

ABSTRAK

PENGARUH RESIDU BIOCHAR DAN KOTORAN AYAM SETELAH 4 MUSIM TANAM TERHADAP KEMANTAPAN AGREGAT TANAH DI LAHAN KERING PADA PERTANAMAN JAGUNG MANIS (*Zea mays saccharata* Sturt.)

Oleh

Nur Sari Putri

Lahan yang digunakan dalam penelitian ini merupakan jenis lahan kering yang kondisi kemantapan agregat umumnya tergolong rendah. Hal tersebut karena lahan kering memiliki kandungan bahan organik yang rendah. Bahan organik berfungsi sebagai lem perekat antar partikel tanah maka upaya untuk perbaikan kemantapan agregat dengan pemberian bahan pembenah tanah dan bahan organik tanah. Penelitian ini bertujuan untuk mengkaji pengaruh residu biochar dan kotoran ayam setelah empat musim tanam terhadap kemantapan agregat tanah dan produktivitas jagung manis (*Zea mays saccharata* Sturt) di lahan kering Gedong Meneng. Penelitian ini dilaksanakan pada musim tanam kelima menggunakan Rancangan Acak Kelompok (RAK) dengan empat perlakuan: kontrol (B_0), residu biochar (B_1), residu kotoran ayam (B_2), dan kombinasi keduanya (B_3). Variabel utama penelitian yaitu kemantapan agregat tanah dan variabel pendukung yaitu indeks dispersi tanah, tekstur tanah, C-organik, dan produksi tanaman. Hasil penelitian menunjukkan bahwa semua perlakuan menghasilkan nilai kemantapan agregat dalam kategori mantap, perlakuan (B_3) kombinasi residu biochar dan kotoran ayam dengan nilai 64,31% lebih baik dari perlakuan lainnya dan mengalami penurunan dibandingkan sebelum ditanami. Kandungan karbon organik tertinggi ditemukan pada perlakuan (B_3) kombinasi residu biochar dan kotoran ayam yang mengindikasikan bahwa biochar tetap memiliki dampak residu yang bertahan lama di dalam tanah, tetapi tidak memberikan pengaruh signifikan terhadap kemantapan agregat tanah. Namun, tidak ditemukan pengaruh signifikan perlakuan terhadap komponen hasil jagung manis, seperti panjang, diameter, dan berat tongkol.

Kata kunci: Biochar, jagung manis, kotoran ayam, kemantapan agregat, lahan kering.

ABSTRACT

THE EFFECT OF BIOCHAR AND CHICKEN MANURE RESIDUES AFTER FOUR PLANTING SEASONS ON SOIL AGGREGATE STABILITY IN SWEET CORN (*Zea mays saccharata* Sturt.) CULTIVATION

By

Nur Sari Putri

The land used in this study is a dry land type with generally low aggregate stability conditions. This is due to the low organic matter content in dry land. Organic matter functions as a binding agent between soil particles; therefore, efforts to improve aggregate stability include the application of soil amendments and organic soil materials. This study aimed to evaluate the effect of biochar residue and chicken manure after four cropping seasons on soil aggregate stability and sweet corn (*Zea mays saccharata* Sturt) productivity on dry land in Gedong Meneng. The study was conducted in the fifth planting season using a Randomized Block Design (RBD) with four treatments: control (B₀), biochar residue (B₁), chicken manure residue (B₂), and their combination (B₃). The main variable measured was soil aggregate stability, supported by soil dispersion index, soil texture, organic carbon content, and crop yield. Results showed all treatments produced aggregate stability values classified as stable, with the combination treatment (B₃) of biochar residue and chicken manure achieving the highest value of 64.31%, which was better than the other treatments but showed a decrease compared to before planting. The highest organic carbon content was found in the combination treatment (B₃), indicating that biochar has a long-lasting residual effect in the soil, although it did not significantly influence soil aggregate stability. However, no significant effect of the treatments on sweet corn yield components, such as cob length, diameter, and weight, was observed.

Keywords: Biochar, chicken manure, soil aggregate stability, sweet corn, upland.