

**UTILIZATION OF COCONUT BY-PRODUCTS IN VERMICOMPOST PRODUCTION TO DEVELOP POTASSIUM-RICH POTTING MEDIA FOR HOT CHILI (*Capsicum chinense*)**

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The hot chili, locally known as *nai miris*, is a high-demand crop in local and export markets and relies heavily on potassium for yield and quality. Potassium supply through synthetic fertilizers reduces profitability and leads to environmental degradation thus, emphasizing the need for sustainable alternatives. Meanwhile, Sri Lanka's coconut industry produces large quantities of coconut by-products, posing health and environmental problems if unmanaged. A sustainable nutrient and waste management system could address both challenges effectively. To address both issues, this study focuses on the utilization of coconut by-products in vermicompost production for developing potassium-rich potting media for Hot chili cultivation. Vermicompost was prepared by coconut leaves (T2), coconut leaf stalks (T3), coir dust (T4), and coconut chips (T5). Normal vermicompost was considered as T1 and T6 was the standard compost. Three replicates in each treatment were arranged in a CRD layout in protected condition. Physiochemical parameters (pH, EC, moisture content, nitrogen, phosphorus, potassium, organic carbon, and C:N ratio) and worm count among different treatments were taken. ANOVA was carried out on the collected data to find out the effect of treatments on potassium levels and worm count, while Turkey's Studentized Range was used for mean separation. The results demonstrated significant variation in potassium content among all treatments ( $p < 0.05$ ). Standard compost exhibited the highest potassium level of 1.08%, followed by T3 with a potassium content of 0.73%. The highest worm count of 648 was observed from the T2. Thus, coconut leaf vermicompost is the ideal medium for cultivating earthworms. These results depict that inorganic potassium could be partially replaced by coconut leaf stalk vermicompost to gain economic and sustainable benefits from hot chili cultivation.

**Keywords:** Coconut by-products, Hot-chili, Potassium, Vermicompost