



RESEARCH PAPER

Effect of different dose of cytokinin for shoot multiplication of banana (*Musa paradisiaca* L.) variety 'GRAND NAINÉ' under *in-vitro* condition

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Abstract : The maximum callus formation (20.3%) was observed in treatment BAP 8 mg l⁻¹ while the minimum (4.6%) was noted under control. With the combination of BAP and BA, the maximum callus formation (27.0%) was recorded under BAP 8 mg l⁻¹ + BA 4 mg l⁻¹; however, it was at par with BAP 8 mg l⁻¹ + BA 3 mg l⁻¹ at 75 days after inoculation. At 90 days after inoculation, maximum callus percentage (29.3) was found under BAP 8 mg l⁻¹ + BA 4 mg l⁻¹. At 105 days after inoculation, callus percentage was maximum callus (33.0%) was noted under the treatment combination of BAP 8 mg l⁻¹ + BA 4 mg l⁻¹, however, it was significantly at par with BAP 8 mg l⁻¹ + BA 3 mg l⁻¹, while the minimum (9.3%) was recorded under control again. The earliest shoot initiation (21.0, 22.0 days, respectively) was noted under BAP 8 mg l⁻¹ and BA 5 mg l⁻¹, separately; while it was statistically earliest *i.e.* 20.66 days in combination with BAP 2 mg l⁻¹ + BA 5 mg l⁻¹. Maximum shoot length (0.76 cm) was recorded in the treatment of BAP 8 mg l⁻¹ at 20 days after shoot initiation. Maximum shoot length (3.06 cm) was noted under BAP 8 mg l⁻¹ alone which statistically superior to other under BAP alone treatments while it recorded minimum under control at 40 days after shoot initiation. Under BA treatments, the maximum shoot length (2.26 cm) was noted with BA 4 mg l⁻¹ and 5 mg l⁻¹ both; however, it was at par with BA 2 mg l⁻¹ and 3 mg l⁻¹ at 40 days after shoot initiation. With the effect of BAP and BA combinations, the maximum shoot length (3.23 cm) was recorded under BAP 8 mg l⁻¹ + BA 5 mg l⁻¹ at 40 days after shoot initiation. The minimum duration of root initiation (14.66 days) was noted under the treatment of Indole Butyric acid 4 mg l⁻¹; however, it was significantly at par with indole butyric acid 2 mg l⁻¹ and 3 mg l⁻¹. The maximum duration (34.33 days) was observed under control. Minimum number of roots (4.0 roots) were recorded under the treatment applied 1 mg l⁻¹ IBA in culture medium. Further, number of roots was found maximum 10.33 roots under the treatment of 5 mg l⁻¹ IBA followed by 4 mg l⁻¹ IBA concentrations. Culture medium with IBA 5 mg l⁻¹ showed maximum root length (1.66 cm) followed by IBA 4 mg l⁻¹, 3 mg l⁻¹ and 2 mg l⁻¹ with 1.56 cm, 1.40 cm and 1.06 cm, respectively. It was concluded that BAP 8 mg l⁻¹ and BA 5 mg l⁻¹ separately performed better results on account of callus formation, shoot initiation and multiplication of shoots whereas with their combination *viz.*, BAP 8 mg l⁻¹ + BA 4 mg l⁻¹ showed best result on the above parameters. For root initiation and its development IBA 5 mg l⁻¹ was found to be the best among all the treatments.

Key Words : Cytokinin, Shoot multiplication, Banana, *In-vitro* condition

View Point Article : Rajbhar, Yogesh Prasad, Singh, Manmohan, Kumar, Anil, Singh, Gopal, Singh, Abhimanyu and Singh, D.K. (2016). Effect of different dose of cytokinin for shoot multiplication of banana (*Musa paradisiaca* L.) variety 'GRAND NAINÉ' under *in-vitro* condition. *Internat. J. agric. Sci.*, **12** (1) : 65-72.

Article History : Received : 16.09.2015; Revised : 29.11.2015; Accepted : 11.12.2015