ABSTRAK

APLIKASI BIOCHAR DAN PUPUK KANDANG AYAM TERHADAP RESPIRASI TANAH PADA PERTANAMAN PADI GOGO (*Oryza sativa* L.) DI TANAH ULTISOL PADA MUSIM TANAM KE-2

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Lahan kering tanah Ultisol perlu dimanfaatkan untuk mengoptimalisasi produksi padi salah satunya jenis padi gogo (*Oryza sativa* L.). Tetapi lahan kering tanah Ultisol memiliki keterbatasan kesuburan tanah salah satunya dapat dilihat dari respirasi tanah. Tujuan dari penelitian ini yaitu untuk mempelajari pengaruh aplikasi biochar, pupuk kandang ayam dan kombinasi keduanya terhadap respirasi tanah, mempelajari korelasi antara variabel pendukung dengan respirasi tanah dan mempelajari korelasi antara respirasi tanah dengan produksi padi gogo (*Oryza sativa* L.). Penelitian ini disusun dalam Rancangan Acak Kelompok non faktorial (RAK) yang terdiri dari 4 perlakuan yaitu B_0 (kontrol), B_1 (Biochar 5 ton ha^{-1}), B_2 (Pupuk kandang 5 ton ha^{-1}), dan B_3 (Kombinasi Biochar 5 ton ha^{-1} dengan Pupuk kandang 5 ton ha^{-1}) dan 4 ulangan, sehingga diperoleh 16 unit percobaan. Data diuji homogenitas ragamnya dengan uji Bartlett, aditifitas data diuji dengan uji Tukey dan dilanjutkan dengan uji BNT taraf 5%. Hubungan antara pH tanah, kadar air tanah, suhu tanah, dan C-organik dengan respirasi tanah diuji dengan uji korelasi. Pengamatan respirasi tanah dilakukan sebanyak 3 kali yaitu pada waktu sebelum olah tanah, vegetatif maksimum, dan setelah panen. Hasil penelitian menunjukkan bahwa aplikasi biochar, pupuk kandang ayam dan kombinasi keduanya tidak berpengaruh nyata terhadap respirasi tanah, terdapat korelasi positif antara suhu tanah dengan respirasi tanah pada pengamatan vegetatif maksimum, dan perlakuan berpengaruh nyata terhadap produksi padi gogo (*Oryza sativa* L.).

Kata kunci: Biochar, Ultisol , padi gogo, pupuk kandang ayam, respirasi tanah

ABSTRACT

APPLICATION OF BIOCHAR AND CHICKEN MANURE ON SOIL RESPIRATION IN GOGO RICE (*Oryza sativa* L.) CULTIVATION IN ULTISOLS AT SECOND GROWING SEASON

By

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Ultisol dry land needs to be utilized to optimize rice production, one of which is gogo rice (*Oryza sativa* L.). But the Ultisol dry land has limited soil fertility, one of which can be seen from soil respiration. The aims of this study were to study the effect of the application of biochar, chicken manure and a combination of both on soil respiration, study the correlation between supporting variables and soil respiration and study the correlation between soil respiration and production of gogo rice (*Oryza sativa* L.). This study was arranged in a non-factorial Randomized Block Design (RBD) consisting of 4 treatments, namely B_0 (control), B_1 (Biochar 5 tons ha^{-1}), B_2 (Manure 5 tons ha^{-1}), and B_3 (Combination of Biochar 5 tons ha^{-1} with manure 5 tons ha^{-1}) and 4 replicates, so that 16 experimental units were obtained. The data were tested for homogeneity of variance with the Bartlett test, the additiveness of the data was tested with the Tukey test and continued with the LSD test at the 5% level. The relationship between soil pH, soil water content, soil temperature, and C-organic with soil respiration was tested by correlation test. Observation of soil respiration was carried out 3 times, namely at the time before tillage, maximum vegetatif, and after harvest. The results showed that the application of biochar, chicken manure and a combination of the two had no significant effect on soil respiration, there is a positive correlation between soil temperature and soil respiration at maximum vegetatif observation, and the treatment had a significant effect on the production of gogo rice (*Oryza sativa* L.).

Keywords: Biochar, chicken manure, Ultisols, soil respiration, gogo rice