RINGKASAN

Penelitian ini dilaksanakan di lahan Percobaan Fakultas Pertanian Universitas Islam Sumatera Utara, Jln. Karya Wisata, Kelurahan Gedung Johor, Kecamatan Medan Johor, Kota Madya Medan, Provinsi Sumatera Utara Pada Ketinggian tempat ± 48 mdpl, dengan Topografi datar. Penelitian ini telah dilakukan pada Bulan Oktober 2024 sampai Februari 2025.

Penelitian ini dibimbing oleh Bapak Indra Gunawan, M.P. sebagai Ketua Pembimbing dan Ibu Ir. Fenty Maimunah Simbolon, M.P. selaku Anggota Komisi Pembimbing. Penelitian ini bertujuan untuk mengetahui pengaruh nutrisi hidroponik terhadap pertumbuhan pembibitan kelapa sawit (*Elaeis guinensis* Jacq) pada umur 0-3 bulan di polybag. Untuk mengetahui pengaruh media tanam terhadap pertumbuhan pembibitan kelapa sawit (*Elaies guinensis* Jacq) pada umur 0-3 bulan di polybag. Untuk mengetahui pengaruh interaksi nutrisi hidroponik dan media tanam terhadap pertumbuhan pembibitan kelapa sawit (*Elaies guinensis* Jacq) pada umur 0-3 bulan di polybag. Penelitian menggunakan Rancangan Acak Kelompok (RAK) faktorial, yaitu: faktor pertama adalah pemberian nutrisi hidroponik (N) terdiri dari 4 taraf sebagai berikut: N_0 = Kontrol; N_1 = 6ml/liter; N_2 = 8ml/liter; N_3 = 10ml/liter. Faktor kedua adalah berbagai jenis media tanam (M) terdiri dari 4 taraf sebagai berikut: M_0 = Media tanah top soil; M_1 = Media tanah top soil dan sekam padi (50:50); M_2 = Media tanah top soil dan arang sekam (50:50). Variabel pengamatan yang terdiri dari tinggi tanaman, panjang daun, lebar daun, luas daun, inventarisasi hama, dan inventarisasi penyakit.

Berdasarkan hasil analisis menunjukkan bahwa nutrisi hidroponik dan media tanam berpengaruh terhadap pertumbuhan tinggi tanaman, panjang daun, lebar daun, luas daun, meningkatkan ketahanan hama dan penyakit. Perlakuan terbaik terdapat pada N_2 (nutrisi hidroponik 8 ml/liter). Hama ulat api (*Setothosea asigna*) menyerang tanaman bibit kelapa sawit di *pre-nursery* pada perlakuan N_0M_0. Penyakit bercak daun (*Leaf spot disease*) yang disebabkan oleh jamur *Curvularia* spp. yang dijumpai pada perlakuan N_2M_1 dan N_2M_1. Interaksi dari perlakuan nutrisi hidroponik dan media tanam berpengaruh terhadap semua parameter pengamatan. Perlakuan terbaik terdapat pada N_2M_1 (nutrisi hidroponik 8 ml/liter dengan media tanah top soil dan sekam padi 50:50).

Kata Kunci : Pembibitan Tanaman Kelapa Sawit, Nutrisi Hidroponik, Media Tanam dan Pertumbuhan.

SUMMARY

This research was conducted at the Experimental Field of the Faculty of Agriculture, Islamic University of North Sumatra, located on Jln. Karya Wisata, Gedung Johor Subdistrict, Medan Johor District, Medan City, North Sumatra Province. The site is situated at an altitude of approximately 48 meters above sea level, with flat topography. The research was carried out from October 2024 to February 2025.

This research was supervised by Mr. Indra Gunawan, M.P. as the Principal Supervisor and Mrs. Ir. Fenty Maimunah Simbolon, M.P. as a Member of the Advisory Committee. The study aimed to determine the effect of hydroponic nutrient application on the growth of oil palm seedlings (Elaeis guineensis Jacq) aged 0–3 months in polybags. It also aimed to assess the effect of various growing media on the growth of oil palm seedlings aged 0–3 months in polybags, and to examine the interaction between hydroponic nutrient application and different types of growing media on the growth of oil palm seedlings (Elaeis guineensis Jacq) during the same period. The study used a factorial Randomized Complete Block Design (RCBD) with two factors. The first factor was hydroponic nutrient application (N), consisting of four levels: N_0 = Control; N_1 = 6 ml/liter; N_2 = 8 ml/liter; N_3 = 10 ml/liter. The second factor was the type of growing media (M), consisting of three levels: M_0 = Topsoil media; M_1 = Topsoil and rice husk media (50:50); M_2 = Topsoil and rice husk charcoal media (50:50). The observed variables included plant height, leaf length, leaf width, leaf area, pest inventory, and disease.

Based on the analysis results, the application of hydroponic nutrients had a significant effect on plant height, leaf length, leaf width, leaf area, and pest and disease inventory. The best treatment was found in N_2 (hydroponic nutrients at 8 ml/liter). The growing media treatment significantly affected leaf length and pest and disease inventory, but had no significant effect on plant height, leaf width, and leaf area. The best media treatment was M_2 (a mixture of topsoil and rice husk charcoal at a 50:50 ratio). The interaction between hydroponic nutrient application and growing media had a significant effect on all observed parameters. The best interaction treatment was N_2M_1 (hydroponic nutrients at 8 ml/liter combined with a growing medium of topsoil and rice husk at a 50:50 ratio).

***Keywords**: Oil Palm Seedling, Hydroponic Nutrients, Growing Media, and Growth.*