ABSTRAK

Agnes Monika Simamora, NIM. 4223220025 (2026). Ekologi Makrofauna Tanah pada Perkebunan Kelapa Sawit (*Elaeis guineensis* Jacq.) dan Kakao (*Theobroma cacao* L.) di Kecamatan Serbajadi Kabupaten Serdang Bedagai.

Perubahan penggunaan lahan dan sistem pengelolaan perkebunan, seperti monokultur sawit dan agroforestri kakao, dapat mempengaruhi komunitas makrofauna tanah yang berperan sebagai bioindikator kualitas tanah. Penelitian ini bertujuan untuk menganalisis jenis, kelimpahan, keanekaragaman, dominansi, kemerataan, serta perbedaan komunitas makrofauna tanah pada perkebunan kelapa sawit dan kakao di Kecamatan Serbajadi, Kabupaten Serdang Bedagai. Penelitian deskriptif kuantitatif ini dilakukan dari Maret hingga April 2026. Sampel makrofauna tanah dikumpulkan menggunakan metode *pitfall trap* pada 5 titik di perkebunan kelapa sawit dan 5 titik di perkebunan kakao. Identifikasi sampel dilakukan di Laboratorium Biologi Universitas Negeri Medan. Data dianalisis menggunakan indeks *Margalef* untuk kelimpahan, indeks *Shannon-Wiener* untuk keanekaragaman, indeks *Simpson* untuk dominansi, indeks *Evenness* untuk kemerataan, dan *uji-t* untuk perbedaan keanekaragaman dan kelimpahan pada kedua perkebunan. Faktor fisika-kimia tanah (suhu, pH, kadar air) juga diukur. Ditemukan 9 jenis makrofauna tanah pada perkebunan kelapa sawit dan 8 jenis makrofauna tanah pada perkebunan kakao. Jumlah individu pada perkebunan kelapa sawit (413) lebih tinggi daripada perkebunan kakao (235). Kedua areal perkebunan menunjukkan indeks kelimpahan dan dominansi yang rendah, keanekaragaman sedang, serta kemerataan yang tinggi. Uji t menunjukkan perbedaan signifikan antara komunitas makrofauna tanah di perkebunan sawit dan perkebunan kakao (t-hitung 5,00 > t-tabel 2,58). Kondisi fisika-kimia tanah masih mendukung kehidupan makrofauna tanah pada kedua perkebunan.

Keywords: *Kakao, Keanekaragaman, Kelapa Sawit, Makrofauna Tanah, Pitfall Trap.*

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ABSTRACT

Agnes Monika Simamora, NIM. 4223220025 (2026). Ecology Of Soil Macrofauna On Palm Oil (*Elaeis Guineensis* Jacq.) And Cocoa (*Theobroma Cacao* L.) Plantations In Serbajadi District, Serdang Bedagai Regency.

Changes in land use and plantation management systems, such as oil palm monoculture and cocoa agroforestry, can affect soil macrofauna communities, which serve as bioindicators of soil quality. This study aimed to analyze the types, richness, diversity, dominance, and evenness of soil macrofauna communities, as well as differences between them, in oil palm and cocoa plantations in Serbajadi District, Serdang Bedagai Regency. This quantitative descriptive study was conducted from March to April 2026. Soil macrofauna samples were collected using the pitfall trap method at five points in the oil palm plantation and five points in the cocoa plantation. Sample identification was performed at the Biology Laboratory of Medan State University. Data were analyzed using the Margalef index for richness, Shannon-Wiener index for diversity, Simpson index for dominance, and Evenness index; a t-test was used to compare diversity and richness between the two plantations. Soil physicochemical factors (temperature, pH, and moisture content) were also measured. Nine types of soil macrofauna were found in the oil palm plantation, and eight types were found in the cocoa plantation. The total number of individuals was higher in the oil palm plantation (413) than in the cocoa plantation (235). Both plantation areas exhibited low richness and dominance, moderate diversity, and high evenness. The t-test revealed a significant difference between the soil macrofauna communities in the oil palm and cocoa plantations (calculated t-value 5.00 > t-table 2.58). Soil physicochemical conditions remained conducive to soil macrofauna life in both plantations.

Keywords: *Cocoa, Biodiversity, Oil Palm, Soil Macrofauna, Pitfall Trap*.