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Using native enchytraeid species for soil-ecotoxicological tests in Brazil

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The Enchytraeid Reproduction Test (ERT) has been implemented as the ISO guideline 16387 to determine toxicity of chemicals in soil of temperate climatic zone. For relevant results, ecotoxicological tests should use species that are likely to occur in the target environment, therefore, to adapt ERT for (sub-)tropical conditions, we have established cultures of local enchytraeids in order to find a suitable species for ecotoxicological studies. For the first time in Brazil we succeeded in culturing different strains of enchytraeids in agar plates, originating from starter specimens extracted from soil samples collected around Curitiba, Paraná. All strains belong to the genus *Enchytraeus*. Three of them reproduce obligately via cocoon production; they belong to *E. buchholzi* (Vejdovský, 1879) sensu lato, or to a new species *Enchytraeus* spA. Eight strains are fragmenting worms identified as *Enchytraeus dudichi* Dózsa-Farkas, 1995 s.l. and *Enchytraeus bigeminus* Nielsen & Christensen, 1963 s.l.. In order to verify the potential of the local species in ERT we tested the reproductive performance of *Enchytraeus* spA and *E. buchholzi* s.l. in tropical artificial soil (TAS), which has been the substrate used for ecotoxicological tests with earthworms, at temperatures more compatible to Brazilian climate.

Enchytraeus spA and *E. buchholzi* s.l. showed results comparable to *E. crypticus* in 20 g of TAS moistened to 50% of its water holding capacity (WHC) for 30 days at 22 ° ± 1 °C. Each group of 10 adults produced, in average, more than a thousand juveniles, in accordance to the ERT validity criteria of a minimum of 50 juveniles and coefficients of variation (CVs) below 50%. We also tested the reproductive performance of *E. buchholzi* s.l. for a shorter period of 21 days in 10 g of TAS under 22 ± 1 °C, 25 ± 1 °C and 28 ± 2 °C among which only the treatment of 28 °C did not meet the validity criteria for ERT. Range finding tests with carbendazim in a commercial formulation performed with *E. buchholzi* s.l. did not show 50% of mortality in any of the concentrations tested from 1 to 1000 mg a.i. kg-1 dry TAS, but from 100 mg a.i. kg-1 carbendazim clearly impaired reproduction. Definitive tests will be performed to evaluate *E. buchholzi* s.l. usefulness as a test organism for ecotoxicological studies. Tests changing the moisture and the amount of substrate, as well as a test with natural soil assessing *E. buchholzi* s.l. reproductive performance are also ongoing.