ABSTRAK

KOMBINASI BAHAN AMELIORAN DAN DOSIS PEMUPUKAN N, P, DAN K TERHADAP KETERSEDIAAN FOSFOR TANAH, FOSFOR TERPANEN DAN PRODUKSI JAGUNG MANIS DI KEBUN PERCOBAAN BALAI PELATIHAN PERTANIAN LAMPUNG

Oleh

NUR HIDAYAH

Fosfor berperan penting dalam metabolisme tanaman jagung manis, namun ketersediaannya sering terbatas akibat fiksasi oleh Al dan Fe. Penelitian ini bertujuan untuk mempelajari pengaruh kombinasi bahan amelioran dan dosis pemupukan N, P, K terhadap ketersediaan fosfor tanah, fosfor terpanen, dan produksi tanaman jagung manis. Penelitian dilaksanakan di lahan Balai Pelatihan Pertanian Lampung pada bulan September 2024–November 2025 dengan menggunakan Rancangan Acak Kelompok faktorial. Faktor pertama adalah kombinasi bahan 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 kombinasi biochar sekam padi dan pupuk kandang sapi menghasilkan ketersediaan fosfor tertinggi pada fase vegetatif maksimum dan fase panen, serta produksi jagung manis tertinggi sebesar 18,59 ton ha^{-1}. Pemupukan dosis tepat (P_3) mampu mempertahankan ketersediaan fosfor tertinggi hingga fase panen dan menghasilkan produksi tertinggi sebesar 19,20 ton ha^{-1}. Terdapat interaksi nyata antara bahan amelioran dan pemupukan terhadap serapan fosfor, dimana perlakuan B_1P_3 menghasilkan fosfor terpanen tertinggi. Terdapat korelasi nyata antara C-organik dengan P-tersedia fase vegetatif maksimum (r = 0,595), serta korelasi sangat nyata antara P-tersedia fase vegetatif maksimum dengan produksi jagung manis (r = 0,803).

Kata Kunci: biochar sekam padi, pupuk kandang sapi, *bio-slurry*, fosfor tersedia, fosfor terpanen, jagung manis.

ABSTRACT

COMBINATION OF AMELIORANTS AND FERTILIZER DOSES OF N, P, AND K ON SOIL PHOSPHORUS AVAILABILITY, HARVESTED PHOSPHORUS AND SWEET CORN PRODUCTION IN THE EXPERIMENTAL GARDEN OF THE LAMPUNG AGRICULTURAL TRAINING CENTER

By

NUR HIDAYAH

Phosphorus plays a vital role in sweet corn metabolism; however, its availability is often limited due to fixation by Al and Fe. This study aims to examine the effects of ameliorant combinations and N, P, K fertilization doses on soil phosphorus availability, harvested phosphorus, and sweet corn production. The research was conducted at the Lampung Agricultural Training Center experimental field in September 2024 – November 2025 using a factorial Randomized Block Design. The first factor was ameliorant combination: 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 dose: no fertilizer (P_0), ½ recommended dose (P_1), 1 recommended dose (P_2), and precise dose (P_3). Results showed that the combination of rice husk biochar and cow manure produced the highest phosphorus availability at maximum vegetative phase and harvest phase, as well as the highest sweet corn yield of 18,59 ton ha^{-1}. Precise fertilization maintained the highest phosphorus availability until harvest phase and produce the highest sweet corn yield of 18,59 ton ha^{-1}. A significant interaction between ameliorant and fertilization was found for harvested phosphorus, where treatment B_1P_3 produced the highest. A significant correlation was found between organic-C and available-P at maximum vegetative phase ($r = 0.595$), and a highly significant correlation between available-P at maximum vegetative phase and sweet corn production ($r = 0.803$).

Keywords: rice husk biochar, cow manure, *bio-slurry*, available phosphorus, harvested phosphorus, sweet corn.