

**DEVELOPMENT OF AN ELECTROCULTURE SYSTEM FOR  
ONION (*Allium cepa L.*) PRODUCTION**

**DARREN EZRA P. ALIAGA  
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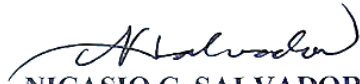
An Undergraduate Thesis Submitted to the Faculty of the Department of Agricultural and  
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for the Degree of

**BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS  
ENGINEERING  
(AB Machinery and Power Engineering)**

**JULY 2024**

**ACCEPTANCE SHEET**

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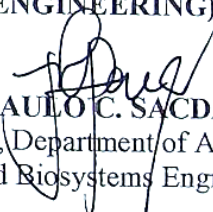
  
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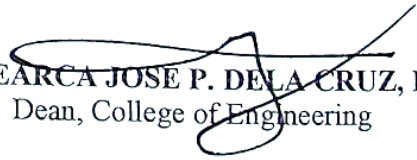
  
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## BIOGRAPHICAL SKETCH

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## ABSTRACT

**ALIAGA, DARREN EZRA P.** and **FRANCIA, JOHN PAULO D.** , Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **JULY 2024**, **DEVELOPMENT OF AN ELECTROCULTURE SYSTEM FOR ONION (*Allium cepa L.*) PRODUCTION.**

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Onions, known as sibuyas, are crucial in various cuisines but face challenges like armyworm threats. This study explored electroculture as a solution to enhance onion production and manage pests. Electroculture uses electricity in the atmosphere or soil to stimulate plant growth, showing potential in boosting growth and pest control. By creating an electric field around plants, it activates genes, accelerates metabolism, improves water absorption, increases nutrient uptake, repels pests, and promotes growth. The study aimed to design, install, and assess an electroculture system for onion production in Purok 2, Brgy. Palusapis, Science City of Muñoz, Nueva Ecija. Different voltages (5V, 7V, 12V) were tested, with traditional planting as a control. Higher voltages showed a decrease in the armyworm population and leaf damage, although not statistically significant. However, electroculture treatments improved production metrics, with the 12V treatment resulting in the highest number of leaves, bulb diameter, and yield. While electroculture positively impacted onion production, further research is needed to validate its role in sustainable farming in the Philippines.

*Keywords:* Electroculture; Onion Production; Pest Management; Armyworms; Sustainable Farming

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