

Earthworm species in various land use systems in Northern Paraná State, Brazil

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Earthworms are present in almost all terrestrial ecosystems, and are one of the most important components of the soil invertebrate macrofauna. Species identification is essential in biological, ecological, and behavioural studies, as well as to characterize the benefits of these organisms in various land use systems (LUS). This study aimed to identify earthworm species in four LUS in Northern Paraná State, Brazil. The study was conducted in the counties of Rolândia and Arapongas, in five areas: 1) no-till (36 yr) – NT; 2) subsoiled no-till – SNT (every 3 yr); 3) pasture – P (> 30 yr); 4) coffee plantation – C (> 30 yr); and 5) native forest – NF. Soils of the area were Oxisols: Rhodic Hapludox in NT, SNT, C and NF and a transition between Rhodic Hapludox and Rhodic Kandiodox in P. Nine samples were taken in each area over a one-year period (march 2008 to march 2009) every three months, using the TSBF (Tropical Soil Biology and Fertility) methodology (handsorting of 25 × 25 cm monoliths from the 0-20 cm layer of soil). The earthworms were preserved in 4% formaldehyde, and then they were separated in juveniles and adults and were identified at the genus or species level when possible. In the five samples dates (mar/08, jun/08, sep/08, dec/08 and mar/09) highest diversity was founded in P (7 species): *Fimoscolex sp.* and *Glossocolex sp.* (native and new species), *Pontoscolex corethrurus*, *Dichogaster gracilis*, *D. affinis*, *D. saliens* (exotics) and *NIsp.1* (not identified species – native?). In NT, 6 species were founded: *P. corethrurus*, *D. affinis*, *D. saliens* (exotics), *Fimoscolex sp.* and *Belladrilus* (*Santomesia emiliani*) *emiliani* and *Belladrilus sp.1* (natives). In NF, 5 species were found: *P. corethrurus*, *D. affinis* (exotics), *Urobenus sp.*, *Belladrilus sp1* and *sp2* (natives). Lowest diversity was found in SNT (3 species): *D. saliens* (exotic), *B. (S.) emiliani* and *Belladrilus sp1* (native), and in C (2 species): *D. saliens* (exotic) and *B. (S.) emiliani* (native). Therefore, several native species were able to survive in the agro ecosystems, though disturbance was high, although these tended to be of small size and higher diversity was associated with lower disturbance, allowing comparable diversity with the native forest. **Financed by Capes (scholarship for the first author) and Fundação Agrisus (divulcation of the results)