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**Some agronomical studies and phytochemical analysis of *Stevia rebaudiana* Bertoni –
a natural low calorie sweetener**

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Stevia rebaudiana Bertoni, an ancient perennial herb native to South America, produces glycosides of the diterpene steviol, that are low calorie sweeteners, about 300 times sweeter than sucrose. *Stevia rebaudiana* is widely used as a natural sweetener for the production of candy, sweets, and an array of beverages due to its safety for diabetic patients. Even though, this plant has an immense potential to be used in Sri Lanka, it has not been introduced yet due to various reasons. Therefore, the present study was undertaken to establish agronomic practices and post-harvest aspects, by means of total antioxidant and phytochemical behavior under different light intensity, for the purpose of successful introduction of *Stevia rebaudiana* as a promising new agricultural crop and making thereby a contribution to enhance product development. Propagation trials were conducted with three treatments: open polythene pots with single cutting, closed polythene pot with single cutting, and closed polythene pot with multiple cutting (10/pot), while the cultivation trial was conducted with 3 fertilizer types: organic fertilizer, inorganic fertilizer, and the control. All experiments were conducted in completely randomized block design (CRBD). The data on success rate of propagation, number of leaves, number of shoots, and plant height were recorded at one week intervals. Diurnal variation of phytochemicals of total phenolic content (TPC), total flavonoid content (TFC), and total antioxidant capacity (TAC) were determined using modified Folin-Ciocalteu colorimetric method, calorimetric method, and Ferric Reducing Antioxidant Power Assay (FRAP), respectively. Results revealed that a comparatively higher success percentage of stevia can be obtained from cuttings propagated in a closed polythene propagator, with single cutting in a pot, at 90% success rate. A comparatively higher growth rate was observed in plants treated with organic fertilizer compared to the control. Results on diurnal variation of TPC, TFC and TAC demonstrated that all values are increasing from 6 am to 3 pm and decreasing after 3 pm. Stevia can be successfully propagated by adopting potting system with single cutting/pot and cultivated with organic fertilizer and harvested before 3 pm for a better phytochemical yield.

Keywords: *Stevia rebaudiana*, antioxidant capacity, flavonoids content, phenolic content, growth indicators

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