

**CARBONIZED RICE HULL AS SOIL CONDITIONER FOR  
BELL PEPPER (*Capsicum annuum L.*) PRODUCTION  
UNDER GREENHOUSE CONDITION**

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An Undergraduate Thesis Submitted to the Faculty of the Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines in Partial Fulfillment of the Requirement for the Degree of

**BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS  
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**ACCEPTANCE SHEET**

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## ABSTRACT

**RIMOCAL, CHRISTIAN CLARK P.**, Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Munoz, Nueva Ecija, **June 2019, CARBONIZED RICE HULL AS SOIL CONDITIONER FOR BELL PEPPER (*Capsicum annuum L.*) PRODUCTION UNDER GREENHOUSE CONDITION**

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Bell peppers (*Capsicum annuum L.*), also called sweet peppers are grown for its fruit. It is one of the crops that can be planted inside a greenhouse because of its high market value. Rice hull can be used as fuel, as fertilizer and as soil conditioner. Rice hull needs to undergo the carbonization process to become more effective as fertilizer and as soil conditioner. Most of the farmers use inorganic fertilizer that in the long run, arises some issues like decrease in macro aggregate resulting to soil acidification that can lead to damage of top soil. Using a carbonized rice hull, it can improve the soil properties like the downward movement of the water that can help roots to easily access the water. The study aimed to evaluate the carbonized rice hull as soil conditioner for bell pepper production under greenhouse condition.

The design of drip irrigation system for bell pepper production was made by considering some parameters. The different components of drip irrigation system are water tank, lateral, mainline, emitters and water filter. The experiment was laid out in a Completely Randomized Design (CRD). The data on plant height, fruit weight, root length and crop yield were recorded and analyzed using Analysis of variance (ANOVA). Comparison among means was done using Least Significant Difference (LSD). All the expenses throughout the study were recorded and some assumptions were made.

A design of drip irrigation system was made and installed inside the greenhouse for the irrigation of bell pepper plants. Results revealed that treatment 4 (65% garden soil + 30% Vermicompost + 5% carbonized rice hull) was the best mixture of growing media in terms of increasing the growth and yield of the bell pepper under greenhouse condition. In terms of plant height, treatment 4 has the highest height with a mean of 79.44 cm followed by treatments 2, 3 and 1 with means of 67.78 cm, 61.33 cm and 58.22 cm. In terms of yield, treatment 4 has also the highest yield with a mean of 73.30 g followed by treatment 2 with a mean of 34.00 g. The estimated cost of production per kilogram is Php 384.88.

Keywords: carbonized rice hull, soil conditioner, drip irrigation

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