



Regeneration of Plants from Embryogenic Cell Suspensions of cv. “Datil” (*Musa AA*): Morphological Evaluation of Plants in the Field

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Abstract: The full cycle from embryogenic callus (EC) induction to field evaluation of regenerated plants is reported for the first time for banana cv. “Datil” (*Musa AA*). Immature male flowers were used for EC induction on a modified M1 culture medium. The ideal type of EC was obtained in the presence of 4.5 μM and 9.0 μM 2,4-dichlorophenoxyacetic acid (2,4-D). Embryogenic cell suspensions were established in both concentrations of 2,4-D; however, only the suspensions from ideal callus (IC) formed with 4.5 μM of 2,4-D were regenerated. A histological study revealed the formation of structurally different cell masses during the regeneration phase of cv. “Datil”. The embryos germination was characterized by the growth cellular aggregates, indicating the possible occurrence of secondary embryogenesis. Development and acclimatization of the plants were carried out in a normal manner as observed for other cultivars. Field evaluation of the plants’ genetic stability was based on observation of morphological traits. In the vegetative growth phase, 6.61% of the plants presented drooping leaves and deformed semi-limbs. These traits, however, did not affect further plant growth during flowering and harvest phases. The produced fruits were of good quality. And the present study indicates that this cultivar may be stable genetically.

Key words: *Musa*, Pisang Mas, somatic embryogenesis, cell suspension, plant regeneration, field evaluation.

Abbreviations

6-BAP	6-benzylaminopurine
2,4-D	2,4-dichlorophenoxyacetic acid
2-ip	2-isopentenyladenine
IAA	Indol-3-acetic acid
NAA	1-naphthaleneacetic acid
MS	Murashige and Skoog
SE	Somatic embryogenesis
SCV	Settled cell volume

1. Introduction

Banana cv. “Pisang Mas”, known as “Datil”, is an edible diploid *Musa acuminata* type (*Musa AA*); because of its flavor, the fruit is highly sought-after by certain ethnic groups in the Latin markets of the United States (Florida and New York). It is also in

high demand at the Asian market, and it is of great economic importance for producer countries [1, 2]. In addition, Soto [3] mentions that this cultivar is resistant to Panama disease (*Fusarium oxysporum*), and is highly tolerant to black sigatoka (*Mycosphaerella fijiensis*). These traits make this cultivar an important gene pool candidate for genetic improvement work on bananas and plantains.

Banana cv. as “Datil” is a parthenocarpic diploid. It lacks seeds, and like all edible cultivars, it is sterile—this being the primary limitation for carrying out conventional genetic improvement work. Therefore, genetic improvement using modern tools of biotechnology constitutes a viable alternative for the improvement of these cultivars, consequently, an efficient system of cellular regeneration as somatic embryogenesis (SE) is required [4]. SE through embryogenic cell suspension cultures is an important

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