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Authentication of coconut hybrids using RAPD analysis

M.K. Rajesh, P. Preethi, B.A. Jerard B.A., Regi Jacob Thomas[1] and Anitha Karun
Central Plantation Crops Research Institute, Kasaragod
[1]Divison of Crop Improvement, CPCRI (RS), Kayamkulam

Coconut palms, based on the plant stature and earliness, are classified into two major types *viz.,* 'talls' and 'dwarfs' which mainly differ in their pollination behavior of cross and self pollination respectively. Due to this, getting true to type progenies of desirable tall and dwarf cultivars has always been a challenge for the farmers and researchers. The conventional practice of the selection of seedlings based only on morphological traits such as petiole colour and vigour of seedlings often results in selection of out-crossed seedlings and undesirable offtypes. Hence, identification of molecular markers for distinguishing tall and dwarf character is imperative for isolating true-to-type high-yielding hybrid lines in the early stage of coconut breeding programmes and also in the commercial hybrid seedling production in coconut. In the present investigation, RAPD markers for this plant type trait were identified using a bulked DNA approach. Screening of tall and dwarf palm bulk DNA with 200 decamer primers revealed a RAPD primer OPBA3 which could clearly differentiate the both tall and dwarf bulks. For validation, the primer was used to screen individual tall and dwarf coconut palms representing different geographic regions. Primer OPBA3 produced a band of around 1200 bp present only in tall palms and a band of around 1300 bp present only in dwarf palms. The primer was also used to screen the parents and validate hybrids of Dwarf x Tall crosses. The results could pave the way for the development of SCAR markers for distinguishing tall and dwarf coconut accessions which would go a long way in establishing potential varietal identity, achieving varietal purity and thereby ensuring the quality of planting material in different Tall x Dwarf and Dwarf x Tall hybrid planting material production.

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Estimation of out-crossing rate in West Coast Tall cultivar in coconut using microsatellite markers

M.K. Rajesh, J. Rijith, Shafeeq Rahman, K. Ramya, K.K. Sajini and Anitha Karun
Central Plantation Crops Research Institute, Kasaragod

Understanding of mating system of a plant species has fundamental importance for formulation of genetic conservation and breeding programmes. The pattern of gene flow via pollen strongly influences the genetic structure within a population. Various genetic parameters, obtained from molecular marker studies, can be used to provide estimates' of mating system. The aim of this study was to estimate the rate of outcrossing in West Coast Tall (WCT) cultivar of coconut using microsatellite simple sequence repeats (SSR). Microsatellite markers possess great advantages for determining mating systems since these are co-dominant and multi-allelic markers, which can be reliably scored in a simple assay. Two WCT mother palms and their 88 progenies, collected as embryos every month from December 2011 to April 2012, were screened using 15 highly