

BIOCHAR ON GROWTH AND DEVELOPMENT OF CAPSICUM (*Capsicum annum L.*) IN REDDISH BROWN LATASOLIC SOILS

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Biochar is a fine-grained, porous charcoal substance and an amendment for highly degraded soil. A planthouse experiment was conducted using Completely Randomized Design (CRD) to study the effect of three biochar feedstocks on growth and development of capsicum and its influence on selected soil properties. Biochar was prepared using coconut nut shell, coconut husk and tea waste considering their physio-chemical properties. Total Nitrogen (N), Phosphorous (P), and Potassium (K) contents were determined in this study. Biochar was added in different combinations at the rate of 135 g to 4 kg of Reddish Brown Latasolic (RBL) soil. Treatments used were, no biochar (control), tea waste biochar, coconut nut shell biochar, coconut husk biochar, tea waste biochar + coconut nut shell biochar, coconut nut shell biochar + coconut husk biochar, tea waste biochar + coconut husk biochar, and biochar of tea waste+ coconut nut shell + coconut husk. Plant growth performance and the effect on soil were determined after 10 weeks period. Soil pH, Cation Exchange Capacity (CEC), and available K were significantly higher in all biochar applied treatment than control. Electrical Conductivity (EC) and CEC were significantly higher in tea waste biochar added treatment. Plant dry weight and plant height were not significantly different among treatments. Root dry weight was significantly higher in tea waste biochar and biochar of tea waste + coconut nut shell + coconut husk treatments compare to the rest of the treatments. Phosphorous uptake was significantly higher in all biochar applied treatment than control. Plant K and N uptake were higher in all biochar applied treatments than control but not significant. The study revealed that biochar can improve soil properties such as pH, EC and CEC while improving the uptake of N, P, and K in RBL soil.

Key words: Biochar, Coconut nut shell, Coconut husk, Soil amendment, Tea waste