AUTOMATED FERTIGATION SYSTEM FOR ONION (*Allium cepa* L.) PRODUCTION UNDER GREENHOUSE CONDITION

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ABSTRACT

LUMANDAS, EUNICE JOY C. and **ROJAS, PRINCESS G.**, Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **June 2023, AUTOMATED FERTIGATION SYSTEM FOR ONION (*Allium cepa* L.) PRODUCTION UNDER GREENHOUSE CONDITIONS.**

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Optimal irrigation management and fertilizer application are crucial for onion production for steady plant growth, uniform bulb size, better quality, and a higher yield. This study aims to evaluate the performance of an automated fertigation system for onion production under greenhouse conditions in terms of its growth and yield, determine its water productivity, and perform a profitability analysis on the system. The experiment was analyzed using the T-test to determine if there is a significant difference between the automated fertigation system (AFS), manual drip irrigation (MDI), and conventional farming.

The overall pattern revealed among treatment means, AFS resulted in greater plant height, leaf diameter, leaf length, and higher number of leaves compared to MDI. AFS was also found to have a better performance in terms of water productivity with 1. 61 kg/m^{3}, which is higher than MDI and conventional with 1.50 kg/m^{3} and 0.07 kg/m^{3}, respectively. Lastly, the profitability analysis using the AFS revealed that the Payback Period to recover the investment cost is 2.4 years, with a Break-even point of 102.42 kg/yr and a 40.91% ROI.

Keywords: Irrigation, fertilizer application, water productivity, growth, yield

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