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A REVIEW

Lisianthus micro propagation

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Abstract : Lisianthus [*Eustoma grandiflorum* (Raf) Shinn.] is becoming one of the most highly ranked cut flowers in the international market. Propagation by seeds is complicated and difficult exercise due to slow germination and growth and seedling populations are disadvantageously variable with respect to flowering time, stem length and flower qualities. Vegetative propagation of selected cultivars might provide a useful alternative to seed propagation as the limited availability of cuttings from each stock resulting in apical dieback is a major setback. Therefore, micro propagation serves as potent tool to develop a method of rapid propagation of selected/ elite genotypes of lisianthus. The clonal multiplication of lisianthus especially through tissue culture might provide a useful alternative to seed propagation, thus resulting in to production of better quality planting stock. *In vitro* multiplication of elite plant genotypes offers immense opportunities to multiply large number of disease free, healthy and vigorous planting material in shortest possible time. In this review, the scattered information on clonal multiplication of *Eustoma* through micro propagation are being tried to put together. This could eventually be helpful in drawing the attention of the researchers and scientists to work on it, besides would be benefitted by utilizing the knowledge review in this paper so as to popularize it as a cut flower to make its place among top 10 cut flowers.

Key Words : *Eustoma*, Tissue culture, GA_3, BA, NAA, IBA, In vitro rooting, Hardening

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Eustoma grandiflorum (Raf.) Shinn. syn. *Lisianthus russelianus* Hook., belongs to family Gentianaceae and is native to southern parts of the United States (Popa *et al.*, 2004). Lisianthus is also known as 'Texas Blue Bell' and Prairie Gentian. Lisianthus is becoming one of the most highly ranked cut flowers in the international market due to its rose like flowers, excellent post harvest life and blue / purple colour. It gained importance on account of a variety of cultivars developed with respect to many traits like uniform flowering throughout the year, lack of rossetting, heat tolerance, flower colour, flower size and form including double flower etc. (Toa, 2006). Tsukada *et al.* (1982) classified the corolla shape of lisianthus into four groups: funnel-shape, cup-shape, shallow bowl shape and bell shape where as Harbough (2006) described flower shapes as flat/open petals, bell shape and tubular shape.

Lisianthus is a seed produced pot plant florist crop, with flowers that appear quite similar to those of tulip. The colour range include pink, white and purple (Asen *et al.*, 1986). The stem is monopodial at the base and branches apically. Stem length of most commercially available cultvars varies from 500-750mm. Individual flowers last for 2 weeks and a whole plant can remain in bloom for up to 5 weeks (Ruffoni and Savona, 2006; Gnesback *et al.*, 1988). Lisianthus is normally grown as an annual crop. The young plants have a high light requirement and optimum temperature of 20^0 C at sowing and 26^0 C / 18^0 C (day/night) during the growing season. The crop requires a fairy light, free draining soil, with good organic matter content and a pH range of 6-7 (Tsukada *et al.*, 1995). Lisianthus can be used either as cut flowers or as flowering pot plants and flowers are available in various colours like blue, purple, plum, white, pink and bicolours (Kunitake *et al.*, 1995).About three cut flower stems are produced per plant in the first harvesting cycle and retaining the plant for the second crop is considered uneconomic (Halevy and Kofranek, 1984).

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