ABSTRAK

PENGARUH RESIDU SETELAH 4 MUSIM TANAM APLIKASI BIOCHAR DAN KOTORAN AYAM TERHADAP KEMAMPUAN TANAH MENAHAN AIR DAN PRODUKTIVITAS TANAMAN JAGUNG MANIS (*Zea mays saccharata* Sturt.) DI LAHAN KERING

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Tanah Ultisol memiliki permasalahan bahan organik tanah dan unsur hara rendah. Kemampuan tanah menahan air merupakan salah satu sifat fisik tanah yang menjadi indikator tingkat kesuburan suatu tanah. Upaya untuk meningkatkan kesuburan tanah dapat dilakukan dengan cara pemberian biochar dan kotoran ayam. Pada penelitian ini mempelajari residu aplikasi biochar dan kotoran ayam setelah pemberian 4 tahun sebelumnya. Penelitian ini bertujuan untuk menentukan apakah aplikasi biochar, kotoran ayam dan kombinasi keduanya setelah 4 musim tanam mempunyai kemampuan tanah menahan air dan produktivitas tanaman jagung manis di lahan kering lebih tinggi dibandingkan kontrol. Penelitian ini menggunakan Rancangan Acak Kelompok (RAK) non faktorial dengan 4 kelompok dan 4 perlakuan yaitu, B_0 = kontrol, B_1 = biochar 5 ton ha^{-1} , B_2 = kotoran ayam 5 ton ha^{-1} , dan B_3 = biochar 5 ton ha^{-1} + kotoran ayam 5 ton ha^{-1}. Data kemampuan menahan air, struktur tanah dan C-organik yang dilakukan dengan cara membandingkan hasil analisis dengan kelas penetapan kriteria yang ada. Data yang diperoleh dari hasil analisis kemudian disajikan dalam bentuk tabel dan data produksi jagung manis dianalisis ragam, dilanjutkan dengan uji BNT 5%. Hasil penelitian menunjukkan bahwa residu biochar, kotoran ayam dan kombinasi keduanya setelah 4 musim tanam mempunyai kemampuan tanah menahan air di lahan kering tidak berpengaruh terhadap kelas kemampuan menahan air karena masih dalam kriteria yang sama, selanjutnya residu kombinasi biochar dan kotoran ayam setelah 4 musim tanam mempunyai kemampuan tanah menahan air di lahan kering tidak berpengaruh terhadap kelas kemampuan menahan air karena masih dalam kriteria yang sama

dan residu biochar, kotoran ayam dan kombinasi keduanya setelah 4 musim tanam tidak berpengaruh terhadap produktivitas jagung manis..

Kata kunci : air tersedia, bahan organik, biochar, , kemampuan tanah menahan air, kotoran ayam

ABSTRACT

THE EFFECT OF RESIDUE AFTER 4 PLANTING SEASONS OF BIOCHAR APPLICATION AND CHICKEN MANURE ON SOIL ABILITY TO HOLD WATER AND SWEET CORN (Zea *mays saccharata* Sturt.) PLANT PRODUCTIVITY IN DRY LAND

By

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Ultisol soil has problems with low organic matter content and nutrient availability. The soil's ability to retain water is one of its physical properties that serves as an indicator of soil fertility. Efforts to improve soil fertility can be made by applying biochar and chicken manure. This study examines the residual effects of biochar and chicken manure application after four years. The objective of this study was to determine whether the application of biochar, chicken manure, and their combination after four growing seasons had a higher soil water retention capacity and sweet corn productivity in dryland compared to the control. The study used a non-factorial Randomized Complete Block Design (RCBD) with four groups and four treatments, namely B0 = control, B1 = biochar at 5 tons ha^{-1}, B2 = chicken manure at 5 tons ha^{-1}, and B3 = biochar 5 tons ha^{-1} + chicken manure 5 tons ha^{-1}. Data on water holding capacity, soil structure, and organic carbon were obtained by comparing the analysis results with established classification criteria. The obtained data were presented in tables, and the sweet corn yield data were analyzed using analysis of variance (ANOVA), followed by a 5% LSD test. Research results showed that the residues of biochar, chicken manure, and their combination after four planting seasons did not affect the soil water-holding capacity class in dryland, as they remained within the same criteria. Furthermore, the residue of the combination of biochar and chicken manure after four planting seasons did not affect the soil water-holding capacity class in dryland, as it still met the same criteria. Additionally, the residues of biochar, chicken manure, and their combination after four planting seasons had no effect on sweet corn productivity.

Key words: available water, biochar, chicken manure, soil fertilizer, water retention capacity