

ABSTRACT

EFFECT OF SAWDUST *BIOCHAR* AND ZA FERTILIZER ON GROWTH AND YIELD OF PAKCOY (*BRASSICA RAPA L*)

BY

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Pakcoy mustard plant is one of the vegetable plants that is very easy to cultivate in cold and hot areas, namely at an altitude of 500 m - 1200 m above sea level. These plants can be planted every year, because they are classified as plants that are tolerant of high temperatures and will be even better if planted in loose soil, rich in organic matter, and good drainage with acidity (pH) 6 to 7. It needs efficient use of nitrogen fertilizer with the addition of biochar. This study aims to determine the effect of *biochar* and ZA fertilizer on the growth and production of pakcoy (*Brassica rapa L*). This research was conducted from December 2020 to March 2021 at the *Greenhouse Building L*, Faculty of Agriculture, University of Lampung. This study used a Factorial Completely Randomized Design (RALF) consisting of 2 factors, namely the *biochar* dose factor consisting of: control (without the addition of *biochar*), 5 tons/ha, 10 tons/ha, and 15 tons/ha. ZA fertilizer dose factors consist of: control (without ZA fertilizer), 100 kg/ha, 200 kg/ha, 300 kg/ha. Each treatment combination was carried out using a 4 L bucket, filled with a mixture of soil and initial biochar as much as 3 kg, all treatment combinations were repeated 3 times so that 48 experimental units were obtained. Parameters observed included: analysis of soil properties, analysis of *biochar*, soil pH, bulk density, plant height, leaf width, number of leaves, leaf color, canopy area, weight of fresh top stover, dry weight of top stover, weight of bottom stover

fresh, weight of stover under dry conditions, total weight of pakcoy plants, water consumption, water productivity, and fertilizer productivity.

The results of this study indicate that the interaction effect between *biochar* dose factor and ZA fertilizer dose factor significantly (SIG > 5%) on the parameters of leaf width, *canopy* area, fresh top stover, dry top stover, fresh weight, water consumption, fertilizer productivity and had no significant effect (SIG <5%) on the parameters of plant height, number of leaves, leaf color, fresh lower stover, dry lower stover, water productivity, bulk density, and soil pH. The *biochar* dose factor had a significant effect (SIG <5%) on the parameters of leaf width, *canopy* area, bulk density, soil pH and had no significant effect (SIG>5%) on plant height, number of leaves, leaf color, fresh lower stover, dry lower stover. , top stover fresh, top stover dry, fresh weight, water consumption, water productivity and fertilizer productivity. The dose of ZA fertilizer had a significant effect (SIG >5%) on parameters of water productivity, fertilizer productivity and had no significant effect (SIG <5%) on parameters of plant height, leaf width, number of leaves, leaf color, bulk density, soil pH, *canopy* area. , fresh top stove, dry top stove, fresh bottom stove, dry bottom stove, fresh weight, water consumption.

Keywords: *Biochar*, Pakcoy, ZA Fertilizer, Dosage

ABSTRAK

PENGARUH *BIOCHAR* SERBUK GERGAJI DAN PUPUK ZA TERHADAP PERTUMBUHAN DAN HASIL TANAMAN PAKCOY (*Brassica Rapa L*)

Oleh

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Tanaman sawi pakcoy merupakan salah satu tanaman sayuran yang sangat mudah dibudidayakan pada daerah dingin maupun panas, yaitu pada ketinggian 500 m - 1200 m di atas permukaan laut. Tanaman tersebut dapat ditanam setiap tahun, karena tergolong dalam tanaman yang toleran terhadap suhu tinggi dan akan lebih baik lagi jika ditanam dalam keadaan tanah yang gembur, kaya dengan bahan organik, dan drainase yang baik dengan derajat keasaman (pH) 6 sampai 7. Maka dari itu perlu efisiensi penggunaan pupuk nitrogen dengan penambahan *biochar*. Penelitian ini bertujuan untuk mengetahui pengaruh *biochar* dan pupuk ZA terhadap pertumbuhan dan produksi pada tanaman pakcoy (*Brassica rapa L*). Penelitian ini dilaksanakan pada bulan Desember 2020 sampai Maret 2021 di *Greenhouse* Gedung L, Fakultas Pertanian, Universitas Lampung. Penelitian ini menggunakan Rancangan Acak Lengkap Faktorial (RALF) yang terdiri dari 2 faktor yaitu faktor dosis *biochar* terdiri dari : kontrol (tanpa penambahan *biochar*), 5 ton/ha, 10 ton/ha, dan 15 ton/ha. Faktor dosis pupuk ZA terdiri dari : kontrol (tanpa pupuk ZA), 100 kg/ha, 200 kg/ha, 300 kg/ha. Masing-masing kombinasi perlakuan dilakukan menggunakan ember berukuran 4 L, dengan diisi campuran tanah dan *biochar* awal sebanyak 3 kg, semua kombinasi perlakuan diulang sebanyak 3 kali sehingga diperoleh 48 unit percobaan. Parameter yang diamati meliputi : analisis sifat tanah, analisis *biochar*, pH tanah, bulk density,

tinggi tanaman, lebar daun, jumlah daun, warna daun, luas *canopy*, bobot brangkasan atas segar, bobot brangkasan atas kering, bobot brangkasan bawah segar, bobot brangkasan bawah kering, total bobot tanaman pakcoy, konsumsi air, produktivitas air, dan produktivitas pupuk.

Hasil penelitian ini menunjukkan bahwa, pengaruh interaksi antar faktor dosis *biochar* dan faktor dosis pupuk ZA berpengaruh nyata (SIG >5%) terhadap parameter lebar daun, luas *canopy*, brangkasan atas segar, brangkasan atas kering, bobot segar, konsumsi air, produktivitas pupuk dan tidak berpengaruh nyata (SIG <5%) terhadap parameter tinggi tanaman, jumlah daun, warna daun, brangkasan bawah segar, brangkasan bawah kering, produktivitas air, bulk density, dan pH tanah. Faktor dosis *biochar* berpengaruh nyata (SIG <5%) terhadap parameter lebar daun, luas *canopy*, bulk density, pH tanah dan tidak berpengaruh nyata (SIG >5%) tinggi tanaman, jumlah daun, warna daun, brangkasan bawah segar, brangkasan bawah kering, brangkasan atas segar, brangkasan atas kering, bobot segar, konsumsi air, produktivitas air dan produktivitas pupuk. Dosis pupuk ZA berpengaruh nyata (SIG >5%) terhadap parameter produktivitas air, produktivitas pupuk dan tidak berpengaruh nyata (SIG <5%) terhadap parameter tinggi tanaman, lebar daun, jumlah daun, warna daun, bulk density, pH tanah, luas *canopy*, brangkasan atas segar, brangkasan atas kering, brangkasan bawah segar, brangkasan bawah kering, bobot segar, konsumsi air.

Kata kunci : *Biochar*, Pakcoy, Pupuk ZA, Dosis