

Evaluation of Palmyrah-Based Growing Media on Growth, Yield and Quality of Cantaloupe (*Cucumis Melo* L.) under Protected Cultivation

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Cantaloupe (*Cucumis melo* L.) is a high-value crop cultivated under protected conditions, where the growing medium plays an important role in plant growth, yield, and fruit quality. This study evaluated palmyrah-based growing media as sustainable alternatives for cantaloupe production under protected cultivation at the Regional Agricultural Research and Development Centre (RARDC), Kilinochchi, Sri Lanka. The experiment was conducted in a net-house using 14 × 14 inch grow bags and arranged in a Randomized Complete Block Design (RCBD) with four treatments and three replications, comprising five plants per replication. Treatments were T1: Soil + Compost + Partially Burnt Rice Husk (2:1:1, v/v), T2: Cocopeat + Partially Burnt Rice Husk (3:1, v/v), T3: Cocopeat + Palmyrah Dry Flowers + Partially Burnt Rice Husk (2:2:1, v/v), and T4: Palmyrah Dry Flowers + Partially Burnt Rice Husk (3:1, v/v). Growth, reproductive, yield, fruit quality, and media chemical properties were evaluated. Data were analyzed using ANOVA, and means were separated using the LSD test at the 5% significance level. Significant differences ($P \leq 0.05$) were observed for media chemical properties, fruit weight, and total soluble solids (TSS). Palmyrah-based media maintained favourable pH (6.07–6.10), moderate electrical conductivity (0.565–0.673 dS m⁻¹), and higher nitrogen content (1.06–1.18%) than the conventional medium. The highest fruit weight (712 g) and TSS (13.88 °Brix) were recorded in T4, while the lowest values were observed in T1 (573 g and 11.78 °Brix, respectively). Plant height, stem girth, and leaf area index were not significantly affected by the treatments. These findings indicate that T4 has strong potential as a low-cost and sustainable growing medium for protected cantaloupe cultivation, although further validation under different environmental conditions and production systems is recommended before large-scale adoption.

Keywords: Cantaloupe, growing media, palmyrah residues, protected cultivation, dry zone agriculture