ABSTRAK

PENGARUH AMELIORAN DAN PEMUPUKAN N, P, DAN K TERHADAP KETERSEDIAAN UNSUR HARA MIKRO Cu DAN Zn DI DALAM TANAH PADA LAHAN PERTANAMAN JAGUNG MANIS

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Unsur hara mikro Cu dan Zn berperan penting dalam metabolisme tanaman meskipun dibutuhkan dalam jumlah kecil. Penelitian ini bertujuan mempelajari pengaruh kombinasi amelioran (biochar sekam padi+pupuk kandang sapi dan pupuk kandang sapi+*bio-slurry*) serta pemupukan N, P, K terhadap ketersediaan Cu dan Zn di tanah pada pertanaman jagung manis. Penelitian dilaksanakan di Balai Pelatihan Pertanian Lampung (September-Desember 2024) dengan Rancangan Acak Kelompok faktorial. Faktor pertama adalah amelioran: tanpa amelioran (B_0), biochar sekam padi + pupuk kandang sapi (B_1), dan pupuk kandang sapi + *bio-slurry* (B_2). Faktor kedua adalah dosis pupuk N, P, K: tanpa pupuk (P_0), ½ dosis rekomendasi (P_1), 1 dosis rekomendasi (P_2), dan dosis tepat (P_3). Hasil penelitian menunjukkan bahwa aplikasi amelioran, pemupukan N, P, K maupun interaksinya tidak berpengaruh nyata terhadap ketersediaan Cu dan Zn tanah. Namun, kombinasi biochar sekam padi dan pupuk kandang sapi meningkatkan C-organik dan P-tersedia. Pemupukan N, P, K dosis tepat menghasilkan P-tersedia tertinggi. Interaksi amelioran dengan pemupukan N, P, K berpengaruh nyata terhadap pH tanah, dengan pH tanah tertinggi pada perlakuan pemupukan N, P, K satu dosis rekomendasi dengan kombinasi pupuk kandang sapi dan *bio-slurry*. Ketersediaan Cu dipengaruhi secara sangat nyata oleh interaksi C-organik dan pH tanah ($R^2 = 0,73$), namun ketersediaan Zn tidak dipengaruhi oleh pH, C-organik dan P-tersedia maupun interaksinya.

Kata Kunci: Cu-tersedia, Zn-tersedia, biochar sekam padi, pupuk kandang sapi, *bio-slurry,* pupuk N, P, K.

ABSTRACT

THE EFFECTS OF AMELIORANTS AND N, P, AND K FERTILIZATION ON THE AVAILABILITY OF MICRONUTRIENTS Cu AND Zn IN SOIL ON SWEET CORN PLANTATION

By

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Copper and zinc play important roles in plant metabolism despite being required in small amounts. This study aims to examine the effects of combinations of ameliorants (rice husk biochar+cow manure and cow manure+*bio-slurry*) and N, P, K fertilization on Cu and Zn availability in soil on sweet corn plantation. The study was conducted at the Lampung Agricultural Training Center (September-December 2024) using a factorial Randomized Block Design. The first factor was ameliorants: no ameliorant (B_0), rice husk biochar + cow manure (B_1), and cow manure + *bio-slurry* (B_2). The second factor was N, P, K fertilizer doses: no fertilizer (P_0), ½ recommended dose (P_1), 1 recommended dose (P_2), and precise dose (P_3). Results showed that ameliorants, N, P, K fertilization and their interactions had no significant effect on Cu and Zn availability in soil. However, the combination of rice husk biochar and cow manure significantly increased organic-C and available-P. Precision fertilization resulted in the highest available-P. The interaction between ameliorants and N, P, and K fertilization significantly affected soil pH, with the highest soil pH obtained in the treatment of N, P, and K fertilization at one recommended dose combined with cow manure and *bio-slurry*. Cu availability was significantly influenced by the interaction of C-organic and soil pH ($R^2 = 0.73$), but the availability of Zn was not effected by pH, organic-C, available-P and their interactions.

Keywords: available-Cu, available-Zn, rice husk biochar, cow manure, *bio-slurry*, N, P, K fertilizers.