ABSTRACT

Soil compactness refers to how tightly soil particles are packed together. The higher the soil compactness make the lower the land productivity and the root's ability to penetrate the soil. Efforts to improve soil compactness can be made by adding soil amendments such as oil palm frond biochar and mycorrhiza to the soil. The research was conducted in Tangkit Village, Sungai Gelam District, Muaro Jambi Regency. The research used a Randomized Block Design (RBD) of factorial pattern with two factor. The first factor was biochar with three levels: no biochar, biochar at 5 tons.ha^{-1}, and biochar at 10 tons.ha^{-1}. The second factor was mycorrhiza with three levels: no mycorrhiza, 10 grams of mycorrhiza, and 20 grams of mycorrhiza. The observed variables included soil organic matter, bulk density, total pore space, soil penetration resistance, soil moisture content, plant height, and crop yield.The results showed no interaction between the application of oil palm frond biochar and mycorrhiza on Ultisol compactness, but there were interactions in organic matter, plant height, and crop yield parameters. The individual factors of oil palm frond biochar and mycorrhiza had an effect on bulk density, total pore space, penetration resistance, and soil moisture content. The combination of 10 tons/ha of biochar and 20 grams of mycorrhiza was the most effective dose for improving corn growth and yield. Further research is needed using the combination of 10 tons/ha of biochar and 20 grams of mycorrhiza to examine the interaction of these amendments on Ultisol compactness.

Keywords: *Soil Compactness, Biochar, Mycorrhiza*

ABSTRAK

Kepadatan tanah merupakan kondisi seberapa rapat partikel-partikel tanah yang saling berdekatan di tanah. Semakin tinggi kepadatan tanah akan menurunkan produktivitas lahan dan kemampuan akar menembus tanah. Upaya untuk memperbaiki kepadatan tanah dapat dilakukan dengan penambahan pembenah tanah seperti biochar pelepah kelapa sawit dan mikoriza ke dalam tanah. Penelitian ini dilaksanakan di Desa Tangkit, Kecamatan Sungai Gelam, Kabupaten Muaro Jambi. Penelitian ini menggunakan Rancangan Acak Kelompok (RAK) pola faktorial 2 faktor. Faktor pertama biochar dengan 3 taraf yaitu tanpa biochar, biochar 5 ton.ha^{-1}, biochar 10 ton.ha^{-1}. Faktor kedua mikoriza dengan 3 taraf yaitu tanpa mikoriza, mikoriza 10 gram, dan mikoriza 20 gram. Variabel pengamatan meliputi bahan organik tanah, berat volume tanah, total ruang pori tanah, ketahanan penetrasi tanah, kadar air tanah, tinggi tanaman dan hasil tanaman. Hasil penelitian menunjukkan tidak adanya interaksi akibat pemberian biochar pelepah kelapa sawit dan mikoriza terhadap kepadatan Ultisol namun terdapat interaksi pada parameter bahan organik, tinggi tanaman dan hasil tanaman. Faktor tunggal biochar pelepah kelapa sawit dan mikoriza berpengaruh terhadap berat volume, total ruang pori, ketahanan penetrasi dan kadar air tanah. Kombinasi biochar 10 ton.ha^{-1} dan

mikoriza 20 gram merupakan dosis efektif yang digunakan untuk meningkatkan pertumbuhan dan hasil jagung. Perlu dilakukan penelitian lebih lanjut dengan menggunakan dosis biochar 10 ton.ha^{-1} dan mikoriza 20 gram untuk mengetahui interaksi akibat pemberian biochar pelepah kelapa sawit dan mikoriza terhadap kepadatan Ultisol.

Kata kunci : Kepadatan, Biochar, Mikoriza