

# Effect of coconut milk and number of subcultures on banana somaclonal variation

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## ABSTRACT

*This research was conducted to study the effect of coconut milk concentrations (0, 5, 10 and 20% v/v), separately or in combinations with subcultures number (5, 6, 7, 8, 9, 10 or 11), on occurrence of somaclonal variation in banana (*Musa sp*) using ISSR-based analysis. Absence of great number of bands distributed on various subcultures, were noticed when medium without coconut milk was used. These bands were Unique and distinctive to subculturing without coconut milk. Subculturing banana on media containing 5%, 10% or 20% coconut milk resulted in presence of most of bands. Polymorphism percentage of HB09 and HB12 primers were 100% and 41.7% in absence of coconut milk among subcultures from No. 5 to No, 11, whereas it was decreased to (14% and 8.33), (14% and 16.7) and (14% and 8.33) when coconut milk was added to the medium in concentrations (0, 5, 10 and 20% v/v). ISSR markers-based dendrogram separated groups and subgroups for subculturing on medium without coconut milk. Plants grown on a medium containing coconut milk in various concentrations and various subcultures were clustered in two categories where the main category involved shoots of banana plant produced from various coconut concentrations from subcultures number 6, 7, 8, 9 and 10. Shoots produced from subculture number 11 were gathered in a separate category. 5% coconut milk is recommended to make 10 subcultures without somaclonal variation.*

**Key words:** Banana, Somaclonal variation, BA, Coconut milk, Micropropagation, ISSR.

## INTRODUCTION

Micropropagation is necessary to preserve genetic uniformity of the plant material. Shoots multiplied clonally are a source of plantlets of a known genotype for breeding purposes and for economic culture. Clonal multiplication of novel materials regenerated from breeding procedures is also desirable to uniformly and rapidly produce clonal plants for variety release (Michael *et al.*, 2010). The presence of somaclonal variation in populations derived from tissue culture influence the use of tissue

culture negatively. There are several published research papers for banana somaclonal variation by Israeli *et al.* (1991), Michael *et al.* (2006 and 2010) and Thomas *et al.* (2007) mentioned that all based on morphological and DNA markers.

Rodrigues, *et al.* (1998) mentioned that somaclonal variation appeared after 5, 7, 9 and 11 subcultures at a rate of 1.3, 1.3, 2.9 and 3.8%, respectively. In general, all somaclonal variants produced bad quality bunches. The increase in the somaclonal variation with increased numbers of subcultures stresses the need to take care when plants are multiplied in a large scale in biofactories.