



Utilization of agricultural waste compost as an alternative potting media component with coir dust for leafy vegetable *Ipomoea aquatica*

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Evolution of plant growth techniques has increased demand for growth substrates such as peat, zeolite, perlite, pumice and vermiculite but supply has been decreasing while the prices are escalating. The aim of this research was to study the potential utilization of an alternative potting media developed from agricultural waste compost in combination with coir dust on the growth and development of leafy vegetable *Ipomoea aquatica* (L).

Agricultural waste compost was prepared by heap method with poultry litter, sawdust, rice straw, gliricidia and cow dung. Seven different potting media were prepared by mixing compost at the rates of 0%, 10%, 25%, 50%, 75%, and 100% with coir dust at 100%, 90%, 75%, 50%, 25%, and 0%, respectively. Another treatment was used as a control which had 100% coir with recommended chemical fertilizer by the department of Agriculture, Sri Lanka.

Physical (bulk density, true density, water holding capacity, porosity, particle distribution, and coarseness index) and chemical properties (electrical conductivity, P^H, total nitrogen, available phosphorous) of the all potting media were analyzed. Pot experiment was conducted in a greenhouse using *Ipomea aquatic* to determine the impact of developed potting media on the growth and the development of the plant. Height, fresh and dry weight of the plants were determined. Two harvests were done. Experimental design was completely randomized design with five replicates. Obtained data were subjected to analysis of variance to determine the treatment effects. Duncan's multiple comparison range test was used to determine significant differences between the means using SAS package.

Developed potting media showed adequate physical and chemical properties for *Ipomea aquatica* cultivation. First harvest showed significant differences among all treatments and treatment containing 100% compost gave the best growth and yield parameters. But second harvest did not show significant difference between 100% compost treatment and 90% compost in combination with 10% coir. The highest plant height, shoot fresh weight and shoot dry weight obtained from the 100% compost were increased by 2.70, 18.07 and 18.02 times in comparison to the 100% coir with chemical fertilizer as the control. 100 % compost treatment had bulk density 0.632 gcm⁻³, true density 1.62 gcm⁻³, water holding capacity 167.11 mL L⁻¹, porosity 60.98%, total nitrogen 1.14%, available phosphorous 0.38 mgL⁻¹, EC 0.22 dSm⁻¹ and pH 6.75 was the best among all other treatments and it gave a profit of Rupees 3142.00 for 10 m². Compost in the potting mixture did not show any toxic effect on plant growth and development. Utilization of compost derived from different agricultural compost can be considered as alternative potting media for leafy vegetable *Ipomoea aquatica*.

Keywords: compost, leafy vegetable, waste, potting media