

***OUTSEAL MEGA V2 SLIM PLC-BASED NPK CONTROL SYSTEM WITH  
HYSTERESIS METHOD ON MELON FARMLAND IN KERTONEGORO  
JEMBER VILLAGE***

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**ABSTRACT**

*East Java is the largest melon producing region in Indonesia. One of the factors that affect melon production is fertilization. Efficient fertilization is essential in melon cultivation to ensure optimal growth and maintain nutrient balance in the soil. Kertonegoro Village Farmer Group of Jember Regency is one of the business partners engaged in melon cultivation. Partners still use conventional methods in the fertilization process which causes decreased productivity. The conventional method used is considered inefficient because it tends to spend more fertilizer and is not evenly distributed to each plant. The application of a plant NPK control system based on Outseal Programmable Logic Controller (PLC) and NPK sensor with hysteresis method aims to improve fertilization efficiency. The methods used include literature study, system design, assembly and testing, troubleshooting, data collection, and report preparation. The test data shows that the system is able to keep the elements in the soil in accordance with the setpoint area by turning on the fertilizer pump twice within 10 hours with an overshoot of  $\pm 7\%$ .*

**Keywords:** *Outseal PLC, NPK Control, Hysteresis Method, Fertilization Efficiency*