

GENETIC CHARACTERIZATION OF ARABUSTA COFFEE HYBRIDS AND THEIR PARENTAL GENOTYPES USING MOLECULAR MARKERS

J. M. GIMASE*, W. M. THAGANA, D. T. KIRUBI, E. K. GICHURU AND B. M. GICHIMU
Coffee Research Foundation, P.O. Box 4 - 00232, Ruiru, Kenya. [JMG, EKG, BMG]
Kenyatta University, P.O. Box 43844 - 00100, Nairobi, Kenya. [WMT, DTK]

Abstracts

Twenty coffee genotypes were characterized comprising of eleven F1 interspecific Arabusta hybrids, three induced tetraploid Robusta parental genotypes, four Arabica parental genotypes, one diploid Robusta accession and one Hybrid de Timor (HDT), a natural interspecific hybrid between Arabica and Robusta. Characterization was conducted using thirteen Simple Sequence Repeats (SSR) and ten Random Amplified Polymorphic DNA (RAPD) molecular markers. The molecular data were analyzed for polymorphism and also subjected to cluster analysis using Unweighted Pair Group Method with Arithmetic Average (UPGMA) to estimate the diversity among the genotypes. SSR markers revealed a genetic diversity of 51.5%, 50% and 6.9% while RAPD markers revealed genetic diversity of 51.6%, 47.4% and 3.5% within induced tetraploid Robusta, F1 interspecific Arabusta hybrids and Arabica genotypes respectively. The SSR primers separated the genotypes into 3 distinct clusters unlike RAPDs which separated them into 7 distinct clusters. The study therefore confirmed the narrow genetic base within Arabica coffee and successfully portrayed the possibility of broadening it through interspecific hybridization. These results can be used to select parents with high combining ability in a hybridization program between Arabica and tetraploid Robusta.

Keywords :

Coffea arabica, *Coffea canephora*, Arabusta, SSR, RAPD, genetic diversity.

- See more at: <http://www.ikpress.org/abstract.php?iid=429&id=34&aid=3559#.VBr3QvmSyho>