



IMPACT OF BOVINE EXCRETA AND SEASONALITY ON MICROBIOLOGICAL SOIL PROPERTIES IN AN INTEGRATED CROP-LIVESTOCK SYSTEM

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Introduction

In crop-livestock integration system (iCL) microbiological soil properties tend to change gradually with the development of pasture. The objective of this study was to evaluate the effect of bovine excretas and seasonality of its application in some chemical and microbiological soil properties in areas under pasture conducted in iCL system.

Material and Methods

Fourty eight plots were established in four randomized complete block in a split-plot design with three treatments (urine, faeces and control), two areas with pastures (Área 1- Three years of pasture with *Urochloa ruziziensis* e Área 2 – One year of pasture with *Urochloa brizantha* cv. Piatã), two periods of excreta application (dry and wet seasons) repeated in time (two years of applications). Soil samples for microbial biomass analysis were performed at thirty days after the application of bovine excretas and were collected at 0-0,1 m depth to determine microbial biomass carbon and nitrogen (MBC and MBN), soil total carbon (STC) and soil total nitrogen (STN), basal respiration, ratio MBN:STN, microbial quotient (MBC:STC) and metabolic quotient (qCO₂). Data were subjected to analysis of variance and means were compared by Tukey test at 5% probability.

Results and Conclusions

Area 1 in the dry season showed an inverse relationship between microbial biomass carbon and metabolic quotient after applications, which according to Frazão et al (2010) and Diniz et al. (2014) suggests a higher stability of the system. Microbiological soil properties tend to gradually increase with the development of pasture at iCL system, associated with bovine excreta applications. The cattle faeces in pastures under iCL system had higher effect than urine on the microbiological soil properties, when they were evaluated at thirty days after the application on the soil. The greatest effect on the soil microbiological properties was observed in the dry season.

References Cited

Diniz et al., (2014) Biosci. J. DOI:

Frazão et al., (2010) Agric. Ecosyst. and Environ. DOI:

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