

KEPADATAN INCEPTISOL PADA LAHAN BUDIDAYA KUNYIT (*Curcuma domestica* Val) AKIBAT PEMBERIAN PUPUK KOTORAN AYAM DAN MULSA ORGANIK

Romdynaldo Ananda Nofo¹⁾, Sunarti²⁾, Diah Listyarini³⁾

¹⁾Alumni Jurusan Agroekoteknologi Fakultas Pertanian Universitas Jambi

²⁾Dosen Jurusan Agroekoteknologi Fakultas Pertanian Universitas Jambi Kampus Pinang Masak, Mendalo Darat, Jambi 36361

Email: Romdy278@gmail.com

ABSTRACT

Inceptisol is one of the most widespread soil types in Indonesia and has considerable potential for agricultural activities. However, its physical characteristics—such as high soil compaction, low organic matter content, and reduced total pore space—make it less suitable for optimal plant growth, especially for rhizome crops like turmeric (*Curcuma domestica* Val). This study aimed to determine the effects of chicken manure and organic mulch application on improving the physical properties of Inceptisol soil and its relationship to the growth and yield of turmeric plants.

The research was conducted from June to December 2021 in Ibru Village, Mestong Subdistrict, Muaro Jambi Regency. The experimental design used was a Randomized Complete Block Design (RCBD) with 12 treatment combinations consisting of three levels of organic mulch coverage (30%, 60%, and 90%) and four levels of chicken manure dosage (0, 5, 10, and 15 tons ha⁻¹), namely: M1P0, M1P1, M1P2, M1P3, M2P0, M2P1, M2P2, M2P3, M3P0, M3P1, M3P2, and M3P3. Each treatment was repeated three times, resulting in a total of 36 experimental units. Observed parameters included soil physical properties (organic matter content, bulk density, total pore space, soil penetration resistance, and soil moisture content), as well as plant growth and yield indicators (plant height and rhizome weight). Data were analyzed using analysis of variance (ANOVA) at the 5% significance level and followed by DMRT.

The results showed that the combination of chicken manure and organic mulch had no significant effect on soil organic matter, bulk density, or total pore space. However, there was a significant effect on soil penetration resistance and moisture content, particularly in treatments with 60% mulch combined with 5 to 15 tons ha⁻¹ of chicken manure, which gave the best results in reducing soil compaction and supporting turmeric plant growth. These treatments also showed a positive influence on plant height and rhizome weight, although not all parameters differed significantly. Therefore, the sustainable application of organic materials is recommended to improve the long-term physical quality of Inceptisol soils.

Keywords : Inceptisol, turmeric, bulk density, poultry manure compost, organic mulch

INTISARI

Tanah Inceptisol merupakan salah satu jenis tanah yang tersebar luas di Indonesia dan memiliki potensi besar untuk kegiatan pertanian. Namun, karakteristik fisik tanah Inceptisol seperti kepadatan tanah yang tinggi, kandungan bahan organik yang rendah, dan rendahnya total ruang pori menjadikan tanah ini kurang mendukung bagi pertumbuhan tanaman, khususnya tanaman rimpang seperti kunyit (*Curcuma domestica* Val). Penelitian ini bertujuan untuk mengetahui pengaruh pemberian pupuk kotoran ayam dan mulsa organik terhadap perbaikan sifat fisik tanah Inceptisol dan hubungannya dengan pertumbuhan serta hasil tanaman kunyit.

Penelitian dilaksanakan pada bulan Juni hingga Desember 2021 di Desa Ibru, Kecamatan Mestong, Kabupaten Muaro Jambi menggunakan Rancangan Acak Kelompok (RAK) dengan 12 kombinasi perlakuan antara tiga taraf mulsa organik (30%, 60%, dan 90%) dan empat taraf pupuk kotoran ayam (0, 5, 10, dan 15 ton ha⁻¹), yaitu M1P0 (mulsa 30% tanpa pupuk), M1P1 (mulsa 30% + pupuk 5 ton/ha), M1P2 (mulsa 30% + pupuk 10 ton/ha), M1P3 (mulsa 30% + pupuk 15 ton/ha), M2P0 (mulsa 60% tanpa pupuk), M2P1 (mulsa 60% + pupuk 5 ton/ha), M2P2 (mulsa 60% + pupuk 10 ton/ha), M2P3 (mulsa 60% + pupuk 15 ton/ha), M3P0 (mulsa 90% tanpa pupuk), M3P1 (mulsa 90% + pupuk 5 ton/ha), M3P2 (mulsa 90% + pupuk 10 ton/ha), dan M3P3 (mulsa 90% + pupuk 15 ton/ha). yang masing-masing diulang sebanyak tiga kali. Parameter pengamatan meliputi sifat fisik tanah (bahan organik, berat volume, total ruang pori, ketahanan penetrasi, dan kadar air tanah) serta pertumbuhan dan hasil tanaman kunyit (tinggi tanaman dan berat rimpang). Analisis data dilakukan menggunakan sidik ragam pada taraf 5% dan dilanjutkan dengan uji DMRT.

Hasil penelitian menunjukkan bahwa kombinasi perlakuan pupuk kotoran ayam dan mulsa organik tidak memberikan pengaruh nyata terhadap kandungan bahan organik, berat volume tanah, dan total ruang pori. Namun, terdapat pengaruh nyata pada ketahanan penetrasi tanah dan kadar air, terutama pada kombinasi perlakuan mulsa 60% dengan pupuk kotoran ayam 5 hingga 15 ton ha⁻¹, yang memberikan hasil terbaik dalam menurunkan kepadatan tanah dan mendukung pertumbuhan tanaman kunyit. Perlakuan tersebut juga menunjukkan pengaruh positif terhadap tinggi tanaman dan berat rimpang, meskipun tidak semua parameter menunjukkan perbedaan signifikan secara statistik. Penggunaan bahan organik secara berkelanjutan disarankan untuk memperbaiki kualitas tanah Inceptisol dalam jangka panjang.

Kata kunci : Inceptisol, kunyit, pupuk kotoran ayam, mulsa organik, kepadatan tanah