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Start**251-9 Management and Soil Interactions Impacting SOC Dynamics in Crop-Livestock and Sugarcane Systems.****Browse by Section/Division of Interest**

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Recently management systems as crop-livestock integration and methods of management and harvesting of sugarcane are being considered to improve soil and water conservation in Brazil. Our goal in this study was to evaluate soil C dynamics under crop-livestock and sugarcane systems in the Cerrado region influenced by the soil use and management history, using physical, chemical and biological attributes. We used measurements from four different management systems and land use histories found in the Pedro Afonso region, in Tocantins State (Northern Brazil), between 2009 and 2014, but we considered the 2012/13 crop season as a baseline in this study. The historic land use and management in these systems is: 1 – *CLJ - soybean – corn silage*: crop-livestock integration with no-till and crop rotation including brachiaria grass (2009/10) /soybean – corn 2nd harvest (2010/11) /soybean – corn 2nd harvest (2011/12) /soybean – corn silage (2012/13) /soybean – brachiaria grass (2013/14); 2 – *CLJ - soybean – corn 2nd harvest*: crop-livestock integration with no-till and crop rotation including brachiaria grass (2009/10) /soybean – corn 2nd harvest (2010/11) /soybean – corn 2nd harvest (2011/12) /soybean – corn 2nd harvest (2012/13) /soybean – brachiaria grass (2013/14); 3 – *Sugarcane*: sugarcane with conventional tillage and no preharvest burning management during the period from 2009 to 2014; and 4 – *Cerrado*: savanna native vegetation, used as a reference. The soil samples were taken in April/2013 (chemical analyses) and in February/2014 (physical and microbiological analyses), and were analyzed for pH in CaCl₂, phosphorus, SOC content and stock, exchangeable Al, cation exchange capacity, base saturation, soil bulk density, moisture, total porosity, microbial biomass carbon, and microbial quotient. The chemical measurements shows that agricultural systems are similar and they can easily overcome the native conditions, even with equivalent levels of SOC. However, the results of soil microbiological and physical analysis are different and can better represent the impact of land use and management on the SOC stocks.

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