

**EVALUASI KARAKTERISTIK FISIK DAN KIMIA TANAH PASIRAN
PANTAI DAN PRODUKTIVITAS PAKCOY (*Brassica rapa* L.) AKIBAT
APLIKASI ZEOLIT DAN BIOCHAR SEKAM PADI
INTISARI**

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Tanah berpasir pesisir dicirikan oleh kapasitas penahan air yang rendah, kapasitas pertukaran kation yang buruk, dan miskin makronutrien, yang membatasi budidaya sayuran berdaun seperti pakcoy (*Brassica rapa* L.). Penelitian ini bertujuan untuk membandingkan respons tanah berpasir di pesisir pantai terhadap aplikasi zeolit dan biochar sekam padi serta mengevaluasi dampaknya terhadap produktivitas tanaman. Penelitian ini dilakukan dari bulan Mei hingga September menggunakan Rancangan Acak Kelompok (RAK) dengan sembilan perlakuan: pupuk kimia+biochar (KB), pupuk kimia+zeolit (KZ), tanah berpasir (P), tanah berpasir+zeolit (PZ), pupuk organik+zeolit (OZ), kontrol kimia (CK), pupuk organik+biochar (OB), tanah berpasir+biochar (PB), dan kontrol organik (CO). Zeolit dan biochar diaplikasikan dengan dosis 1 ton/ha. Sampel tanah dikumpulkan pada awal sebelum tanam dan akhir setelah pemanenan untuk membandingkan sifat fisik (berat volume dan porositas) dan sifat kimia (pH tanah, konduktivitas listrik, N-total, P-total, dan K-total). Hasil penelitian menunjukkan bahwa pengaplikasian zeolit dan biochar selama dua kali periode masa tanam pakcoy tidak berpengaruh signifikan terhadap perubahan sifat fisik dan kimia tanah. Namun jika dilihat dari produktivitas tananaman, perlakuan pupuk organik+biochar (OB) dan pupuk kimia+zeolit (KZ) memberikan pengaruh yang signifikan dengan hasil masing-masing sebesar 1,9 kg/m². Kemudian berdasarkan analisis SEM-PLS, sifat kimia tanah berperan paling paling besar dengan kekuatan hubungan sebesar 0,938 terhadap produktivitas tanaman pakcoy.

Kata kunci: Zeolit, Biochar, Tanah, Produktivitas tanaman, Pakcoy

***EVALUATION OF PHYSICAL AND CHEMICAL CHARACTERISTICS OF
COASTAL SANDY SOIL AND PAKCOY (*Brassica rapa* L.) PRODUCTIVITY
DUE TO THE APPLICATION OF ZEOLITE AND RICE HUSK BIOCHAR
ABSTRACT***

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*Coastal sandy soils are characterized by low water-holding capacity, poor cation exchange capacity, and limited macronutrient availability, which limits the cultivation of leafy vegetables such as bok choy (*Brassica rapa* L.). This study aimed to compare the response of coastal sandy soils to the application of zeolite and rice husk biochar and evaluate their impact on crop productivity. This study was conducted from May to September using a Randomized Block Design (RBD) with nine treatments: chemical fertilizer + biochar (KB), chemical fertilizer + zeolite (KZ), sandy soil (P), sandy soil + zeolite (PZ), organic fertilizer + zeolite (OZ), chemical control (CK), organic fertilizer + biochar (BO), sandy soil + biochar (PB), and organic control (CO). Both zeolite and biochar were applied at a dose of 1 ton/ha. Soil samples were collected at the beginning before planting and the end after harvest to compare physical properties (bulk density and porosity) and chemical properties (soil pH, electrical conductivity, total N, total P, and total K). The results showed that the application of zeolite and biochar during the two bok choy planting periods did not significantly affect changes in physical and chemical properties. However, in terms of plant productivity, the organic fertilizer + biochar (OB) and chemical fertilizer + zeolite (KZ) treatments significantly impacted yields of 1.9 kilograms each. Furthermore, based on SEM-PLS analysis, soil chemical properties played the largest role, with a correlation strength of 0.938 on bok choy plant productivity.*

Keywords: Zeolit, Biocharcoal, Soil, Crop productivity, Pakcoy