

MICROMORPHOLOGY OF EARTHWORM CASTS IN A SOIL AND ROCK POWDER MIXTURE

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The use of rocks is an alternative to fertilize soils with low cation exchange capacity and low weatherable-mineral content. However, the mineral alteration of the rock fertilizer can be very slow. Earthworms host a significant variety of microorganisms and develop internal, mutualistic digestive systems. They ingest organic and mineral compounds of soils. We have studied the effects of earthworms (*Eisenia phoetida* and *Lumbricus terrestris*) on biogeochemistry alteration of minerals. The experiment was conducted under greenhouse condition in vases with 2 litres of capacity where it was introduced five earthworms. The treatments in this study consisted of 5 rock powder rates (0, 10, 20, 400 and 1000 g kg⁻¹ soil). The soil used was a sandy loam O xisol, with a millet (*Pennisetum americanum*) mulch. The material used to make the rock powder was collected in the Catalão Carbonate Complex (Goiás State, Brazil). It is approximately composed by 50% carbonatite and 50% phlogopite. The powder presented a granulometry finer than 2 mm and 50% was finer than 0,3 mm. The earthworm casts were collected in the vase surfaces when the experiment had 165 days. The earthworms had ingested great amounts of rock powder and micro-morphological analysis indicated an increase of plasm with the decrease of rock powder rate. The matrix is composed by a red plasm (Fe and Al oxydes and hidroxydes), and the skeleton is composed of quartz, carbonates, and micas. The voids were filled with minor particles and little oxidation has been observed in borders of biotite and phlogopite.