

Interactions between Eisenia andrei (Oligochaeta) and nematode populations during vermicomposting

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Summary

We studied the effect of the earthworm, *Eisenia andrei*, on the nematode community and on the microbial activity during the vermicomposting of two organic wastes, cow manure and sewage sludge. Fresh cow manure and sewage sludge was placed in five replicated boxes with and without earthworms for a period of 16 weeks. Samples were collected periodically and nematodes were extracted in Baermann funnels, counted and separated into different trophic groups. Samples were also analyzed for microbial respiration and microbial biomass nitrogen. Nematode communities were dominated by bacterivores, and their abundance was dramatically affected by earthworm activity. In both substrates, numbers of nematodes decreased in the presence of earthworms. Fungivore nematodes were observed after 6 weeks in the cow manure and in contrast to bacterial feeders, their number continuously increased in the treatment without earthworms but remained low in the presence of the earthworms. We did not detect a significant earthworm effect on microbial respiration but they significantly increased microbial biomass nitrogen in sewage sludge. Our results indicate that earthworms have a strong influence on nematode densities and nematode trophic structure, and that further investigations are necessary to determine the mechanisms of this influence.

Keywords: Earthworms; *Eisenia andrei*; nematodes; vermicomposting; decomposition; cattle manure; sewage sludge