

ABSTRACT

THE EFFECT OF COCONUT SHELL BIOCHAR APPLICATION TO THE EFFECTIVITY OF THE USE OF NPK FERTILIZER TO THE SHALLOTS (*Allium ascalonicum* L.) PRODUCTION

By

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Shallot plant needs sufficient nutrients in their growth, but one of dominating soil in Indonesia is ultisol which is having low nutrient content. Therefore, it needs an improvement soil's material such as biochar and NPK fertilizer. The aim of this research knows the effect of using coconut shell-biochar due to effectiveness of using NPK fertilizer on shallot plants production. This research was using complete randomised factorial design. There are two factors; biochar dose (0, 40, 80, and 120 gram/pot) and NPK fertilizer dose (0, 0,8, 1,6, and 2,4 gram/pot). Each treatment were repeated 3 times. The observed parameters are characteristic of soil (pH, bulk density, decreasing soil's volume) and plant parameters (plant height, number of leaves, leaf color, wide canopy, fresh gross weight, dry gross weight, top dry weight, number of tubers, dry tuber weight, tuber diameter, evapotranspiration, water productivity, and fertilizer productivity).

The observation shows that biochar factor was significantly (α 5%) affected to bulk density, decreasing soil volume, soil's pH, fresh gross weight, dry top gross weight, and fertilizer productivity. Fertilizer factor had a significant effect (α 5%) on fresh gross weight, dry gross weight, top dry gross weight, dry tuber weight, water productivity, and fertilizer productivity. Then, the interaction of the two factors significantly (α 5%) on plant height, number of leaves, tuber diameter, and evapotranspiration. The best treatment is BIN1 (40 gram/pot biochar and 0,8 gram/pot NPK fertilizer) because could produce the best fresh gross weight. Adding 40 gram/pot of biochar could decrease dose of fertilizer's recommendation from 2,4 gram/pot to 0,8 gram/pot.

Keyword: *decreasing soil's volume, fertilizer productivity, water productivity, dose, pH*

ABSTRAK

PENGARUH APLIKASI *BIOCHAR* TEMPURUNG KELAPA TERHADAP EFEKTIVITAS PENGGUNAAN PUPUK NPK PADA PRODUKSI TANAMAN BAWANG MERAH (*Allium ascalonicum* L.)

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Tanaman bawang merah membutuhkan unsur hara yang cukup dalam pertumbuhannya, namun salah satu tanah yang mendominasi di Indonesia adalah ultisol yang memiliki kandungan unsur hara yang rendah. Oleh karena itu, dibutuhkan bahan pembenah tanah seperti *biochar* dan pupuk. Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan *biochar* tempurung kelapa terhadap efektivitas penggunaan pupuk NPK pada produksi bawang merah. Penelitian disusun dalam Rancangan Acak Lengkap Faktorial (RALF) yang terdiri dari 2 faktor yaitu dosis *biochar* (0, 40, 80, dan 120 gram/pot) dan dosis pupuk NPK (0, 0,8, 1,6, dan 2,4 gram/pot). Setiap kombinasi perlakuan diulang sebanyak 3 kali. Parameter yang diamati meliputi karakteristik tanah (pH, *bulk density*, dan penyusutan volume tanah) dan parameter tanaman (tinggi tanaman, jumlah daun, warna daun, luas kanopi, bobot brangkasan segar, bobot brangkasan

kering, bobot brangkasan atas kering, jumlah umbi, bobot umbi kering angin, diameter umbi, evapotranspirasi, produktivitas air, dan produktivitas pupuk).

Hasil penelitian menunjukkan bahwa faktor *biochar* berpengaruh nyata (α 5%) terhadap *bulk density*, penyusutan volume tanah, pH tanah, bobot brangkasan segar, bobot brangkasan atas kering, dan produktivitas pupuk. Faktor pupuk berpengaruh nyata (α 5%) terhadap bobot brangkasan segar, bobot brangkasan kering, bobot brangkasan atas kering, bobot umbi kering, produktivitas air, dan produktivitas pupuk. Kemudian, interaksi kedua faktor berpengaruh nyata (α 5%) terhadap tinggi tanaman, jumlah daun, diameter umbi, dan evapotranspirasi. Kombinasi perlakuan terbaik adalah B1N1 (*Biochar* 40 gram/pot dan pupuk NPK 0,6 gram/pot karena dapat menghasilkan bobot brangkasan segar terbaik. Penambahan *biochar* dengan dosis 40 gram/pot dapat mengurangi dosis pupuk rekomendasi yaitu 1,2 gram/pot menjadi 0,8 gram/pot.

Kata Kunci : penyusutan volume tanah, produktivitas pupuk, produktivitas air, dosis, pH