

**PENGARUH PEMBERIAN BIOCHAR TERHADAP AIR TERSEDIA
TANAH DAN PERTUMBUHAN JAGUNG PADA TANAH BEKAS
TAMBANG EMAS DI DHARMASRAYA**

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PADANG

2021

THE EFFECT OF BIOCHAR APPLICATION ON PLANT AVAILABLE WATER AND CORN GROWTH AT EX-GOLD MINING SOIL IN DHARMASRAYA

Abstract

This research was aimed to study the interaction between the type and the dose of biochar on the availability of water and the growth of corn on ex-mining soil. The research was carried out from June 2020 to May 2021 at the Glasshouse and Soil Physics Laboratory the Soil Department, Faculty of Agriculture, Andalas University and the Laboratory of the Soil Research Institute in Bogor. This research was conducted using 3 x 5 factorial using Completely Randomized Design (CRD) with 3 replications. The first factor was the type of biochar derived from 3 different raw materials (rice husk, corn cob, and bamboo). The second factor was the dose of biochar, (4; 8; 12; 16; 20 tons/ha). Parameters analyzed were soil texture, Bulk Density, Total Soil Pore, Organic Matter, Permeability, and Plant Available water. The results showed that: (1) the application of the type of biochar and the dose of biochar did not show an interaction on water availability and some other soil physical properties, except for soil permeability. However, the main factor showed that the effect on soil properties and plant growth (2) The best dose in increasing water availability and corn growth was the 20 ton/ha. Soil organic matter content increased by 0.9%, soil bulk density decreased by 0.25 g/cm³, total soil pore space increased from 46.45% to 54.17%, and soil permeability decreased from 198.80 cm/h into 24.11 cm/h. Furthermore, the dose of 20T/ha to the 3 types of biochar gave the best growth. It was indicated by the crop height (109 cm) and the number of leaves (11 pieces). (3) The amount (%) of plant available water (PAT) of the soil increased from 9% to 14%, due to the increase in soil organic matter content, after application 20 tons/ha biochar.

Keywords: Rice husk biochar, corncob biochar, bamboo biochar, biochar doses, ameliorant

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Abstrak

Penelitian ini bertujuan untuk mempelajari interaksi antara jenis dan dosis biochar terhadap ketersediaan air dan pertumbuhan tanaman Jagung pada tanah bekas tambang. Penelitian telah dilaksanakan pada bulan Juni 2020 sampai Mei 2021 di Laboratorium fisika Jurusan Tanah, Fakultas Pertanian, Universitas Andalas dan Laboratorium Kimia Balai Penelitian Tanah. Penelitian ini dilakukan menggunakan Rancangan Acak Lengkap (RAL) faktorial 3 x 5 dengan 3 kali ulangan. Faktor pertama adalah jenis bahan baku biochar yaitu sekam padi, tongkol jagung dan bambu. Faktor kedua adalah dosis biochar yaitu 4; 8; 12; 16; 20 ton/ha. Analisis parameter yaitu tekstur tanah, berat volum tanah, total ruang pori, bahan organik tanah, permeabilitas dan pori air tersedia tanah. Hasil penelitian menunjukkan bahwa: (1) Pemberian jenis biochar dan dosis biochar tidak memperlihatkan interaksi terhadap ketersediaan air dan beberapa sifat fisik tanah serta pertumbuhan tanaman. Berinteraksi terhadap laju permeabilitas. (2) Pemberian yang terbaik dalam meningkatkan ketersediaan air dan pertumbuhan tanaman jagung yaitu pada pemberian 20 ton/ha, yang meningkatkan kandungan bahan organik tanah (dari 1,22% menjadi 3,12%), menurunkan nilai berat volume tanah dari (1.42 g/cm³ menjadi 1.17 g/cm³), total ruang pori tanah (dari 46,45% menjadi 54.17%), dan permeabilitas tanah (dari 198,80 cm/jam menjadi 24,11 cm/jam). Selanjutnya dosis 20 ton/ha untuk ke 3 jenis biochar memberikan pertumbuhan tinggi tanaman (109 cm) tertinggi tanaman jagung. (3) Persentase (%) pori air tersedia (PAT) tanah meningkat dari 8% menjadi 9.8%.



Kata kunci: *Biochar sekam padi, Biochar tongkol jagung, Biochar bambu, dosis biochar, amelioran*