ABSTRAK

KETERSEDIAAN KALIUM DAN KALIUM TERANGKUT PADA TANAMAN JAGUNG (*Zea mays L.)* AKIBAT BAHAN PEMBENAH TANAH DAN PEMUPUKAN NPK PADA TANAH ULTISOL DI GEDONG MENENG

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Indonesia memiliki 45,80 juta ha tanah Ultisol yang miskin unsur hara dengan kandungan liat tinggi yang menjadi faktor penurunan hasil produksi pertanian lahan kering, seperti jagung. Upaya untuk mengatasi hal tersebut adalah dengan menambahkan bahan pembenah tanah alami serta penambahan unsur hara N, P, K, untuk mendukung pertumbuhan jagung. Penelitian ini bertujuan untuk mengetahui pengaruh aplikasi bahan pembenah tanah dan pupuk N, P, K, terhadap kandungan kalium dapat ditukar tanah dan kalium terangkut pada tanaman. Penelitian ini dilakukan di Universitas Lampung pada Bulan Desember 2022 hingga Juni 2024 menggunakan Rancangan Acak Kelompok (RAK) faktorial dua faktor, faktor pertama yaitu kombinasi pembenah tanah: B0 : Tanpa Pembenah Tanah; B1 : Biochar Sekam Padi + Pupuk Kandang Sapi 5 ton ha^{-1} ; B2 : Biochar Tongkol Jagung + Pupuk Kandang Sapi 5 ton ha^{-1} ; B3 : Biochar Batang Singkong + Pupuk Kandang Sapi 5 ton ha^{-1} ; faktor kedua yaitu dosis pemupukan dengan 3 perlakuan: P0 : tanpa N, P, K; P1 : ½ dosis N, P, K; P2 : 1 dosis N, P, K, diulang sebanyak tiga kali sehingga diperoleh 36 satuan percobaan. Homogenitas ragam diuji dengan uji Bartlett dan aditivitas data diuji dengan uji Tukey. Jika asumsi terpenuhi maka dilakukan analisis ragam, maka dilanjutkan uji lanjut Beda Nyata Terkecil dengan taraf 5%.. Berdasarkan uji BNT dengan taraf 5%, biochar batang singkong terbukti berpengaruh lebih tinggi dalam meningkatkan ketersediaan kalium tanah dari pada biochar lainnya. Pupuk NPK ½ dosis sudah mampu meningkatkan kalium terangkut berangkasan sedangkan pada kalium terangkut tongkol dan pipilan pelu 1 dosis pemupukan. Interaksi bahan pembenah tanah dan pempukan NPK hanya ada pada variabel kalium terangkut brangkasan.

Kata kunci : batang singkong, biochar, jagung, kalium, sekam padi, tongkol jagung, ultisol

ABSTRACT

AVAILABILITY OF TRANSPORTED POTASSIUM AND TRANSPORTED POTASSIUM IN CORN PLANTS (*Zea mays L.*) AS A RESULT OF SOIL CONDITIONERS AND FERTILIZATION IN ULTISOL SOIL IN GEDONG MENENG

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Indonesia possesses 45.80 million hectares of Ultisols, which are characterized by nutrient-poor conditions and high clay content, thereby serving as limiting factors that decrease agricultural production in drylands, such as maize (Zea mays L.). An effort to overcome this issue is by applying natural soil conditioners alongside the addition of N, P, and K nutrients to support maize growth. This study aimed to determine the effects of soil conditioner applications and N, P, and K fertilization on soil exchangeable potassium and plant potassium uptake. The research was conducted at the University of Lampung from December 2022 to June 2024, employing a factorial Randomized Block Design (RBD) with two factors. The first factor was the combination of soil conditioners: B0: Without Soil Conditioner; B1: Rice Husk Biochar + Cattle Manure 5 tons ha^{-1} ; B2: Corncob Biochar + Cattle Manure 5tons ha^{-1}; and B3: Cassava Stem Biochar + Cattle Manure 5 tons ha^{-1}. The second factor was the fertilization dosage consisting of 3 treatments: P0: Without N, P, K; P1: ½ dosage of N, P, K; and P2: 1 dosage of N, P, K. The treatments were replicated three times, yielding 36 experimental units. Homogeneity of variance was tested using the Bartlett test, and data additivity was tested using the Tukey test. If the assumptions were met, the analysis of variance (ANOVA) was performed, followed by the Least Significant Difference (LSD) post-hoc test at a 5% significance level.. Based on the LSD test at the 5% level, cassava stem biochar was proven to have a significantly higher effect on increasing soil potassium availability compared to other biochars. ½ dosage of NPK fertilizer was sufficient to increase potassium uptake in the stover, whereas potassium uptake in the cobs and kernels required a full (1) dosc fertilization. The interaction between soil conditioners and NPK fertilizatic only observed on the variable of stover potassium uptake.

Keyword: biochar, cassava stem, corn, corn cob, pottasium, rice husk, ultisol