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*RESEARCH PAPER*

# Effect of different growth regulator combinations on growth rate of explants in walnut *in vitro* studies using MS medium

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**Abstract :** The present investigation on effect of different growth regulator combinations on growth rate of walnut (*J. regia* L.) studies using MS medium was carried out in order to document the available genetic variability in walnut germplasm and to select elite walnut genotypes possessing superior attributes and quality traits. During the survey, data were recorded on one hundred fifty two (152) walnut trees growing in different areas of Kashmir valley. The study also involved establishment of response of elite walnut selections to different plant growth regulators in shoot morphogenesis. Woody species have been found to be far more difficult to clone *in vitro* than herbaceous plants. Poor response of the explants from mature woody species to *in vitro* manipulation is usually associated with the problem of browning and explant necrosis. The present studies were conducted on forced explants from three walnut selections (SKUAST 002, SKUAST 008, SKUAST 010). Murashiage and Skoog's basal medium supplemented with 0.3 mg/$l^{-1}$ benzylamino purine and 0.1 mg/$l^{-1}$ indole-3-butyric acid. The growth regulator combinations revealed low to medium effect on the growth rate of explants. The maximum growth rate of 2.49 was found in BAP 0.3$mgl^{-1}$ + IBA 0.1$mgl^{-1}$ followed by 2.19 in BAP 1.2$mgl^{-1}$ + IBA 0.1$mgl^{-1}$ as compared to 1.46 and 1.27 in the BAP 0.9 mg $l^{-1}$ + IBA 0.1$mgl^{-1}$ and BAP 0.6 mg $l^{-1}$ + IBA 0.1 mg $l^{-1}$, respectively. This difference was significant in both $T_1$ (BAP 0.3$mgl^{-1}$ + IBA 0.1$mgl^{-1}$) and $T_4$ (BAP 1.2$mgl^{-1}$ + IBA 0.1$mgl^{-1}$) as compared to both $T_2$ (BAP 0.6$mgl^{-1}$ + IBA 0.1$mgl^{-1}$) and $T_3$ (BAP 0.9$mgl^{-1}$ + IBA 0.1$mgl^{-1}$). Rest of the comparison among the growth regulator combinations were non-significant.

**Key Words :** Walnut, Variability, Shoot morphogenetic response, Growth rate of walnut

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