

ABSTRACT

THE EFFECT OF BIOCHAR AND CHICKEN MANURE RESIDUES AFTER FOUR PLANTING SEASONS ON THE POPULATION AND DIVERSITY OF SOIL MESOFAUNA IN SWEET CORN CULTIVATION (*Zea mays sacharrata* Sturt)

By

Farhan Naufal Alijuan

The effect of biochar residue and chicken manure is the effect of single or combined application after several planting seasons without new application. Evaluation of the effect of biochar residue and chicken manure on soil mesofauna is very important because it acts as a decomposer, predator, and sensitive indicator of soil health. This study aims to evaluate the effect of biochar and chicken manure residue on the population and diversity of soil mesofauna in sweet corn plantations. This study was designed in a non-factorial Randomized Block Design (RBD) with 4 groups and 4 treatments: B_0 = control, B_1 = biochar residue 5 tons ha^{-1} , B_2 = chicken manure residue 5 tons ha^{-1} , B_3 = biochar residue 5 tons ha^{-1} + chicken manure residue 5 tons ha^{-1} . Data were analyzed by analysis of variance at the 5% level, which was previously carried out by the Barlett Test (homogeneity) and Tukey Test (additivity). The data were further tested by the LSD test at the 5% level, and the correlation test between the population and soil mesofauna with supporting variables and components of sweet corn production. The results showed that the residue had no significant effect on the mesofauna population in the early to mid-season. However, at 75 days after planting, the biochar residue treatment (B_1) was higher than the other treatments. Meanwhile, the chicken manure residue treatment (B_2) and the combination of the two (B_3) did not differ from the control (B_0). Although the mesofauna population increased at the end of the season, this treatment residue did not have a significant effect on the diversity of soil mesofauna (Shannon-Wiener Index). There was no significant correlation between the mesofauna population and mesofauna diversity with sweet corn production components. The soil mesofauna found belonged to the orders Acarina, Collembola, Protura, Diplura, and Symphyla.

Key Word : biochar, chicken manure, mesofauna, residue, sweet corn

ABSTRAK

PENGARUH RESIDU BIOCHAR DAN KOTORAN AYAM SETELAH APLIKASI SELAMA EMPAT MUSIM TANAM TERHADAP POPULASI DAN KEANEKARAGAMAN MESOFAUNA TANAH DI PERTANAMAN JAGUNG MANIS (*Zea mays sacharrata* Sturt)

Oleh

Farhan Naufal Alijuan

Pengaruh residu biochar dan kotoran ayam adalah pengaruh aplikasi tunggal atau kombinasi setelah beberapa musim tanam tanpa dilakukan aplikasi baru. Evaluasi pengaruh residu biochar dan kotoran ayam terhadap mesofauna tanah sangat penting karena berperan sebagai dekomposer, predator, dan indikator kesehatan tanah yang sensitif. Penelitian ini bertujuan untuk mengevaluasi pengaruh residu aplikasi biochar dan kotoran ayam terhadap populasi dan keanekaragaman mesofauna tanah pada pertanaman jagung manis. Penelitian ini dirancang dalam Rancangan Acak Kelompok (RAK) non-faktorial dengan 4 kelompok dan 4 perlakuan: B_0 = kontrol, B_1 = residu biochar 5 ton ha^{-1} , B_2 = residu kotoran ayam 5 ton ha^{-1} , B_3 = residu biochar 5 ton ha^{-1} + residu kotoran ayam 5 ton ha^{-1} . Data dianalisis dengan analisis ragam pada taraf 5%, yang sebelumnya dilakukan Uji Barlett (homogenitas) dan Uji Tukey (aditifitas). Data diuji lanjut dengan uji BNT taraf 5%, dan uji korelasi antara populasi dan mesofauna tanah dengan variabel pendukung dan komponen produksi jagung manis. Hasil penelitian menunjukkan bahwa residu tersebut tidak berpengaruh nyata pada populasi mesofauna di awal hingga pertengahan musim tanam. Namun, pada pengamatan 75 HST. Perlakuan residu biochar (B_1) lebih tinggi dari perlakuan lainnya. Sedangkan Perlakuan residu kotoran ayam (B_2) dan residu kombinasi keduanya (B_3) tidak berbeda dengan kontrol (B_0). Meskipun populasi mesofauna meningkat di akhir musim, residu perlakuan ini tidak memberikan pengaruh yang signifikan terhadap keanekaragaman mesofauna tanah (Indeks Shannon-Wiener). Tidak terdapat korelasi yang signifikan antara populasi mesofauna maupun keanekaragaman mesofauna dengan komponen produksi jagung manis. Mesofauna tanah yang ditemukan termasuk ke dalam ordo Acarina, Collembola, Protura, Diplura, dan Symphyla.

Kata kunci : biochar, jagung manis, kotoran ayam, mesofauna, residu