
Roles of earthworms species in the organic matter recycling

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Abstract

Given their impact on soil functioning and their interactions with soil organisms, earthworms contribute to the recycling of organic matter and participate significantly in the numerous ecosystem services provided by soils. Most studies on the role of earthworms in organic matter recycling were conducted at the level of the four functional groups (epigeic, epi-anecic, anecic strict and endogeic), but their effects at sub-specific levels remain largely unknown. Still, within a functional group, anatomic and physiologic earthworm species traits are different, which should impact organic matter recycling. This study aims at determining, within controlled conditions, epi-anecic species differences in (i) selection, (ii) ingestion, (iii) assimilation, (iv) organic matter excretion and (v) impact on microorganisms communities implied in organic matter degradation. An experiment using microcosms was conducted to compare the impact of four species from the epi-anecic functional group (*Lumbricus rubellus*, *Lumbricus festivus*, *Lumbricus centralis* and *Lumbricus terrestris*) on the recycling of three trophic resources (*Holcus lanatus*, *Lolium perenne* and *Corylus avellana*). Measured parameters were taken at several places in the microcosms after 0, 10 and 20 days. Microorganisms communities were analysed using TRFLP. Results are discussed taking into account physical and chemical properties of these 3 trophic resources (e.g. C/N ratio, phenolic compounds, micronutrients, percentage of lignin and cellulose...).

Keywords: Earthworms, soil, organic matter, functional trait

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