PENGARUH KOMPOS JERAMI PADI PLUS TITHONIA DAN BIOCHAR SEKAM PADI TERHADAP PERBAIKAN SIFAT KIMIA TANAH SERTA PRODUKSI PADI (*Oryza sativa* L.) DI KECAMATAN KURANJI KOTA PADANG

TESIS

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Abstrak

Penggunaan pupuk buatan secara intensif merupakan salah satu pemicu berkurangnya produktivitas tanah. Penelitian ini bertujuan untuk mengetahui pengaruh kompos jerami padi plus tithonia (j+t) dan biochar sekam padi dalam meningkatkan sifat kimia tanah dan produksi padi serta mengetahui karakteristik gugus fungsional dari kompos j+t dan biochar sekam padi. Penelitian menggunakan rancangan acak kelompok terdiri dari 6 perlakuan dan 3 ulangan: 0% kompos j+t dan 0% biochar sekam padi, 100% kompos j+t, 75% kompos j+t dan 25% biochar sekam padi, 50% kompos j+t dan 50% biochar sekam padi, 25% kompos j+t dan 75% biochar sekam padi, 100% biochar sekam padi. Hasil penelitian menunjukkan bahwa terjadi pengaruh pemberian kompos j+t dan biochar sekam padi terhadap nilai sifat kimia tanah dan produksi padi pada pemberian 25% kompos j+t dan 75% biochar sekam padi memberikan pengaruh terbaik dengan nilai pH H_2O sebesar 6,30; Eh 65,00 mV; C-organik 2,53% kg; bahan organik 4,35%; N-total 0,93%; P-tersedia 26,00 ppm; KTK 40,48 cmol/kg; K-dd 1,47 cmol/kg; Ca-dd 1,06 cmol/kg; Na-dd 0,67 cmol/kg; Mg-dd 0,57 cmol/kg dan memberikan pengaruh terhadap tinggi tanaman sebesar 80,50 cm; jumlah anakan total 26,20 anakan; jumlah anakan produktif 22,44 anakan; bobot kering jerami 7,49 ton/ha; bobot gabah bernas 6,36 ton/ha; angkutan N 21,13 kg/ha; angkutan P 2,60 kg/ha; angkutan K 183,12 kg/ha. Karakteristik gugus fungsional dari kombinasi kompos j+t dan biochar sekam padi menghasilkan bilangan gelombang sebesar 3350,32 cm^{-1} dengan jenis ikatan O-H; N-H; 2112,67cm^{-1} -C≡C; -C=N; 1626,51cm^{-1} C=C; 1052,73cm^{-1} C=C-H.

Kata Kunci: biochar, kompos, produksi, sifat kimia tanah.

THE EFFECT RICE STRAW COMPOST PLUS TITHONIA AND BIOCHAR ON IMPROVMENT OF SOIL CHEMICAL PROPERTIES AND RICE (*Oryza sativa* L.) PRODUCTION IN KURANJI, PADANG CITY

Abstract

Intensive use of artificial fertilizers is one of the triggers for reducing soil productivity. This study was aimed to identify the best compost derived from rice straw plus tithonia (compost j+t) and biochar to improve soil chemical properties and than to study the characteristics of the functional groups. The experimental design used in this research was randomized block design (RBD). The research consisted of 6 treatments and 3 replications. The treatments were 0% compost j+t and 0% biochar, 100% compost j+t, 75% compos j+t and 25% biochar, 50% compost j+t dan 50% biochar, 25% compost j+t dan 75% biochar, 100% biochar. The result showed that the 25% compost j+t and 75% biochar was the best combination to improve soil chemical properties. It increased the soil pH H_2O into 6.30; Eh 65.00 mV; organic C 2.53%; organic matter 4.35%; total N 0.93%; available P 26.00 ppm; CEC 40.48 cmol/kg; exchangeable K 1.47 cmol/kg; exchangeable Ca 1.06 cmol/kg; exchangeable Na 0.67 cmol/kg; exchangeable Mg 0.57 cmol/kg. It also gave an effect on the growth of lowland rice with the production was 6.36 T/ha; plant height was 80.50 cm; the total tiller was 26.20; the productive tiller was 22.44; N uptake was 21.13 kg/ha; P uptake was 2.60 kg/ha; K uptake was 183.12 kg/ha and rice yield was 6.36 T/ha. Characteristics of functional groups from combination of compost j+t and biochar produced the wave number which the peak absorption was 3350.32 cm^{-1} with the bond type was O-H;N-H, 2112,67cm^{-1} was -C≡C; -C≡N, 1626.51cm^{-1} was C=C 1052.73cm^{-1} was C=C-H.

Keywords: biochar, compost, rice production, soil chemical properties.