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Roles of epi-anecic taxa of earthworms in the organic matter recycling

Kevin Hoeffner (1), Cécile Monard (1), Mathieu Santonja (1), Guénola Pérès (2), and Daniel Cluzeau (1)
(1) UMR 6553, Université de Rennes, France, (2) UMR 1069, Agrocampus Ouest, Rennes, France

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 taxa level remain largely unknown. Still, within a functional group, anatomic and physiologic earthworm taxa traits are different, which should impact organic matter recycling. This study aims at determining, under controlled conditions, epi-anecic taxa differences in (i) leaf litter mass loss, (ii) assimilation and (iii) impact on microorganisms communities implied in organic matter degradation. In seperate microcosms, we chose 4 epi anecic taxa (Lumbricus rubellus, Lumbricus festivus, Lumbricus centralis and Lumbricus terrestris). Each taxon was exposed separately to leaves of three different plants (Holcus lanatus, Lolium perenne and Corylus avellana). In the same microcosm, leaves of each plant was both placed on the surface and buried 10cm deep. The experiment lasted 10 days for half of the samples and 20 days for the second half. Microorganisms communities were analysed using TRFLP in each earthworm taxon burrow walls at 20 days. We observed differences between epi-anecic taxa depending on species of plant and the duration of the experiment. Results are discussed taking into account physical and chemical properties of these 3 trophic resources (e.g. C/N ratio, phenolic compounds, percentage of lignin and cellulose...).