EVALUATION OF SOLAR-POWERED AUTOMATED DRIP IRRIGATION SYSTEM WITH PLASTIC MULCHING IN TOMATO (*Solanum lycopersicum*) PRODUCTION

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ABSTRACT

ALCANTARA, VAL A., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Munoz Nueva Ecia, Philippines, **June 2023. EVALUATION OF SOLAR-POWERED AUTOMATED DRIP IRRIGATION SYSTEM WITH PLASTIC MULCHING IN TOMATO (*Solanum lycopersicum*) PRODUCTION.**

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In recent years, automation has been developed to reduce the demand for manual irrigation, as automation has numerous advantages in farming. This study was conducted to determine and evaluate the performance of the ADIS with plastic mulch in tomato production. The study utilized a CRD with three (3) treatments and four (4) replications.

In ADIS with plastic mulch, plant height (52.14 cm), fruit quantity (4.91), fruit weight (36.84 g), fruit yield (130.08 g), and total fruit yield (3.12 kg) were found to be higher compared to drip irrigation systems with mango leaves mulch and without mulch, plant height (51.20 cm and 47.79 cm), fruit quantity (3.58 and 3.05), fruit weight (34.70 g and 32.12 g), fruit yield (92.13 g and 91.72), and total fruit yield (2.56 kg and 2.30 kg). In terms of water productivity and consumption, it was determined that ADIS with plastic mulch has the highest WP and low WC (0.016 kg/L and 801.40 L) compared to drip irrigation with mango leaves mulch (0.009 kg/L and 1015.60 L) and without mulch (0.007 kg/L and 1345.40 L). The study revealed that using the ADIS system with plastic mulch was cost viable for farmers, and implementing ADIS with plastic mulch could lead to cost reductions and more efficient resource allocation on farms, resulting in increased profits.

Keywords: automated drip irrigation system; cost viability; system performance

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