

**THE EFFECT OF LIQUID ORGANIC FERTILIZER OF SHRIMP  
WASTE AND COCONUT SHELL BIOCHAR ON THE AVAILABILITY  
OF N, P, AND K IN REGOSOL SOIL AND THE GROWTH OF PAKCOY  
(*Brassica rapa* L.)**

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**ABSTRACT**

Regosol soil has low nutrient availability and water-holding capacity. Shrimp waste organic fertilizer and coconut shell biochar can be used to improve the physical and chemical properties of Regosol soil. The purpose of this research is to determine the effect of shrimp waste liquid organic fertilizer and coconut shell biochar on the availability of N, P, and K in the soil and the growth of pakcoy (*Brassica rapa* L.). The research was conducted in the greenhouse of the Faculty of Agriculture at the National Development University "Veteran" Yogyakarta from April to July 2023 and then analyzed in the laboratory. The experiment used a Completely Randomized Design (CRD) with two factors. The first factor was the concentration of shrimp waste liquid organic fertilizer consisting of P0 = 0 ml/L, P1 = 25 ml/L, P2 = 50 ml/L and P3 = 75 ml/L. The second factor was the dosage of coconut shell biochar consisting of B0 = 0 ton/ha, B1 = 10 ton/ha, B2 = 15 ton/ha and B3 = 20 ton/ha. The research used pots. The preliminary analysis parameters consisted of pH H<sub>2</sub>O, C-organic, N-available, P-available, K-available, N-total, P-total, K-total, and CEC. The research results were analyzed using Analysis of Variance (ANOVA), and to determine the differences between treatments, a 5% DMRT (Duncan Multiple Range Test) was conducted. The research results indicate that shrimp waste liquid organic fertilizer (POC) affects the pH, available N, available K, and Cation Exchange Capacity (CEC) in coastal sandy Regosol soil, but it does not affect organic carbon content (C-organic) and available P. Coconut shell biochar affects pH, organic carbon content (C-organic), available P, available K, and CEC in coastal sandy Regosol soil, but it does not affect available N. There is an interaction between the treatment of shrimp waste liquid organic fertilizer and coconut shell biochar on the availability of soil N in coastal sandy Regosol soil. The combination of shrimp waste liquid organic fertilizer (POC) and coconut shell biochar treatments does not affect the availability of available P and available K in coastal sandy Regosol soil.

***Keywords: biochar, carbon, pakcoy, Regosol, shrimp waste***