

ABSTRACT

APPLICATION OF PREMIUM COMPOST ON SOIL RESPIRATION RATE IN ULTISOL SOIL IN CENTRAL LAMPUNG

BY

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Soil respiration is an indicator of soil biological fertility by the presence of biological activity such as soil microorganisms, roots or other life in the soil which is also influenced by the use of fertilizers in the soil. The premium compost fertilizer produced by a *Pineapple Plantation Company* in Lampung Province with a mixture of several organic materials such as compost, lignite, and other ingredients in it which are expected to be able to supply nutrient needs and increase soil respiration. The purpose of this study was to study the effect of various applications of compost on soil respiration rate in Ultisols in Central Lampung, and to study the effect of various applications of compost on soil C-organic, soil temperature, soil pH, and soil water content, as well as the correlation between C- soil organic matter, soil temperature, soil pH, and soil water content with soil respiration rate. This research was conducted at PT. *Great Giant Pineapple* and analysis soil respiration were carried out at the Soil Science Laboratory, University of Lampung use Randomized Block Design (RBD) consisting of 4 treatments and 4 replications. Data were analyzed by analysis of variance and Tukey's test followed by *Duncan's Multiple Range Test* (DMRT) at 5% level. The results showed that the application of premium compost A (P₁) increased soil respiration at a depth of 0-10 cm at 16 month after planting (MAP) compared to other treatments. The results of the application of premium compost to the soil showed that Premium B compost (P₂) increased soil organic C at 14 MAP and premium A compost (P₁) increased soil pH at 13 MAP compared to other treatments. Correlation tests showed that there was a negative correlation between soil water content with soil respiration at 14 MAP.

Key words : Compost, lignite, pineapple, soil respiration

ABSTRAK

APLIKASI KOMPOS PREMIUM TERHADAP LAJU RESPIRASI TANAH PADA TANAH ULTISOL DI LAMPUNG TENGAH

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Respirasi tanah merupakan salah satu indikator kesuburan tanah secara biologi dengan adanya aktivitas biologi seperti mikroorganisme tanah, akar atau kehidupan lain di dalam tanah yang dipengaruhi juga oleh penggunaan pupuk pada tanah. Kompos premium yang digunakan merupakan pupuk produksi perusahaan perkebunan nanas di Provinsi Lampung dengan campuran dari beberapa bahan organik seperti kompos, batu bara muda, dan bahan lain di dalamnya yang diharapkan dapat melengkapi kebutuhan hara dan meningkatkan respirasi tanah. Tujuan dari penelitian ini adalah untuk mempelajari pengaruh berbagai pemberian kompos terhadap laju respirasi tanah pada tanah Ultisol di Lampung Tengah, dan mempelajari pengaruh berbagai pemberian kompos terhadap C-organik tanah, suhu tanah, pH tanah, dan kadar air tanah, serta korelasi antara C-organik tanah, suhu tanah, pH tanah, dan kadar air tanah dengan laju respirasi tanah. Penelitian ini dilaksanakan di PT. *Great Giant Pineapple* dan analisis tanah dilakukan di Laboratorium Ilmu Tanah, Universitas Lampung. Rancangan yang digunakan yaitu Rancangan Acak Kelompok (RAK) yang terdiri dari 4 perlakuan dan 4 ulangan. Data dianalisis dengan analisis ragam dan uji tukey dilanjutkan dengan uji *Duncan Multiple Range Test* (DMRT) taraf 5%. Hasil penelitian menunjukkan aplikasi kompos premium A (P₁) meningkatkan respirasi tanah di kedalaman 0-10 cm pada 16 bulan setelah tanam (BST) dibandingkan dengan perlakuan lainnya. Hasil aplikasi kompos premium pada tanah menunjukkan kompos Premium B (P₂) meningkatkan C-organik tanah pada 14 BST dan kompos premium A (P₁) meningkatkan pH pada 13 BST tanah dibandingkan dengan perlakuan lainnya. Uji korelasi menunjukkan bahwa terdapat korelasi negatif antara kadar air tanah dengan respirasi tanah pada 14 BST.

Kata Kunci : Kompos, batu bara muda, nanas, respirasi tanah