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country. This study aimed to evaluate the influence of soil management and crop rotations on the soil organic matter (SOM) content after nine years under several cotton production systems. The study was made continually from 2005 through 2014 in the State of Goiás. The treatments were as follow: (1) conventional tillage by tractor plowing and continuous cotton (MC); (2) conventional tillage and cotton-soybean-cotton rotation (CSC); (3) conventional tillage and cotton-soybean-corn rotation (CSCORN); (4) no-tillage cotton (NTC) system - [soybean (main crop) + *Urochloa ruziziensis* (second crop) / maize (main crop) + *U. ruziziensis* (second crop) / cotton (main crop)], and (5) native cerrado vegetation (NCV). The experiment was designed in a randomized block, with four replications. Soil samples were collected in October 2014, after nine years of treatments, in the layers 0-5, 6-10, 11-20, 21-30, 31-60, and 61-100 cm for evaluation of SOM content. The soil under native vegetation had significant higher soil organic matter than all cropping systems. The difference between native and cultivated soils is smaller in deep layers. In the most superficial layer, the soil organic matter was 23.3, 23.4, 24.5, 34.1, and 63.3 g kg⁻¹ in the treatments MC, CSC, CSCORN, NTC, and NCV, respectively. No-tillage cotton increased by 46% the soil organic matter content in the surface layer (0-5 cm) compared to conventional tillage and continuous cotton, while in deeper (6-100 cm) layers, a non-significant increase of approximately 10% was observed after 9 years. No-tillage system increase SOM content in the most superficial layer.

Acknowledgments

References

Keywords: Soybean, Corn, *Urochloa ruziziensis*, Brazilian Savannah, Soil management

SOIL ORGANIC MATTER AFTER NINE YEARS UNDER CROP ROTATION, CONVENTIONAL, AND NO-TILL COTTON PRODUCTION SYSTEMS

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Abstract:

Despite of its negative impacts on environment, the system based on monoculture and conventional tillage predominated for many years in Brazilian cotton production. A sustainable cotton cropping system requires the adoption of conservation tillage practices that increase the soil organic matter, which is the best indicator of soil quality in tropical conditions. Studies on soil tillage cotton, crop rotation, and long-term are rare in the Midwest Brazilian Savannah (cerrado), the most important cotton producing region in this