

Randomly Amplified Microsatellites (RAMs) Approach to Assess Molecular Diversity in Robusta Coffee in Relation to Coffee Wilt Disease in Uganda

S. OLAL¹, D.O.K. OCHOLA², D.T. KYETERE¹, G.J. HAKIZA¹

¹Coffee Research Institute, P.O Box 185, Mukono, UGANDA

²Makerere University, P.O. Box 7062, Kampala, UGANDA

SUMMARY

Coffee wilt disease (CWD), which is currently devastating *Coffea canephora* (Robusta coffee) in Uganda is a vascular wilt disease caused by a fungus called *Fusarium xylarioides*. Studies conducted in the screen house from 1997 by artificially inoculating the plants, and observation made under field condition revealed deferential response to the disease by different coffee lines. In order to assess the molecular basis of the observed variation, coffee lines with known response to CWD were categorized as susceptible, moderately resistant and resistant. Total genomic DNA was isolated from representative number of plants from each category and amplified by polymerase chain reaction (PCR) using four (TG, CA, ACA and GT) randomly microsatellite primers. The products were run on agarose gel by electrophoresis and photographed under UV light. Only CA and TG primers produced polymorphic bands and their products used in the analyses. Cluster analysis with unweighted pair-group method using arithmetic averages (UPGMA) and weighted pair-group method using arithmetic averages (WPGMA) produced no major clusters but the sub-clusters formed fairly grouped different coffee lines according to their response to the disease. ANOVA analysis showed significant different between products of the primers but no significant different between different coffee lines. The limited primers used have revealed the function of the genetic makeup of different robusta coffee lines to their response to CWD. More detail work is planned with more primers in-order to locate the possible loci where the resistance lies for construction of a probe to enhance the present conventional breeding method through marker assisted selection and to initiate breeding strategies for durable resistance in the robusta coffee through genetic engineering.