Intisari

Pemberian input bahan kimia pata sistem tanam tebu memberikan pengaruh terhadap ekosistem diatas permukaan tanah. Teori *Tri-Trophic Intercation* menjelaskan pengaruh kesehatan tanaman yang menginduksi hubungan rantai makanan diatas permukaan tanah. Hasil penelitian yang dilaksanakan pada lahan tebu di Kabupaten Sleman menunjukan pemberian bahan pembenah tanah *Hydrosihum* (*Hydrogel Polimer Lignin,* SiNPS, dan Nano silika) dengan dosis pupuk kimia yang tepat menghasilkan nilai keanekaragaman paling tinggi dan dominansi paling rendah. Penelitian dilakukan dengan metode RAKL (Rancangan Acak Kelompok Lengkap) dengan metode *Trapping* artropoda meggunakan *Yellow sticky trap, transparant sticky trap* dan *Shocking trap.* Hasil penelitian divisualisasikan dalam bentuk indeks Shanon Wienner dan Dominansi hasil pengolahan dengan *R Studio* . Pengolahan menggunakan *Package* dari *vegan, diversity, agricole, ggplot dan tydiverse* untuk dapat memberikan gambaran hasil penelitian yang dilakukan.

Kata Kunci :Shanon-Wienner, Dominansi, Artropoda, Pembenah Tanah, Pupuk Kimia

Abstract

The application of chemical inputs in sugarcane cropping systems significantly influences the above-ground ecosystem. Tri-Trophic Interaction theory explains how plant health induces food chain relationships above the soil surface. The results of research conducted on sugarcane land in Sleman Regency demonstrate that the application of Hydrosihum soil amender (consisting of Lignin Polymer Hydrogel, SiNPS, and Nano-silica) combined with precise chemical fertilizer dosages resulted in the highest diversity index and the lowest dominance index.

The study was conducted using the Randomized Complete Block Design (RCBD) method. Arthropod trapping was performed using yellow sticky traps, transparent sticky traps, and suction traps (shocking traps). The research findings were visualized through the Shannon-Wiener Diversity Index and Dominance Index, processed using R Studio. Data analysis utilized various R packages, including vegan, diversity, agricolae, ggplot2, and tidyverse, to provide a comprehensive overview of the research results.

Keywords: *Shannon-Wiener, Dominance, Arthropods, Hydrosihum, Chemical Fertilizer*