



Growth and Yield Performances of *Ipomea aquatica* (Water Spinach) as Affected by Different Liquid Fertilizers in Static Solution Culture

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Abstract

To increase yield and growth value, leafy vegetables grown in static solution cultures are usually fertilized with an excessive amount of inorganic liquid fertilizers, having detrimental impacts on the environment and human health. Moreover, due to the current economic crisis, the increased prices of these inorganic fertilizers cause intolerable stress to farmers. The objective of this project is to introduce new organic liquid fertilizers and to evaluate their effects on the growth and yield of leafy vegetables in hydroponics, which have not been quantitatively and qualitatively evaluated to date. The new liquid fertilizer included a *Gliricidia* leaves + cow dung mixture. A comparison was done between three mediums: new liquid fertilizer, compost tea, and Albert solution as control, using water spinach in static solution culture. The experiment was carried out in the protected house at the Faculty of Technology, University of Ruhuna, from the 19th of November 2021 to the 17th of January 2022. The experiment used a completely randomized design with four replicates for each treatment. Each replicate included five water spinach cuttings. Other agronomic practices were followed uniformly for all the treatments. After the installation of hydroponic systems, growth parameters were measured each week and fresh and dry weights of plants were measured at the end of each cycle for two equal growth cycles (four weeks for each cycle). The pH and electric conductivity were measured weekly until the harvesting was completed. Analysis of variance was performed to determine the significant difference between treatments ($p < 0.05$). Results revealed that better growth performances were observed in *Gliricidia*+ cow dung liquid fertilizer and Albert solution, than in compost tea. Further, there is no significant difference between *Gliricidia* + cow dung liquid fertilizer and Albert solution in yield. Therefore, a mixture of *Gliricidia* + cow dung liquid fertilizer can be recommended as a solution for the unavailability and economic feasibility of inorganic fertilizers.

Keywords: *Gliricidia Liquid Fertilizer, Water Spinach, Growth Parameters, Compost Tea, Static Solution Culture.*

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