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Suitability of different cutting types and tissue cultured plantlets, as planting material for vanilla (Vanilla fragrans) cultivation

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Vanilla (*Vanilla fragrans* L.) is a tropical climbing orchid which belongs to family orchidaceae. Vanilla is by far the most economically important species as source of natural vanillin. It is valued for its sweet flavor and scent and is widely used in food industry. In Vanilla cultivation 1 meter cuttings are used as planting materials. Use of such large vines with about 12 nodes will lead to limiting the planting materials for large-scale cultivation. Alternatively a large number of 2, 3, and 4 nodal cuttings could be obtained from 1 meter long cutting but their success and performance are not reported. Therefore, this study was undertaken to investigate the suitability of different cuttings types and tissue cultured plantlets as planting material for Vanilla cultivation.

The experiment was conducted at Export Agriculture research station, Matale under the green house condition. Three types of nodal cuttings, i.e., 2, 3 and 4 and tissue cultured plantlets were taken for the comparison. For each treatment, 25 cuttings or 25 tissue cultured plantlets were taken and replicated three times. The cuttings were established in polythene bags (8'x 5') filled with potting mixture containing equal parts of top soil: coir dust sand and cow dung. potting mixture. Each vine was tied up to 3 1/2 feet long dead wooden stick and trained along the stick to prevent entangle of vine. Data on initial length, number of leaves and girth (second node from the terminal) were recorded just after planting. The length of the newly developing shoot, number of new leaves and girth of second inter node were taken at monthly intervals. The data on vine length and girth were analyzed using ANOVA in SAS and LSD was used to compare the treatments. Data on counts were analyzed using non-parametric methods (Kruskal-Wallis or Wilcoxon)

After 5 months, higher survival percentages were found in cuttings (95%) and tissue cultured plants (92%). Out of the data collected on four parameters i.e., new shoot growth, new leaves, girth and plant survival, significant difference was found only in new shoot growth.

Three (38.8 cm) and four (46.5 cm) nodal cuttings showed a higher new shoot growth when compared to two nodal cuttings(20.5 cm) or tissue cultured plants (7.0 cm). The growth of tissue cultured plantlets was significantly lower (3-6 times) than the other type of cuttings. The results on highest shoot growth in longer cuttings indicated that initial food reserves and number of retention leaves in longer cuttings are associated with subsequent growth and development of vanilla shoots.