INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh dari kombinasi pupuk vermikompos dan urea terhadap karakteristik tanah Inceptisol serta pengaruhnya terhadap pertumbuhan dan serapan N kedelai. Penelitian ini dilaksanakan pada bulan Desember 2024 – Februari 2025 di rumah kaca Gedung Pusat Studi Lingkungan Hidup, Universitas Gadjah Mada. Sementara itu, analisis laboratorium dilaksanakan di Laboratorium Tanah Umum, Laboratorium Kimia dan Kesuburan Tanah, Laboratorium Fisika Tanah, dan Laboratorium Kuningan Departemen Tanah, Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta. Penelitian dilakukan berdasarkan rancangan percobaan berupa Rancangan Acak Lengkap (RAL) yang tersusun atas 2 faktor dengan 3 ulangan. Faktor pertama berupa pupuk vermikompos dengan 4 taraf perlakuan yaitu dosis V0 (0 ton/ha), V5 (5 ton/ha), V10 (10 ton/ha), dan V15 (15 ton/ha). Faktor kedua berupa pupuk urea dengan 3 taraf perlakuan yaitu U50 (50 kg/ha), U100 (100 kg/ha), dan U150 (150 kg/ha). Penelitian dilakukan dengan 12 perlakuan dan 1 perlakuan kontrol dengan 3 ulangan untuk masing masing perlakuannya. Hasil penelitian menunjukkan bahwa kombinasi perlakuan pupuk vermikompos dan urea memberikan pengaruh berbeda nyata terhadap sifat fisik tanah berupa kadar lengas tanah, serta sifat kimia tanah meliputi pH H_2O, pH KCl, C-Organik, bahan organik, dan N-Total tanah. Kombinasi vermikompos dan urea meningkatkan tinggi tanaman, jumlah daun, panjang akar, berat basah akar, berat kering akar, berat basah tajuk, dan berat kering tajuk. Perlakuan terbaik diperoleh pada kombinasi perlakuan V5U100 (Vermikompos 5 ton/ha dan Urea 100 kg/ha).

Kata kunci: vermikompos, urea, Inceptisol, kedelai

ABSTRACT

This study aims to determine the effects of combined vermicompost and urea fertilizer on the characteristics of Inceptisol soil and its influence on soybean growth and nitrogen uptake. The research was conducted from December 2024 to February 2025 in the greenhouse of Pusat Studi Lingkungan Hidup Building, Gadjah Mada University. Laboratory analyses were carried out at the General Soil Laboratory, Soil Chemistry and Fertility Laboratory, Soil Physics Laboratory, and Kuningan Laboratory, Soil Science Department, Faculty of Agriculture, Gadjah Mada University, Yogyakarta. A Completely Randomized Design (CRD) arranged in a factorial scheme was employed, consisting of two factors with three replications. The vermicompost factor consisted of four application rates: V0 (0 t ha^{-1}), V5 (5 t ha^{-1}), V10 (10 t ha^{-1}), and V15 (15 t ha^{-1}). The urea factor consisted of three application rates: U50 (50 kg ha^{-1}), U100 (100 kg ha^{-1}), and U150 (150 kg ha^{-1}). A total of 12 treatments and a control treatment were applied, each with three replications. The result showed that the interaction between vermicompost and urea significantly affected soil moisture content and soil chemical properties including pH H_2O, pH KCl, organic C, organic matter, and total soil N. The combination of vermicompost and urea also improved plant height, leaf number, root length, fresh root weight, dry root weight, fresh shoot weight, and dry shoot weight. The best response was obtained from the V5U100 treatment combination (5 tons/ha vermicompost and 100 kg/ha urea).

Keywords: vermicompost, urea, Inceptisol, soybean