

ABSTRAK

Penelitian ini dilaksanakan di Kebun Percobaan Fakultas Pertanian Universitas Islam Sumatera Utara, Kelurahan Gedung Johor, Kecamatan Medan Johor, Kota Medan, Provinsi Sumatera Utara dengan ketinggian tempat ± 40 mdpl dan topografi datar. Penelitian dilaksanakan pada bulan Juli 2024 sampai dengan bulan Oktober 2024. Penelitian ini dibimbing oleh Dr. Ir. Muhammad Rizwan, MP. Sebagai Ketua Pembimbing dan bapak Dr. Ir. Rahmad Setia Budi, M.Sc. Sebagai anggota Pembimbing. Penelitian ini bertujuan untuk mengetahui pemberian pupuk organik kompos dan jarak tanam terhadap peningkatan pertumbuhan dan produksi tanaman kedelai. Penelitian ini menggunakan rancangan acak kelompok (RAK) factorial dengan dua factor perlakuan yaitu pupuk kompos dan jarak tanam. Faktor pertama yaitu: Pupuk kompos terdiri dari 5 taraf yaitu: S0 = Tanpa perlakuan, S1 = 75 % Pupuk anorganik NPK + 25% Pupuk organik Kompos, S2 = 50% Pupuk anorganik NPK + 50% Pupuk organik Kompos, S3 = 25% Pupuk anorganik NPK + 75% Pupuk organik Kompos, S4 = 100% Pupuk Organik Kompos. Faktor kedua yaitu: jarak tanaman terdiri dari 3 taraf yaitu: J1 = Jarak Tanam 20 cm x 30 cm, J2 = Jarak Tanam 20 cm x 40 cm, J3 = Jarak Tanam 25 cm x 40 cm. Parameter yang diamati adalah tinggi tanaman, jumlah klorofil daun, jumlah bintil akar, jumlah polong, jumlah polong berisi, jumlah polong hampa, bobot 100 butir biji, produksi biji per plot, bobot brangkasan basah, bobot brangkasan kering. Hasil penelitian menunjukkan bahwa pemberian pupuk kompos berpengaruh nyata terhadap tinggi tanaman kedelai, jumlah klorofil daun dan jumlah bintil akar. Pemberian jarak tanam berpengaruh nyata terhadap bobot polong hampa, bobot 100 butir dan bobot brangkasan kering. Untuk interaksi pupuk kompos dan jarak tanaman tidak berpengaruh nyata terhadap tinggi tanaman, jumlah klorofil daun, jumlah bintil akar, jumlah polong, jumlah polong berisi, jumlah polong hampa, bobot 100 butir, produksi biji perplot, bobot brangkasan basah, bobot brangkasan kering.

Kata kunci: Limbah padat kelapa sawit, substitusi anorganik, jarak tanam, kedelai.

ABSTRACT

This research was conducted at the Experimental Garden of the Faculty of Agriculture, Islamic University of North Sumatra, located in Gedung Johor Village, Medan Johor District, Medan City, North Sumatra Province, at an altitude of approximately 25 meters above sea level with flat topography. The study was carried out from July 2024 to October 2024, under the supervision of Dr. Ir. Muhammad Rizwan, M.P. as the chief supervisor and Dr. Ir. Rahmad Setia Budi, M.Sc. as the co-supervisor. The aim of this study was to evaluate the effects of compost organic fertilizer application and plant spacing on the growth and yield of soybean plants. A factorial randomized block design (RBD) was used, consisting of two treatment factors: compost fertilizer and plant spacing. The first factor was compost fertilizer, with five levels: S0 = No treatment (control), S1 = 75% NPK inorganic fertilizer + 25% compost organic fertilizer, S2 = 50% NPK inorganic fertilizer + 50% compost organic fertilizer, S3 = 25% NPK inorganic fertilizer + 75% compost organic fertilizer, S4 = 100% compost organic fertilizer. The second factor was plant spacing, with three levels: J1 = 20 cm x 30 cm, J2 = 20 cm x 40 cm, J3 = 25 cm x 40 cm. The observed parameters included plant height, chlorophyll content, number of root nodules, number of pods, number of filled pods, number of empty pods, 100-seed weight, seed yield per plot, wet stover weight, and dry stover weight. The results showed that compost fertilizer application had a significant effect on plant height, chlorophyll content, and number of root nodules. Plant spacing significantly affected the number of empty pods, 100-seed weight, and dry stover weight. There was no significant interaction between compost fertilizer and plant spacing on any of the observed parameters.

Keywords: *Oil palm solid waste, inorganic substitution, spacing, soybean.*