ABSTRAK

Nematoda merupakan salah satu fauna tanah penting karena kelimpahan dan keanekaragaman yang tinggi. Nematoda berada hampir di setiap tropik jaring makanan karena memiliki beberapa kelompok makan yaitu herbivora, bakterivora, omnivora, fungivora, dan karnivora. Penambahan bahan organik diketahui meningkatkan biomassa mikroba tanah dan ketersediaan unsur hara serta mempengaruhi komunitas nematoda tanah. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian limbah BSF (*Black Soldier Fly*), pupuk kimia (NPK), pupuk kompos, dan kontrol terhadap kelimpahan nematoda tanah dan keanekaragaman nematoda parasit tanaman di lahan edamame. Penelitian dilakukan di lahan percobaan Fakultas Pertanian, Universitas Yamagata, Jepang pada musim panas (Mei – Agustus) 2023. Pengambilan sampel tanah dilakukan sebanyak tiga kali yaitu sebelum tanam, pada fase vegetatif tanaman, dan pada fase generatif tanaman. Ekstraksi-Isolasi nematoda dilakukan dengan menggunakan metode *Whitehead-Tray*. Hasil penelitian menunjukkan bahwa pemberian pupuk BSF menunjukkan hasil yang tidak berbeda nyata dengan perlakuan yang lain pada fase vegetatif dan generatif tanaman. Nematoda parasit tanaman yang ditemukan yaitu berasal dari genus *Hoplolaimus*, *Tylenchus*, *Pratylenchus*, *Helicotylenchus*, dan *Criconemoides*. limbah BSF dapat meningkatkan kelimpahan nematoda bakterivora pada fase vegetatif dan pada fase generatif tanaman jika dibandingkan dengan perlakuan pemberian pupuk kimia (NPK) dan kontrol. Pemberian limbah BSF juga meningkatkan kelimpahan nematoda fungivora pada fase vegetatif dan generatif tanaman. Pada perlakuan pemberian limbah BSF, kelimpahan omnivora meningkat pada masa vegetatif tanaman dan menurun pada masa generatif tanaman. Penambahan bahan organik berupa limbah BSF dan kompos mampu mempengaruhi komunitas nematoda tanah dengan meningkatkan kelimpahan bakterivora dan fungivora pada masa vegetatif dan pada masa generatif tanaman.

Kata kunci: limbah BSF, nematoda parasit, nematoda non-parasit, kelimpahan., keanekaragaman.

Abstract

Nematodes are one of the essential soil faunas because of their high abundance and diversity. Nematodes are found in almost every tropic of the food web because they have several feeding groups: herbivores, bacterivores, omnivores, fungivores and carnivores. Adding organic matter increases soil microbial biomass and nutrient availability and influences soil nematode communities. This research aimed to determine the effect of applying BSF (Black Soldier Fly) frass, chemical fertilizer (NPK), compost fertilizer, and control on the abundance of soil nematodes and the diversity of plant parasitic nematodes in edamame fields. The research was conducted at the Faculty of Agriculture, Yamagata University, Japan, in the summer (May–August) of 2023. Soil samples were taken three times: before planting, in the vegetative phase, and in the generative phase of the plant. Extraction-Isolation of nematodes was carried out using the modified Whitehead-Tray method. The results showed that the application of BSF frass was not significantly different from other treatments in the vegetative and generative phases of the plant. The plant parasitic nematodes found were from the genera Hoplolaimus, Tylenchus, Pratylenchus, Helicotylenchus, and Criconemoides. BSF frass could increase the abundance of bacterivorous nematodes in vegetative and generative phases compared with chemical fertilizer (NPK) and control treatments. Applying BSF frass also increased the abundance of fungivorous nematodes in plants' vegetative and generative phases. Adding organic materials such as BSF frass and compost could influence the soil nematode community by increasing the abundance of bacterivores and fungivores in plants' vegetative and generative phases.

Keywords: BSF frass, plant parasitic nematodes, non-parasitic nematodes, abundance, diversity