

A Comparative Study on Growth Performance at Seedling Stage in Response to Different Particle Compositions of Coir-based Nursery Substrates

RMPM Rathnayake¹, A Gunasena^{2#}, MK Meegahakumbura¹,
KP Waidyaratne³ and AMGN Rathnayake¹

¹ Department of Export Agriculture, Uva Wellassa University, Badulla, Sri Lanka

²Jiffy Lanka (Pvt) Ltd, Kobeigane, Sri Lanka

³Plant Physiology Division, Coconut Research Institute, Lunuwila, Sri Lanka

ajithgunasena@yahoo.co.uk

Coco pith is widely used as a growing substrate and the particle composition of the substrate can substantially affect plant growth and productivity. This study was conducted to investigate the effects of seven different particle compositions; 2 mm/6 mm mix (50/50), 6 mm/2 mm/fine mix (50/30/20), 2 mm/coarse mix (20/80), 2 mm/coarse mix (40/60), 2 mm/coarse mix (50/50), 6 mm/sieved mix/2nd particles mix (60/20/20) and 6 mm/sieved mix/2nd particles mix (40/30/30) of coir-based substrates as the nursery media together with two standard fine and coarse mixtures on nursery growth performance of Chilli pepper (Scotch bonnet), Green chili (MICH HY 1) and Brinjal (Raveena) varieties. Almost all growth parameters (Seedling height [cm], Root length [cm], and Total dry matter content [g]) had diverse responses to substrate blend where the data was analysed using SPSS. According to the results, seedling height and total dry matter of MICH HY 1 and seedling height of Raveena showed a significant effect of substrate blend treatment. Tested mixtures with minimum deviations from two standard mixtures were selected as the best substrate blends with relevance to growth parameters and the crop variety. T₅ (2 mm/coarse mix [20/80]), T₆ (2 mm/coarse mix [40/60]) and T₇ (2 mm/coarse mix [50/50]) blends had best performances over the standards for MICH HY 1 and Raveena. However, the growth parameters of Scotch bonnet did not show significant effects. In conclusion, new particle compositions with the best performance for Green chili and Brinjal could be used to replace the standard mixtures. These findings will be vital for the horticultural industry and enable growers to better cultivation without quality losses.

Keywords: *brinjal, chilli pepper, coir-based substrates, green chili, growth performance*