

ABSTRAK

PERILAKU ADSORPSI FOSFOR, P TERPANEN, DAN PRODUKSI TANAMAN JAGUNG AKIBAT PERLAKUAN BIOCHAR DAN PUPUK KANDANG AYAM DI TANAH ULTISOL MUSIM TANAM KE-3

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Di Indonesia, jagung merupakan bahan pangan pokok kedua setelah beras yang memiliki banyak manfaat dan dapat diolah menjadi berbagai jenis bahan makanan, bahan pakan ternak dan bahan baku industri. Penelitian ini dilakukan untuk mengetahui perilaku adsorpsi fosfor (P) menggunakan Metode Langmuir, P terpanen pada tanaman jagung serta produksi tanaman jagung. Penanaman jagung dan analisis unsur hara disusun dalam rancangan acak kelompok, terdapat 4 perlakuan yaitu, PPD = pupuk dasar (Urea : 400 kg.ha⁻¹, TSP-46 : 150 kg.ha⁻¹, KCl : 100 kg.ha⁻¹); PPD + BCR = pupuk dasar + biochar 5 Mg.ha⁻¹; PPD + PKA = pupuk dasar + pupuk kandang ayam 5 Mg.ha⁻¹; dan PPD + BCR + PKA = pupuk dasar + biochar 5 Mg.ha⁻¹ + pupuk kandang ayam 5 Mg.ha⁻¹. Penanaman jagung dilaksanakan di Laboratorium Lapangan Terpadu, Fakultas Pertanian, Universitas Lampung. Sedangkan analisis unsur hara dilakukan di Laboratorium Ilmu Tanah, Fakultas Pertanian, Universitas Lampung. Hasil penelitian menunjukkan pemberian bahan organik berupa pupuk kandang ayam dan biochar mampu meningkatkan produksi tanaman jagung. Pemberian pupuk kandang ayam atau biochar pada tanah mampu menurunkan jerapan maksimum P (X_{max}) pada tanah. Jerapan maksimum P (X_{max}) tanah sebelum tanam berkorelasi positif dengan P-tersedia, namun tidak berkorelasi terhadap P-brangkasan, P-biji, P-tongkol, produksi jagung, P-total, dan C-organik. Pada tanah setelah panen jerapan maksimum P (X_{max}) berkorelasi positif dengan P-tersedia namun tidak berkorelasi terhadap P-brangkasan, P-biji, P-tongkol, produksi jagung, P-total, dan C-organik, namun pada Relatif energi ikatan (K_L) fosfor pada tanah setelah panen berkorelasi positif terhadap P-biji, P-tongkol, dan produksi jagung namun tidak berkorelasi terhadap P-tersedia, P-brangkasan, P-total dan C-organik.

Kata kunci : Biochar, Langmuir, Pupuk kandang ayam, Produksi jagung.

ABSTRACT

PHOSPHORUS ADSORPTION BEHAVIOR, HARVESTED P, AND MAIZE CROP PRODUCTION DUE TO BIOCHAR AND CHICKEN MANURE APPLICATIONS IN ULTISOL SOIL IN 3rd PLANTING SEASON

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In Indonesia, corn is the second staple food after rice which has many benefits and can be processed into various types of food, animal feed and industrial raw materials. This research was conducted to determine the adsorption behavior of phosphorus (P) using the Langmuir Method, P harvested on corn plants and corn plant production. The experiment was arranged in a randomized block design, heaving 4 treatments, namely, PPD = basalt fertilizer (Urea: 400 kg.ha⁻¹, TSP-46: 150 kg.ha⁻¹, KCl: 100 kg.ha⁻¹); PPD + BCR = basalt fertilizer + biochar 5 Mg.ha⁻¹; PPD + PKA = basalt fertilizer + chicken manure 5 Mg.ha⁻¹; and PPD + BCR + PKA = basalt fertilizer + biochar 5 Mg.ha⁻¹ + chicken manure 5 Mg.ha⁻¹, corn planting was carried out at the Integrated Field Laboratory, Faculty of Agriculture, University of Lampung. Meanwhile, nutrient analysis was carried out at the Soil Science Laboratory, Faculty of Agriculture, University of Lampung. The results show that the applications of organic materials in the form of chicken manure and biochar increase corn production. Applying chicken manure or biochar to the soil can reduce the maximum adsorption of P (X_{max}) in the soil. Maximum soil P adsorption (X_{max}) before planting was positively correlated with available P, but not correlated with P in shoots, P in Seeds, P in cobs, corn production, total soil P, and soil organic C. In the soil after harvest maximum adsorption of P (X_{max}) is positively correlated with available P but not correlated with P in shoots, P in seeds, P in cobs, corn production, total soil P, and soil organic C, but the relative binding energy (KL) of phosphorus in the soil after harvest is positively correlated with P in seeds, P in cobs and corn production but not correlated with available P, P in shoots, total soil P and soil organic C.

Key word : Biochar, Langmuir, Chicken manure, Corn production.