Poster – Session 3

# Earthworm abundance and diversity in no-till systems in SW Paraná State, Brazil*

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No-tillage is a widely practiced conservation agriculture system in Brazil, with over 22 million ha currently in no-till. This management system, which includes permanent soil cover (straw), minimum soil physical disturbance and crop rotation with green manures, linked with integrated pest management, is known to promote, among other factors, the role of soil organisms in soil fertility. Therefore, the present study was undertaken to assess earthworm populations in 6 watersheds (Mineira, Ajuricaba, Facão Torto, Buriti, Pacurí and Toledo), in SW Paraná State, Brazil, aiming towards a ranking of earthworm density and diversity in no-till systems. Soils in the region are mainly Red clayey Latosols (Oxisols), derived from cretaceous era basalt flows. Earthworms were collected in 37 farms with no-tillage aging 3 - 27 yr of age, in February 2010, using an adaptation of the TSBF method (hand sorting of five 20×20 cm holes to 20 cm depth). In each watershed, earthworms were also sampled in one native forest fragment, used as a control. In the 37 no-till systems, earthworm abundance ranged from 0 - 24.2 individuals/hole (0 - 605 indiv./$m^2$) and in the forests, from 0.2 – 11.4 indiv./hole (5 - 285 indiv./$m^2$). Most of earthworms encountered were exotic species of the genus *Dichogaster* (*D. saliens*, *D. gracilis*, *D. bolaui* and *D. affinis*, Acanthodrilidae family) and native Ocnerodrilidae (mainly *Belladrilus sp*.), all of small individual size. In a few sites, individuals of the native Glossoscolecidae (*P. corethrurus*, *Glossoscolex sp.*, *Fimoscolex sp*.) and exotic Megascolecidae families (*Amynthas gracilis*) were also encountered, in low densities. *Urobenus brasiliensis* (glossoscolecid) was found only in the forest fragments. Diversity per site ranged from 1 to 6 sp. and the totals per watershed were: Mineira, 4 sp.; Ajuricaba, 8 sp.; Facão Torto, 4 sp.; Buriti, 7 sp.; Pacurí, 6 sp.; and Toledo, 8 sp. In the forests, diversity was, 1, 4, 4, 2, 2, and 6 sp. per watershed, respectively. Based on this study and results from previous studies by the authors, a ranking of earthworm abundance and diversity in no-till systems is here proposed for the red Latosol, warmer climate regions (Cfa, Koeppen) of Paraná State: poor = 2 indiv./hole and 1 sp.; moderate = > 2 to 6 indiv./hole and 2 sp.; good = > 6 to 10 indiv./hole and 3 sp.; excellent = > 10 indiv./hole and > 4 sp.*Financed by Itaipu-Binacional