ABSTRAK

PENGARUH BAHAN PEMBENAH TANAH DAN PEMUPUKAN N, P, K TERHADAP KETERSEDIAAN NITROGEN TANAH DAN NITROGEN TERANGKUT PADA TANAMAN JAGUNG (*Zea mays* L.) DI TANAH ULTISOL GEDONG MENENG

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Ketersediaan hara Nitrogen (N) pada lahan tanam menjadi salah satu masalah produktivitas jagung di Indonesia. Pembenah tanah seperti Biochar dan Pupuk kandang sapi merupakan solusi dalam meningkatkan ketersediaan dan nitrogen terangkut, selain itu pemupukan N, P, K dapat meningkatkan produksi jagung. Tujuan dari penelitian ini untuk mengetahui pengaruh aplikasi bahan pembenah tanah dan pemupukan N, P, K terhadap ketersediaan serta nitrogen terangkut pada tanaman jagung. Penelitian ini dilaksanakan di Laboratorium Lapang Terpadu dan Laboratorium Ilmu Tanah, Fakultas Pertanian, Universitas Lampung. Penelitian dilaksanakan pada Desember 2022. Penelitian ini 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%. Uji korelasi dilakukan untuk mengetahui pengaruh C-organik dan pH tanah terhadap N-total tanah. Hasil menunjukkan pH tanah berkorelasi dengan N-total tanah. Berdasarkan uji BNT dengan taraf 5%, biochar batang singkong terbukti berpengaruh lebih tinggi dalam meningkatkan ketersediaan nitrogen tanah daripada biochar lainnya. Pupuk N, P, K satu dosis terbukti berpengaruh dalam meningkatkan nitrogen terangkut brangkasan dan pipilan. Kombinasi biochar batang singkong dan pupuk N, P, K satu kali dosis terbukti berpengaruh dalam meningkatkan nitrogen tanah.

Kata kunci: biochar, jagung, nitrogen, pembenah tanah, pupuk kandang sapi

ABSTRACT

THE EFFECT OF SOIL AMANDMENT AND N, P, K FERTILIZATION ON SOIL NITROGEN AVAILABILITY AND NITROGEN TRANSPORT IN CORN (Zea mays L.) IN ULTISOL SOIL IN GEDONG MENENG

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Nitrogen (N) availability is one of the problems of corn productivity in Indonesia. Soil amandment such as Biochar and cow Manure are solutions in increasing the availability and transport of nitrogen, in addition to N, P, K fertilization can increase corn production. The purpose of this study was to determine the effect of soil amandment application and N, P, K fertilization on the availability and transport of nitrogen in corn plants. This study was conducted at the Integrated Field Laboratory and Soil Science Laboratory, Faculty of Agriculture, University of Lampung. The study was conducted in December 2022. This study used a two-factorial Randomized Block Design (RDK), the first factor is a combination of soil amandment: B0: without Soil amandment; B1: Rice Husk Biochar + Cow Manure 5 tons ha^{-1}; B2: Corn Cob Biochar + Cow Manure 5 tons ha^{-1}; B3: Cassava Stem Biochar + Cow Manure 5 tons ha^{-1}; The second factor is the N, P, K fertilization dose with 3 treatments: P0: without N, P, K; P1: ½ Dose of N, P, K; P2: 1 Dose of N, P, K, repeated three times to obtain 36 experimental units. Homogeneity of variance was tested by the Bartlett test and data additivity was tested by the Tukey test. If the assumptions are met, the analysis was carried out in various ways, if differences are found, a further test of the Least Significant Difference is carried out at a level of 5%. A correlation test was conducted to determine the effect of organic C and soil pH on soil total N. The correlation results showed that pH had no effect on soil total N. Based on the LSD test at a level of 5%, cassava stem biochar was shown to have a higher effect in increasing soil nitrogen availability compared to other biochars. A single dose of N, P, K fertilizer was shown to have an effect in increasing nitrogen transported by stover and pipes. The combination of cassava stem biochar and a single dose of N, P, K fertilizer was shown to have an effect in increasing soil nitrogen.

Key words: *biochar, corn, cow manure, nitrogen, soil amandment*