AFLP markers in the evaluation of genetic diversity of rice varieties and elite lines in Venezuela

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Abstract

Molecular markers represent a high-precision tool for the assessment of genetic diversity and to determine the identity of varieties, especially in crops of limited genetic basis such as rice. The aim of this study was to assess the genetic diversity of Venezuelan rice varieties and élite lines developed by the National Plan of Rice breeding (INIA and other institutions), Danac Foundation and Chispa Associated Producers using five AFLP primer combinations. Two red rice were also included. Two hundred and twenty bands were registered with molecular size from 25 to >300bp, of which 60 (27.27%) resulted polymorphic, the average showing 12 bands per combination. Shannon diversity index for each combination ranged from 0.17 to 0.41 with an average of 0.29 \pm 0.10. The index showed a moderate level of genetic polymorphism among varieties, élite lines and red rice. Cluster analysis allowed identification of five groups, at a distance of ~0.50 ultrametric units. The first group was formed by red rice only; the remaining groups were formed by both varieties and advanced experimental lines. AFLP combinations allowed differentiation of all the materials, there being association between generated clusters and genotype genetic constitution. This work confirms AFLP usefulness as a tool for discrimination among highly related individuals.