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Soil quality and biodiversity across a land-use intensification gradient in Santa Catarina, Brazil

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As part of the CNPq- and FAPESC-funded project “SisBIOTA”, soil quality and the diversity of soil fauna and microbial communities are being studied across a land-use intensification gradient in 12 counties, including 60 sites in the State of Santa Catarina, Brazil. The land-use systems (LUS) evaluated follow an intensification gradient that includes: Atlantic rainforest fragments, planted forests (*Eucalyptus*), traditional cattle pastures (native or cultivated), crop-livestock integration, and no-till annual cropping. In each LUS samples were taken for the assessment of: (1) soil physical (texture, porosity, aggregation stability, resistance to penetration and density) and chemical (pH, P, K, Ca, Mg, MO, Al, H + Al, C, H, N and S) quality, (2) soil macrofauna diversity (soil macrofuna groups, and identification to species level of Oligochaeta, Coleoptera, Chilopoda, Diplopoda, Aranae, Formicidae, Scorpionidae, Pseudoscorpionidae and Isopoda) using pitfall traps and handsorting of 25 x 25 cm monoliths, (3) mycorrhizal colonization, spore counts and diversity, (4) soil microbial biomass and activity (basal respiration) and, (5) structural community diversity of Archaea and Bacteria using T-RFLP molecular method. In each LUS nine samples following a grid scheme, were taken for each parameter. From each one of the five LUS, 12 different patches were sampled (true replication) across Santa Catarina state (one patch for each LUS per county). This contribution includes the presentation of the concept and aims of the SisBIOTA project, enhancing the need for a robust experimental design and a multidisciplinary approach when tackling biodiversity monitoring at large scales. The importance of the project at national and regional levels is also presented, together with some preliminary results from half of the sites, and the corresponding assessment of the intensification gradient on soil quality and biodiversity.