OPTIMALISASI RETENSI AIR DAN HASIL KACANG TANAH PADA INCEPTISOL AKIBAT PEMBERIAN KOMPOS BERBAHAN KOTORAN SAPI DAN GAMAL

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ABSTRACT

Inceptisol soil has considerable potential for agricultural cultivation, but it faces constraints in terms of physical properties that are less supportive, such as low organic matter content, high bulk density, and low porosity. These characteristics limit the soil's ability to retain and store water, thereby affecting water availability for plants, particularly peanuts. One effort to improve these conditions is through the application of organic materials in the form of compost made from cow manure and Gliricidia (Gamal) leaves. This study aimed to determine the effect of applying compost from cow manure and Gliricidia leaves on water retention in Inceptisol soil and peanut crop yield. The research was conducted in Tangkit Village, Sungai Gelam Sub-district, Muaro Jambi Regency, Jambi Province, from September to December 2024. The experiment used a Randomized Complete Block Design (RCBD) with 5 treatments and 5 replications: K0 (control), K1 (5 tons/ha), K2 (10 tons/ha), K3 (15 tons/ha), and K4 (20 tons/ha), resulting in 25 experimental plots. Observed variables included soil organic matter, bulk density, total pore space, water content at field capacity (pF 2.54), permanent wilting point (pF 4.2), available water content, plant height, and peanut yield. The results showed that the application of cow manure and Gliricidia compost up to a dose of 20 tons/ha significantly improved the physical properties of Inceptisol soil, as indicated by increased organic matter content, reduced bulk density, and increased total soil pore space. Soil water retention at field capacity (pF 2.54), permanent wilting point (pF 4.2), and available water content increased, although not all reached optimal levels. The best treatment was at a dose of 20 tons/ha, which produced the highest available water content and peanut yield of 1.11 tons/ha.

Keywords: Inceptisol, cow manure compost, *Gliricidia sepium*, water retention, peanut yield

ABSTRAK

Tanah Inceptisol memiliki potensi cukup besar untuk dimanfaatkan dalam budidaya pertanian, namun memiliki kendala dalam hal sifat fisik tanah yang kurang mendukung, seperti kandungan bahan organik rendah, bobot volume tinggi, dan porositas rendah. Karakteristik tersebut menyebabkan kemampuan tanah dalam menahan dan menyimpan air menjadi terbatas, sehingga memengaruhi ketersediaan air bagi tanaman, khususnya tanaman kacang tanah. Salah satu upaya untuk memperbaiki kondisi tersebut adalah dengan pemberian bahan organik berupa kompos berbahan dasar kotoran sapi dan daun gamal. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian kompos kotoran sapi dan gamal terhadap retensi air tanah Inceptisol serta hasil tanaman kacang tanah. Penelitian dilaksanakan di Desa Tangkit, Kecamatan Sungai Gelam, Kabupaten Muaro Jambi, Provinsi Jambi, pada bulan September hingga Desember 2024. Penelitian menggunakan Rancangan Acak Kelompok (RAK) dengan 5 perlakuan dan 5 ulangan, yaitu K0 (kontrol), K1 (5 ton/ha), K2 (10 ton/ha), K3 (15 ton/ha), dan K4 (20 ton/ha), sehingga terdapat 25 unit petak percobaan. Variabel yang diamati meliputi bahan organik tanah, bobot volume, total ruang pori, kadar air kapasitas lapang (pF 2,54), kadar air titik layu permanen (pF 4,2), kadar air tersedia, tinggi tanaman, dan hasil panen kacang tanah. Hasil penelitian menunjukkan pemberian kompos kotoran sapi dan gamal hingga dosis 20 ton/ha terbukti mampu mengoptimalkan sifat fisik tanah Inceptisol, ditunjukkan dengan peningkatan kandungan bahan organik, penurunan bobot volume, serta peningkatan total ruang pori tanah. Retensi air tanah pada kapasitas lapang (pF 2,54), titik layu permanen (pF 4,2), dan kadar air tersedia mengalami peningkatan, meskipun belum seluruhnya optimal. Perlakuan terbaik diperoleh pada dosis 20 ton/ha yang menghasilkan kadar air tersedia dan hasil kacang tanah tertinggi sebesar 1,11 ton/ha.

Kata Kunci: Inceptisol, kompos kotoran sapi, gamal, retensi air, kacang tanah