

ABSTRACT

Inceptisols are spread around 70.52 million ha of Indonesia's land area with soil characteristics such as low organic matter, high volume weight, and high penetration resistance. Efforts that can be made by adding organic materials are lamtoro compost and coconut shell biochar. The purpose of the study was to analyze the most effective combination of treatments in improving the physical properties and density of Inceptisols and increasing tomato yields. This study was conducted in Tangkit Village, Sungai Gelam District, Muaro Jambi Regency, Jambi Province. This study used a Randomized Block Design (RAK) with 5 treatments and 5 replications so that there were 25 plots. The treatments used in this study were A0 (0 tons/ha), A1 (10 tons/ha coconut shell biochar + 5 tons/ha lamtoro compost), A2 (10 tons/ha lamtoro compost + 5 tons/ha coconut shell biochar), A3 (15 tons/ha coconut shell biochar), A4 (15 tons/ha lamtoro compost). The parameters observed were organic matter, volume weight, total pore space, water content, penetration resistance, plant height and tomato yield. Data were analyzed using variance analysis at a 95% confidence level ($\alpha = 5\%$) followed by using DMRT (Duncan Multiple Range Test). The results of the study showed that the provision of a combination of lamtoro compost and coconut shell biochar 5:10, 10:5 or the single provision of lamtoro compost and coconut shell biochar was able to reduce soil density through decreasing volume weight, increasing organic matter, increasing total pore space and soil penetration resistance and increasing crop yields tomato.

Keywords: *Inceptisol, soil density, lamtoro compost, coconut shell biochar, tomato*

ABSTRAK

Inceptisol tersebar sekitar 70,52 juta ha dari luas daratan Indonesia dengan karakteristik tanah seperti bahan organik rendah, berat volume tinggi, dan ketahanan penetrasi tinggi. Upaya yang dapat dilakukan dengan penambahan bahan organik yaitu kompos lamtoro dan biochar tempurung kelapa. Tujuan penelitian untuk menganalisis kombinasi perlakuan yang paling efektif dalam memperbaiki sifat fisik dan kepadatan Inceptisol serta meningkatkan hasil tomat. Penelitian ini dilaksanakan di Desa Tangkit, Kecamatan Sungai Gelam, Kabupaten

2 Muaro Jambi, Provinsi Jambi. Penelitian ini menggunakan Rancangan Acak Kelompok (RAK) dengan 5 perlakuan dan 5 ulangan sehingga terdapat 25 petakan. perlakuan yang digunakan dalam penelitian ini adalah A0 (0 ton/ha), A1 (Biochar tempurung kelapa 10 ton/ha + Kompos lamtoro 5 ton/ha), A2 (Kompos lamtoro 10 ton/ha + Biochar tempurung kelapa 5 ton/ha), A3 (Biochar tempurung kelapa 15 ton/ha), A4 (Kompos lamtoro 15 ton/ha). Parameter yang diamati yaitu bahan organik, berat volume, total ruang pori, kadar air, ketahanan penetrasi, tinggi tanaman dan hasil tomat. Data di analisis ragam pada taraf kepercayaan 95% ($\alpha = 5\%$) dilanjutkan menggunakan uji DMRT (Duncan Multiple Range Test). Hasil Penelitian menunjukkan pemberian kombinasi kompos lamtoro dan biochar tempurung kelapa 5:10, 10:5 maupun pemberian tunggal kompos lamtoro dan biochar tempurung kelapa mampu menurunkan kepadatan tanah melalui penurunan berat volume, meningkatkan bahan organik, peningkatan total ruang pori serta ketahanan penetrasi tanah dan meningkatkan hasil panen tomat.

Kata Kunci: Inceptisol, Kepadatan, Kompos lamtoro, Biochar tempurung kelapa, Tomat.