

RINGKASAN

Kedelai, sebagai tanaman yang kaya akan protein dan terjangkau secara ekonomis, menjadi pilihan utama untuk memenuhi kebutuhan gizi masyarakat. Penelitian ini bertujuan untuk mengetahui pengaruh jenis mulsa terhadap pertumbuhan dan produksi tanaman kedelai edamame (*Glycine max* L. Merr.). Untuk mengetahui pengaruh konsentrasi Pupuk Organik Cair (POC) terhadap pertumbuhan dan produksi tanaman kedelai. Untuk mengetahui interaksi kombinasi jenis mulsa dan konsentrasi POC terhadap pertumbuhan dan produksi tanaman kedelai edamame.

Penelitian ini dibimbing oleh Ibu Dr. Ir. Murni Sari Rahayu, M.P. selaku Ketua Komisi Pembimbing dan Ibu Dr. Yenni Asbur, S.P., M.P. selaku Anggota Komisi Pembimbing. Penelitian dilaksanakan di Kebun Percobaan Fakultas Pertanian Universitas Islam Sumatera Utara, Jln. Karya Wisata, Gedung Johor Kecamatan Medan Johor Kota Madya Medan, Ketinggian Tempat ± 25 meter di atas permukaan laut (dpl), dengan topografi datar. Penelitian ini dimulai pada bulan Februari – Bulan Mei 2024. Penelitian ini menggunakan Rancangan Petak Terpisah (RPT) dalam Rancangan Acak Kelompok (RAK) Faktorial tiga ulangan dengan jenis mulsa dan konsentrasi POC perlakuan. Faktor pertama, yaitu jenis mulsa (M) sebagai Petak Utama terdiri atas 4 taraf yaitu: M_0 = Tanpa mulsa (Kontrol), M_1 = Mulsa plastik hitam perak (MPHP), M_2 = Mulsa Jerami padi (3 kg/plot), M_3 = Mulsa *Asystasia gangetica* (3 kg/plot). Faktor kedua yaitu Konsentrasi Pupuk Organik Cair (POC) Eco Farming (N) sebagai Anak Petak terdiri atas 3 taraf yaitu: N_0 = 0 mL/L air (tanpa POC Eco Farming), N_1 = 2 mL/L air/plot, N_2 = 4 mL/L air/plot. Variabel yang diamati yaitu sifat kimia tanah, tinggi tanaman, jumlah daun, jumlah cabang, luas daun, umur berbunga, jumlah polong per tanaman sampel, bobot polong segar per tanaman sampel, bobot polong segar per plot, jumlah bintil akar.

Hasil penelitian menunjukkan bahwa perlakuan jenis mulsa mampu memberi pengaruh terhadap pertumbuhan tinggi tanaman, jumlah daun, jumlah cabang, luas daun dan umur berbunga serta produksi jumlah polong, bobot polong segar per tanaman sampel, bobot polong segar per plot dan jumlah bintil akar. Perlakuan terbaik untuk pertumbuhan terdapat pada M_1 (Mulsa plastik hitam perak MPHP) sementara untuk produksi terdapat pada M_2 (Mulsa jerami padi 3 kg/plot). Konsentrasi pupuk organik cair (POC) eco farming mampu memberi pengaruh terhadap produksi jumlah polong per tanaman sampel, bobot polong segar per tanaman sampel dan bobot segar per plot, dengan perlakuan terbaik pada N_1 (POC eco farming 2 mL/L air/plot). Namun, POC tidak memberikan efek terhadap pertumbuhan tanaman, seperti tinggi tanaman, jumlah daun, jumlah cabang, luas daun, umur berbunga, dan jumlah bintil akar. Interaksi perlakuan jenis mulsa dan konsentrasi pupuk organik cair (POC) eco farming mampu memberi pengaruh terhadap pertumbuhan jumlah daun, jumlah cabang, luas daun serta produksi jumlah polong per tanaman sampel, bobot polong segar per tanaman sampel dan bobot polong segar per plot. Interaksi terbaik terjadi pada perlakuan M_2N_1 (Mulsa jerami padi 3 kg/plot dan POC eco farming 2 mL/L air/plot).

Kata Kunci : Jenis Mulsa, POC Eco Farming, Pertumbuhan dan Produksi Tanaman Kedelai

SUMMARY

*Soybean, as a protein-rich and economically viable crop, is the primary choice to fulfill the nutritional needs of the community. This research aims to determine the effect of different types of mulch on the growth and production of soybean plants (*Glycine max* L. Merr.). To understand the influence of Liquid Organic Fertilizer (LOF) concentration on the growth and production of soybean plants. To investigate the interaction of mulch types and LOF concentrations on the growth and production of soybean plants.*

*This research was supervised by Dr. Ir. Murni Sari Rahayu, M.P. as the Chair of the Supervisory Committee and Dr. Yenni Asbur, S.P., M.P. as a Member of the Supervisory Committee. The research was conducted at the Experimental Garden of the Faculty of Agriculture, Universitas Islam Sumatera Utara, located at Jln. Karya Wisata, Johor Building, Medan Johor District, Medan City, North Sumatra, at an altitude of approximately 25 meters above sea level (masl), with a flat topography. The research was conducted from February to May 2024. This study utilized a Split Plot Design (SPD) within a Randomized Complete Block Design (RCBD) with factorial treatment of mulch types and LOF concentration, replicated three times. The first factor, mulch types (*M*), as the main plot, consisted of 4 levels: M_0 = No mulch (Control), M_1 = Black silver plastic mulch (BSMP), M_2 = Rice straw mulch (3 kg/plot), M_3 = *Asystasia gangetica* mulch (3 kg/plot). The second factor, Liquid Organic Fertilizer (LOF) Eco Farming concentration (*N*), as the subplot, consisted of 3 levels: N_0 = 0 mL/L water (without LOF Eco Farming), N_1 = 2 mL/L water/plot, N_2 = 4 mL/L water/plot. The observed variables included soil chemical properties, plant height, leaf number, branch number, leaf area, flowering age, number of pods per sample plant, fresh pod weight per sample plant, fresh pod weight per plot, and number of root nodules.*

The research results indicate that the type of mulch treatment significantly influences the growth of plant height, number of leaves, number of branches, leaf area, flowering age, as well as the production of pod count, fresh pod weight per sample plant, fresh pod weight per plot, and root nodule count. The best treatment for growth was found in M_1 (Black silver plastic mulch MPHP), while for production, M_2 (3 kg/plot rice straw mulch) was most effective. The concentration of eco farming liquid organic fertilizer (POC) also affected the production of pod count per sample plant, fresh pod weight per sample plant, and fresh weight per plot, with the best treatment observed in N_1 (POC eco farming 2 mL/L water/plot). However, POC did not affect plant growth parameters such as plant height, number of leaves, number of branches, leaf area, flowering age, and root nodule count. The interaction between mulch type and concentration of eco farming liquid organic fertilizer (POC) significantly influenced the number of leaves, number of branches, leaf area, as well as the production of pod count per sample plant, fresh pod weight per sample plant, and fresh pod weight per plot. The best interaction was observed in treatment M_2N_1 (3 kg/plot rice straw mulch and POC eco farming 2 mL/L water/plot).

Keywords : Mulch Type, Eco Farming LOF, Soybean Plant Growth and Production