

ABSTRACT

APPLICATION OF PELLET COMPOST FERTILIZER ENRICHED WITH NPK FERTILIZER AND BIOCHAR FERTILIZER FROM OIL PALM EMPTY FRUIT BUNCHES IN PAKCOY CULTIVATION (*Brassica rapa L.*)

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This study aimed to determine the effect of pelletized compost fertilizer enriched with NPK fertilizer and oil palm empty fruit bunch (EFB) biochar on the growth and yield of pakcoy (*Brassica rapa L.*). The research was conducted from June to August 2023 at the Agricultural Machinery and Power Laboratory (DAMP), Water and Land Resources Engineering Laboratory (RSDAL), greenhouse of the Department of Agricultural Engineering, Faculty of Agriculture, University of Lampung, and the Soil Research Institute Laboratory, Bogor.

The study used a factorial Completely Randomized Design (CRD) with two factors, namely EFB biochar dosage and NPK fertilizer dosage. The biochar factor consisted of three levels: 0%, 2%, and 4%, while the NPK factor consisted of three levels: 0%, 3%, and 6%, with three replications, resulting in 27 experimental units. The observed parameters included plant height, number of leaves, total fresh biomass weight, shoot fresh biomass weight, root weight, water consumption, water productivity, and leaf canopy area. Data were analyzed using analysis of variance (ANOVA) followed by the Least Significant Difference (LSD) test at the 5% significance level.

The results showed that the addition of NPK fertilizer significantly affected the growth of pakcoy plants, especially plant height and number of leaves, while the application of EFB biochar alone and its interaction with NPK fertilizer did not show a significant effect. The 6% NPK treatment produced the best plant growth compared to the other treatments. The highest plant height was obtained from the combination of 0% biochar and 6% NPK treatment, reaching 17 cm, while the highest number of leaves was obtained from the combination of 4% biochar and 3% NPK treatment, reaching 14.67 leaves. The use of pelletized compost fertilizer enriched with NPK fertilizer was able to improve the growth of pakcoy plants and has the potential to become a more efficient and environmentally friendly fertilizer alternative.

Keywords: EFB biochar, NPK, pakcoy, pelletized compost fertilizer, plant growth.

ABSTRAK

APLIKASI PUPUK KOMPOS PELET YANG DIPERKAYA DENGAN PUPUK NPK DAN BIOCHAR TANDAN KOSONG KELAPA SAWIT PADA BUDIDAYA TANAMAN PAKCOY (*Brassica rapa L.*)

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Penelitian ini bertujuan untuk mengetahui pengaruh aplikasi pupuk kompos pelet yang diperkaya pupuk NPK dan biochar tandan kosong kelapa sawit (TKKS) terhadap pertumbuhan dan hasil tanaman pakcoy (*Brassica rapa L.*). Penelitian dilaksanakan pada bulan Juni sampai Agustus 2023 di Laboratorium Daya Alat dan Mesin Pertanian (DAMP), Laboratorium Rekayasa Sumber Daya Air dan Lahan (RSDAL), greenhouse Jurusan Teknik Pertanian Fakultas Pertanian Universitas Lampung, serta Laboratorium Penguji Balai Penelitian Tanah, Bogor.

Metode penelitian menggunakan Rancangan Acak Lengkap (RAL) faktorial dengan dua faktor, yaitu dosis biochar TKKS dan dosis pupuk NPK. Faktor biochar terdiri atas tiga taraf, yaitu 0%, 2%, dan 4%, sedangkan faktor NPK terdiri atas tiga taraf, yaitu 0%, 3%, dan 6%, dengan tiga kali ulangan sehingga diperoleh 27 satuan percobaan. Parameter yang diamati meliputi tinggi tanaman, jumlah daun, berat brangkasan total, berat brangkasan atas, berat akar, konsumsi air, produktivitas air, dan luas kanopi daun. Data dianalisis menggunakan sidik ragam (ANOVA) dan dilanjutkan dengan uji Beda Nyata Terkecil (BNT) taraf 5%.

Hasil penelitian menunjukkan bahwa penambahan dosis pupuk NPK berpengaruh nyata terhadap pertumbuhan tanaman pakcoy, terutama pada parameter tinggi tanaman dan jumlah daun, sedangkan pemberian biochar TKKS secara tunggal maupun interaksinya dengan NPK tidak memberikan pengaruh nyata. Perlakuan NPK 6% menghasilkan pertumbuhan tanaman terbaik dibandingkan perlakuan lainnya. Tinggi tanaman tertinggi diperoleh pada kombinasi perlakuan biochar 0% dan NPK 6% sebesar 17 cm, sedangkan jumlah daun terbanyak diperoleh pada kombinasi biochar 4% dan NPK 3% sebesar 14,67 helai. Penggunaan pupuk kompos pelet yang diperkaya NPK mampu meningkatkan pertumbuhan tanaman pakcoy serta berpotensi menjadi alternatif pupuk yang lebih efisien dan ramah lingkungan.

Kata kunci: biochar TKKS, NPK, pakcoy, pupuk kompos pelet, pertumbuhan tanaman.