AFLP fingerprinting of some Egyptian date palm (*Phoenix dactylifera* L.) cultivars

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ABSTRACT

PCR-based DNA profiling of five Egyptian date palm (Phoenix dactylifera L.) cultivars was conducted using AFLP's. DNA samples from ten individual trees representing each of the five cultivars were pooled to form the sample representing the cultivar. A total of 433 amplification products were generated from the five cultivars using six primer pair combinations (EcoR1 and Mse1) with a mean of 72.17 amplicons per assay. The information about genetic variation determined from AFLP data was employed to estimate genetic similarity matrix value based on Jaccard's coefficient. The similarity values were further used to construct a phonetic dendrogram revealing the genetic relationships. The dendrogram generated by the UPGMA (un-weighted pair group method using arithmetic averages) formed two major clusters with Siwi and Hayany being the most genetically similar cultivars, and in the second cluster Amhat and Samany being next, while Zaghloul was the most distinct cultivar. ALFP analysis also permitted the distinction of unique markers among the five studied date palm cultivars. A total of 78 positive and 48 negative markers were identified by the six AFLP primer combinations. The total number of unique markers per genotype ranged from 13 to 51. The cultivar Zaghloul was characterized by the highest number of unique markers (51), while a total of 16, 23, 13 and 23 unique markers characterized the cultivars Siwi, Hayani Amhat, and Samany, respectively.

Key words: *Date palm, AFLP, DNA fingerprinting, genetic similarity.*

INTRODUCTION

Molecular genetic marker technologies are playing an increasingly important role in the assessment of genetic diversity, genetic relationships and fingerprinting in germplasm collections. Due to advances in the field of molecular genetics a variety of different techniques to analyze genetic variation has emerged during the last few decades. Several PCR-based genetic markers have been used to provide information on genetic variation in plant species. Initially, RAPD markers were employed for genetic analyses, but problems regarding reproducibility were reported (Jones *et al.*, 1997). AFLP technique was introduced as a reliable and reproducible marker system (Vos *et al.*, 1995).