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**EVALUATION OF CUTTING TYPES AND PROPAGATOR SYSTEMS FOR
RAPID VEGETATIVE PROPAGATION OF CARAMBOLA (*Averrhoa carambola*)
IN SRI LANKA**

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Abstract

Carambola (*Averrhoa carambola*), or star fruit, is a nutritious but underutilized fruit crop in Sri Lanka, with commercial cultivation hindered by slow and labour-intensive propagation methods like grafting, which can take over 10 months. Efficient vegetative propagation could address the demand for true-to-type plants while enabling faster orchard establishment. This study evaluated the effect of cutting types and propagator systems for rapid vegetative propagation of Carambola. A 2-factor factorial RCBD experiment was conducted at HORDI, Gannoruwa, using three stem cutting types (softwood, semi-hardwood, and hardwood) and two propagator systems (single and community). Cuttings (10 cm length) were treated with rooting hormone and placed in sterilized potting medium. Community propagators maintained higher humidity (80–90%), moderate temperatures (~28°C), and diffused light using shade nets. Quantitative analysis over six weeks showed that community propagators significantly ($p < 0.05$) enhanced all growth parameters, with 52.5% survival rate vs. 49.95% in single propagators. Hardwood cuttings had the highest survival (60%), shoot emergence (45%), shoot length (0.6 cm), and leaf number (1-2), while semi-hardwood cuttings consistently underperformed ($p < 0.05$). The best combination, hardwood cuttings in community propagators, showed significant integrative effects ($p < 0.05$), supporting 60% survival, 50% shoot emergence, and vigorous vegetative growth. Mean separation (DNMRT) confirmed these differences. The findings highlight that using hardwood or softwood cuttings in community propagators provides a rapid, scalable, and farmer-friendly method for propagating Carambola. Further studies on media types, hormone concentrations, and seasonal variation are recommended to optimize protocols.

Keywords: *Carambola, Propagation, Sri Lanka, Stem Cuttings, Vegetative*