

SUMMARY

Nematodes are the most abundant metazoan in soil, occupying almost all trophic levels in the decomposer food web, based on dead organic matter, and the green food web that is based on living plants. Nematodes in the green food web consume plant-root that cause plant diseases. Nematode community is affected by soil property that might change due to disturbance, suggesting them as the indicator of their environmental conditions. In Banyumas Regency, there have been concern in plant productivity, raised by the local farmers of Gandatapa and Sikapat Villages. They suspected that their agricultural fields have been unhealthy. To respond this problem, a research had done to understand how the nematode community was structured, and how they correlated to chemical-physical soil properties in suspected pathogenic agriculture fields of the Villages.

The study used a survey method, in which samples from suspected pathogenic agricultural soil were taken using transects and quadrants. The 20g soil samples were extracted to obtain nematodes, which were further analyzed based on their families and functional groups. Food web analysis was carried out to determine the condition of the food web and the composition of the nematode community. Multivariate ordination analysis was applied to measure the relationship between nematode communities and environmental variables.

In the study sites, there was 172 ind/10g nematodes (17 families) in Sikapat, and 240 ind/10g (22 families) in Gandatapa. Plant parasitic Heteroderidae (pp 3) was highest abundance (31.97%) in Sikapat soil, whereas Alaimidae (cp 4) was the most abundant (24.17%) in Gandatapa soil. The soil pH, organic carbon, nitrogen, phosphorus, and potassium in Sikapat were 5.13, 2.02%, 0.42%, 0.85%, and 0.03%, while in Gandatapa were 5.06, 0.88%, 0.38%, 0.73%, and 0.04%. The soil temperature, water content, electrical conductivity, and bulk density in Sikapat were 28.47°C, 44.91%, 0.06 mS/m, and 0.58 g/cm³, meanwhile in Gandatapa 28.53°C, 54.65%, 0.09 mS/m, 0.43 g/cm³. The Maturity Index, Maturity Index 2-5, and Plant-parasitic Index were 3.10, 3.41, 2.70 in Sikapat, and 3.45, 3.60, 2.67 in Gandatapa. The Channel Index, Basal Index, Enrichment Index, and Structure Index reached 30.62, 10.49, 66.26, 86.79 in Sikapat, while they were 28.16, 7.79, 53.82, and 91.44 in Gandatapa.

It is concluded that the nematode communities showed complex structures based on the structure based on their profile. The composition of nematode community in this study was significantly correlated to the organic carbon, total potassium contents, as well as soil bulk density, water content, and electrical conductivity.

Keywords: *community structure, disturbance, functional group, food web, soil properties*