

Possible Replacement of Coco-Peat Substrate with Guinea Grass for Grow-Bag Culture of *Capsicum annuum* (L.) Var. Muriya

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Due to high demand for coco-peat as a raw material for grow-bag production, finding viable alternatives would be an economically sound approach to face the future challenges. With this background, a study was conducted with the aim of evaluating different low-cost alternative substrate combinations (through partial substitution of coco-peat) as the growing medium for *Capsicum annuum* (L.) grown in grow-bags. This experiment was conducted in a greenhouse located in low country intermediate zone - IL1a (7.3225° N, 79.9773° E). *Capsicum*, cultivar ‘Muriya’ was tested for seven treatments comprised of T1: 100% base material (BM) (60% coco-chips and 40% coco-peat), T2: 90% BM+ 10% dried Guinea grass (DGG), T3: 80% BM+ 20% DGG, T4: 97% BM+ 3% Guinea grass biochar (GGB), T5: 95% BM+ 5% GGB, T6: 87% BM+ 10% DGG + 3% GGB, T7: 75% BM+ 20% DGG + 5% GGB with three blocks in a Randomized Complete Block Design. The DGG was prepared by drying 1 cm chopped Guinea grass shoots and GGB was prepared by pyrolyzing dried non-chopped Guinea grass shoots (conversion ratio 6:1). Growth, development and yield performances of *Capsicum* were measured. There were no significant differences in plant height, leaf length, and pod weight among the treatments. However, significantly high number of leaves, leaf area, root volume, shoot dry weight, number of pods and total yield were recorded in treatments containing BM with 10% and 20% DGG. Results indicated that the media containing BM with 10% and 20% DGG showed a significantly higher crop growth, development and yield than the other growing media tested. Hence, incorporation of DGG at a rate of 10% to 20% with BM can be recommended as a low-cost and viable alternative to coco-peat grow-bag media for the cultivation of *Capsicum* under tropical greenhouse conditions.

Keywords: Biochar, Coco-peat, Grow-bags, Guinea grass, Greenhouse culture