

## ABSTRACT

### APPLICATION OF BIOCHAR AND CHICKEN MANURE ON EARTHWORM POPULATION AND BIOMASS AT UPLAND RICE (*Oryza sativa* L.) IN ULTISOLS

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Upland rice (*Oryza sativa* L.) grown on dry land has the potential to contribute to national rice production. One of the dry lands that dominates in Indonesia is Ultisols. Biochar can increase plant growth as well as improve soil properties and chicken manure is a source of nutrients. Earthworms a role in improving soil quality. The aim of this study was to study the effect of the application of biochar and chicken manure on the population and biomass of earthworms in upland rice plantations in Ultisols, and correlation between C-organic, temperature, pH and soil moisture content with population and biomass earthworms. The design used was a randomized block design (RBD) consisting of 4 treatments and replications. Data were analyzed by analysis of variance and Tukey's test followed by the Honest Significant Difference (HSD) test at the 5%. The results of this study showed that the combination treatment of biochar and chicken manure 5 tons ha<sup>-1</sup> (B<sub>3</sub>) significantly affected earthworm populations compared to control (B<sub>0</sub>), but was not significantly different from the treatment of biochar (B<sub>1</sub>) and chicken manure 5 tons ha<sup>-1</sup> (B<sub>2</sub>) on 63 days after planting (DAP) and 108 DAP. The combined treatment of biochar and chicken manure 5 tons ha<sup>-1</sup> (B<sub>3</sub>) at 63 DAP significantly affected earthworm biomass compared to other treatments. The combination treatment (B<sub>3</sub>) at 180 DAP significantly affected earthworm biomass compared to the control treatment (B<sub>0</sub>) and (B<sub>1</sub>) but was not significantly different from the chicken manure treatment (B<sub>2</sub>). Soil organic C was negatively correlated with earthworm biomass after harvest (108 DAP). The earthworms belong to the Magascolicidea family with the genus *Magasscolex* and are *anesic* worms.

**Keywords :** biochar, chicken manure, earthworms, ultisols, upland rice

## ABSTRAK

### **APLIKASI BIOCHAR DAN KOTORAN AYAM TERHADAP POPULASI DAN BIOMASSA CACING TANAH PADA PERTANAMAN PADI GOGO (*Oryza sativa* L.) DI TANAH ULTISOL**

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Padi gogo (*Oryza sativa* L.) di lahan kering berpotensi meningkatkan produksi beras nasional. Salah satu lahan kering di Indonesia adalah tanah Ultisol. Biochar mampu memperbaiki sifat-sifat tanah dan kotoran ayam merupakan sumber unsur hara. Cacing tanah merupakan indikator kesuburan tanah secara biologi yang berperan dalam meningkatkan kualitas tanah. Tujuan penelitian ini adalah mempelajari pengaruh biochar dan kotoran ayam terhadap populasi dan biomassa cacing tanah pada pertanaman padi gogo di tanah Ultisol, serta korelasi antara C-organik, suhu, pH dan kadar air tanah terhadap populasi dan biomassa cacing tanah. Penelitian ini disusun dalam Rancangan Acak kelompok (RAK) dengan 4 perlakuan dan 4 ulangan. Data dianalisis dengan analisis ragam dan uji tukey dilanjutkan dengan uji Beda Nyata Jujur (BNJ) taraf 5%. Hasil penelitian ini menunjukkan perlakuan kombinasi biochar dan kotoran ayam 5 ton ha<sup>-1</sup> (B<sub>3</sub>) nyata lebih tinggi memengaruhi populasi cacing tanah dibandingkan dengan kontrol (B<sub>0</sub>), namun tidak berbeda nyata dengan biochar (B<sub>1</sub>) dan kotoran ayam 5 ton ha<sup>-1</sup> (B<sub>2</sub>) pada 63 HST dan 108 HST. Perlakuan kombinasi (B<sub>3</sub>) pada 63 HST nyata lebih tinggi memengaruhi biomassa cacing tanah dibandingkan dengan perlakuan lainnya. Perlakuan kombinasi (B<sub>3</sub>) pada 180 HST nyata lebih tinggi memengaruhi biomassa cacing tanah dibandingkan dengan perlakuan (B<sub>0</sub>) dan (B<sub>1</sub>) namun tidak berbeda nyata dengan perlakuan kotoran ayam (B<sub>2</sub>). C-organik tanah berkorelasi negatif dengan biomassa cacing tanah pada saat setelah panen (108 HST). Cacing tanah yang ditemukan termasuk ke dalam famili *Magascolicidea* dengan genus *Magasscolex* dan merupakan cacing anesik.

**Kata Kunci :** biochar, cacing tanah, padi gogo, kotoran ayam, ultisol