



XIII Congresso de ECOLOGIA

III International Symposium of Ecology and Evolution

Múltiplas ecologias: evolução e diversidade

08 a 12 de outubro de 2017 • UFV - VIÇOSA | MG

RESTORATION OF CERRADO NATURAL SOIL PROPERTIES IN IMPROVED PASTURES

Pereira-Silva, Erico F. L.¹; Sauras-Yera, Teresa²; Camargo-Keller, Victor^{3,5}; Hardt, Elisa³; Canonici, Tiago⁴; Delitti, Wellington B. C.⁵; Vallejo, V. Ramón²

1. Universidade Federal do ABC, Centro de Ciências Naturais e Humanas, Campus São Bernardo do Campo, R. Arcturus, 03, Jd. Antares, 09606-070, São Bernardo do Campo, SP, Brasil
2. Universidade de Barcelona, Departamento de Biología Vegetal, Av. Diagonal, 643, 08028, Barcelona, Espanha
3. Universidade Federal de São Paulo, Programa de Pós-graduação em Ecologia e Evolução. R. Prof. Artur Riedel, 275, Jd. Eldorado, 09972-270, Diadema, Brasil
4. Centro Universitário Hermínio Ometto, Av. Dr. Maximiliano Baruto, 500, Jd. Universitário, 13607-339, Araras, Brasil.
5. Universidade de São Paulo. Departamento de Ecologia, R. do Matão, 321, Trav. 14, Cidade Universitária, 05508-090, São Paulo, Brasil. *Correspondence to candeya@gmail.com

Tema/Meio de apresentação: Ecologia de Ecossistemas/Pôster

Cerrado constitutes one of the largest biomes in Brazil and the dominant soils are Oxisols (46%), Entisols (15%) and Ultisols (15%). Natural soils are highly leached, acidic, with low Cation Exchange Capacity and highly saturated by Al³⁺. Since the 1970s, Cerrado biome is suffering with development of intensive agriculture and highly productive pastures with the result of losing 55% of area. Natural poor soil fertility of cerrado ecosystems have been corrected with heavy application of soil amendments, especially liming and fertilizers. In the context of cerrado ecological restoration we are developing a research with the aim of designing innovative restoration strategies for the Cerrado. Our working hypothesis is that cerrado ecosystem restoration first requires the recuperation of natural cerrado soil properties. To test this hypothesis, we carried out a controlled experiment in a greenhouse to test several soil changes to reduce soil fertility and increase the soil acidity of intensive management pasture, seeking to recover original chemical properties of the cerrado soil. Selected treatments were: Control, powered sulfur (S), citric acid (AcCit), sugar cane bagasse (B with C:N = 165), rice straw (A with C:N = 125), chipped pine bark (M with C:N = 245) and sugar cane bagasse combined with powered sulfur (B+S). From the comparison with the control of the experiment, after 419 days, S and B + S treatments showed significant decrease of soil pH to 5.8, increase of soil exchangeable acidity (Al+H), decrease of exchangeable Ca and Mg and a decrease in P and N availability. Furthermore, acidification by S and AcCit promoted native organic carbon solubilization and leaching. As a conclusion, some of the tested soil conditioners (particularly S and B+S) shows to be efficient to significantly reducing soil nutrient availability, reducing pH and increasing exchangeable Al in the short-term, so recovering some natural cerrado soil properties intensively used for pasture and agricultural uses.

The authors acknowledge the financial support received from CAPES - PROGRAMA CIÊNCIA SEM FRONTEIRAS (proj. 169/2012) with the concession the scholarships for Pereira-Silva, E. F. L. and Vallejo, V. Ramón and also financial support from CAPES-DGPU (proj. 324/2015).