

Evaluation of clonal uniformity in class one Malaysia commercial cocoa clones based on SSR markers

ABSTRACT

The Malaysian Cocoa Board has shortlisted 54 cocoa clones to be the recommended commercial clones distributed for farmers' planting. These 54 cocoa clones are divided into 4 classes, Class I, Class II, Class III and Class IV according to their adaptability to a wide range of Malaysia agro-climatic condition, good agronomic traits, tolerant to major pests and diseases and high butter fat content and good flavour. Propagation of cocoa plants is usually carried out vegetatively and therefore should be genetically uniform as genetic uniformity in cocoa clones is a very crucial information for germplasm conservation, in obtaining correct parental crosses in breeding program and plant materials generation for farmers' fields' distribution. The evaluation was done using microsatellite markers aimed to determine the genetic uniformity of five Class I Malaysian Commercial Cocoa clones using the International Cocoa Molecular Markers Standard. Comparison were done between samples taken from one cocoa germplasm collection in Kota Kinabalu, Sabah. Two samples were taken randomly to represent each of the clones. DNA extraction was done using Qiagen DNeasy Plant DNA kit and amplification was done using 14 SSR markers. The polymorphic information content (PIC) analysis was carried out and was very informative in identifying the genetic uniformity of the evaluated cocoa samples. Result showed that there are differences between the same clone name but obtained from the same location indicating there are off-type plants in the collection.