

Peranan Berbagai Jenis Biochar untuk Meningkatkan Kadar Karbon pada Tanah Entisol

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ABSTRAK

Tanah Entisol memiliki kandungan senyawa kimia dan bahan organik yang rendah. Biochar merupakan salah satu sumber bahan organik yang kaya akan karbon (C). Penelitian ini bertujuan untuk mengetahui peranan berbagai jenis biochar, dosis pemberian dan lama inkubasi terhadap peningkatan kadar karbon tanah Entisol. Metode penelitian menggunakan metode Rancangan Acak Lengkap (RAL) 2 faktor, faktor pertama dosis pemberian biochar, dan faktor kedua lama inkubasi. Pengamatan dilakukan pada 1 bulan, 2 bulan, dan 3 bulan. Masing-masing perlakuan diulang tiga kali. Setiap pot berisi 5.62 kg tanah kering angin. Parameter yang diamati meliputi C-Organik (%), N-total (%), KPK (Cmol kg^{-1}), bahan organik (%), ratio C/N (%) dan pH H_2O . Analisis data menggunakan analisis sidik ragam dan uji Duncan Multiple Range Tes (DMRT). Hasil analisis tanah Entisol Potorono, Banguntapan, Bantul, menunjukkan kadar C-organik sebesar 0.55%. Pada bahan biochar menunjukkan kadar C-organik biochar tempurung kelapa lebih tinggi yaitu 9.52%, bila dibandingkan dengan biochar sekam padi sebesar 5.49%, dan biochar serbuk gergaji sebesar 6.42%. Hasil penelitian menunjukkan kadar C-organik tanah perlakuan pemberian biochar tempurung kelapa pada inkubasi 1, 2, dan 3 bulan memiliki kadar C-organik sebesar 1.42%. Hasil tersebut lebih tinggi dibandingkan biochar sekam padi yaitu 1.41%, dan biochar serbuk gergaji yaitu 1.38%. Perlakuan pemberian biochar tempurung kelapa inkubasi 1, 2 dan 3 bulan dapat meningkatkan KPK tanah menjadi $8.64 \text{ Cmol kg}^{-1}$ terhadap KPK tanah Entisol Potorono yang pada awalnya memiliki KPK tanah sebesar $6.16 \text{ Cmol kg}^{-1}$. Perlakuan dengan pemberian biochar sekam padi dan biochar serbuk gergaji inkubasi 1, 2 dan 3 bulan dapat meningkatkan kandungan KPK tanah. Kandungan KPK tanah yang dihasilkan yaitu masing-masing sebesar $8.75 \text{ Cmol kg}^{-1}$ dan $8.64 \text{ Cmol kg}^{-1}$. Hasil penelitian menunjukkan bahwa pada perlakuan pemberian biochar tempurung kelapa menghasilkan kadar C-organik tanah tertinggi, bila dibandingkan dengan jenis biochar sekam padi atau serbuk gergaji setelah diaplikasikan pada tanah.

Kata kunci : Entisol, jenis biochar, inkubasi, C-organik

Role of Various Types of Biochar to Increase Levels of Carbon in Soil Entisol

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ABSTRACT

Soil Entisol contains chemical compounds and low organic matter. Biochar is one source of organic material rich in carbon (C). This study aims to determine the role of different types of biochar, the dosage and duration of incubation to increase soil carbon levels Entisol. The research method using completely randomized design (CRD) two factors, the first dosage of biochar, and the second factor long incubation. Observations were made at 1 month, 2 months and 3 months. Each - each treatment was repeated three times. Each pot contains 5.62 kg of dry soil wind. The parameters observed Organic C (%), N-total (%), KPK (cmol kg⁻¹), organic matter (%), the ratio of C / N (%) and pH H₂O. Analysis of data using analysis of variance and Duncan test Multiple Range Test (DMRT). The results of soil analysis Entisol Potorono, Banguntapan, Bantul, showed levels of C-organic at 12.55%. In biochar material showed higher levels of C-organic coconut shell biochar higher at 9.52%, when compared with biochar at 5.49% rice husk and sawdust at 6.42 biochar%. The results showed levels of C-organic soil biochar treatment provision coconut shell on incubation 1, 2, and 3 months had higher levels of C-organic at 1.42%. These results are higher than rice hull biochar is 1:41%, and biochar sawdust is 1.38%. Treatment Award biochar coconut shell incubation 1, 2 and 3 months can improve the soil CEC 8.64 cmol kg⁻¹ of the Commission land Entisol Potorono who initially had CEC land at 6.16 cmol kg⁻¹. Treatment with the provision of biochar biochar rice husk and sawdust incubation 1, 2 and 3 months the Commission may increase the content of soil. The content of soil CEC produced respectively amounted to 8.75 cmol kg⁻¹ and 8.64 cmol kg⁻¹. The results showed that the administration of treatment biochar coconut shell produce high levels of soil organic C-highest, when compared with biochar types of rice husks or sawdust after application on the ground

Keywords: Entisol, types of biochar, incubation, C-organic