

GENOTYPIC VARIABILITY IN TISSUE CULTURED PLANTLETS OF BANANA UNDER GREENHOUSE CONDITIONS

SARIKA WARANG, B.L. DHONUKSHE, S.G. BHAVE AND K.J. GAIKWAD

See end of article for authors' affiliations

Correspondence to :
SARIKA WARANG
Department of Horticulture,
C.S. College of Agriculture,
SUDHUDURG (M.S.) INDIA

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ABSTRACT

The plantlets obtained *in vitro* of the banana genotypes *viz.*, Basarai, Grand naine, Lal velchi, Lokhandi, Rasabale, Savarbond, Safed velchi and Shrimanti were hardened in greenhouse for three months. Distinct genotypic variability was observed among the eight genotypes under investigation in respect of different growth parameters *viz.*, Plant height in Rasbale and Safed velchi, number of leaves and leaf area in Basarai and Safed velchi, girth of stem in Basarai. The tissue cultured plantlets of genotypes *viz.*, Basarai, Safed velchi, Savarbond and Lokhandi were found to be the most hardy upto three months.

Key words : Banana, Tissue culture, Green house.

Banana (*Musa paradisiaca* L.) is a major tropical fruit crop cultivated in nearly 120 countries in the world. In India, banana is grown on 4.9 million hectares with total production of 16.0 million tonnes. It is estimated that production of banana is targeted to 25 crore MT by 2020 which indicates alarming need to increase the present area under tissue cultured plants (Nadgowda, 2000). The plantlets obtained *in vitro* need to be acclimatized to normal greenhouse environment (Preece and Sutter, 1991; Zimmerman, 1988). Initially plantlets should be protected, from desiccation in a shaded high humidity tent or under mist or fog. Several days may be required to form new functional roots.

Here comes the crucial role of hardening of the highly sensitive plantlets under controlled conditions or otherwise which results into high mortality of these plantlets. Further, the studies pertaining to genotypic variability exhibited by various genotypes under greenhouse conditions are largely lacking.

MATERIALS AND METHODS

The experimental material used for the study consists of eight genotypes of banana *viz.*, Basarai, Grand naine, Lal velchi, Lokhandi, Rasabale, Savarbond, Safed velchi and Shrimanti. The plantlets obtained *in vitro* of these genotypes were transferred to pots containing soil : sand : FYM (1:1:1) after the period of acclimatization. These plants were then kept for hardening in greenhouse under controlled conditions for three months. The experiment was laid in completely CRD. The observations were recorded at weekly interval to assess the genotypic

variability under greenhouse conditions.

Recording of observations :

Following observations were recorded and average of each character was calculated for five plants. The detailed information of observations recorded is given below.

Plant height :

Plant height was measured in cm from ground level to the tip of the last leaf.

Number of leaves:

Total number of functional green leaves of plantlet.

Girth of stem:

It was measured at three points and the average figure was noted as the girth of stem in cm.

Leaf area (LA):

The leaf area of the plantlets was calculated by using the formula given by (Bose, 1985).

$$LA = l \times b \times CF$$

Where,

l = length of leaf (cm)

b = breadth of leaf (cm)

CF = correction factor = 0.8

RESULTS AND DISCUSSION

There were marked differences in plant height for plantlets of different genotypes. The genotypes Rasbale