sri Lankan Talls. At present about 10,000 yellow dwarf coconut seedlings are rejected yearly from nurseries, as there is not true to type hybrids based on yellow color petiole as a visible marker for hybrid seedlings. The ambiguity of this phenotypic marker for selection often results in considerable wastage of true hybrid seedlings from the nurseries widening the gap between the demand and the supply of hybrid planting material. In the current study, microsatellite (SSR) marker-based approach was used to test the true hybridity of seedlings raised in the nursery. One hundred rejected seedlings were screened with 2 SSR primers, namely CAC 68 and CAC 23 which exhibited potential to distinguish parental varieties, Sri Lanka Tall (SLT), Sri Lanka Yellow Dwarf (SLYD), and resulting hybrids. The results of the study revealed that on average 36% of the rejected plants were true hybrids which are suitable for planting. The percentages of parental types, the true contaminants were 62% comprising with 6% Tall types and 56% SLYD types. As a result the current visible marker used to select off type seedlings from the coconut nursery is inaccurate resulting a loss of 36 true hybrids to the industry for every 100 seedlings rejected. The two SSR markers can be used to confirm the hybridity of seedlings derived from SLT X SLYD crosses reducing the loss by authenticated plants from the nurseries.

Keywords: Genetic purity, Hybridity testing, SSRs, Yellow dwarf coconuts, Phenotypic marker.