world congress on integrated crop-livestock-forest systems
3rd International Symposium on Integrated Crop-Livestock Systems
towards sustainable intensification • brasilia • brazil • 2015

# Soil microarthropod populations under crop-livestock-forestry integration in Amapá savanna - Brazilian Amazon

Ana E. A. D. MONTAGNER[1*], Tainá M. O. de MORAIS[2], Angelo T. BRITO[3], Daniel M. de F. ARAÚJO[1], Nagib J. MELEM JÚNIOR
[1] Embrapa Amapá Research Centre, Rod. Juscelino Kubitschek, km 5, nº. 2600, Macapá, AP, Brasil,
[2] Biological Sciences Course, Amapá Federal University - UNIFAP;
[3] Forest Engineering Course, Amapá State University - UEAP.
E-mail address of presenting author*: ana.montagner@embrapa.br

## Introduction

The soil fauna presents a huge potential as a bio-indicator of soil quality, this because its abundance and wealth are susceptible to changes in their management and use. The CLF integration aims at synergistic effects among the components in de agroecosystem. Upgrading biodiversity approving new niches and habitats to meso-orgnisms, very important for soil enrichment and recycling of nutrients.

## Material and Methods

The experiment was conducted at the experimental area of the savanna of Embrapa Amapá, located "00°22'55" e 00°24'30"N, e 51°01'40" e 51°04'10" W, Macapá -AP. The soil in the area is Oxisol, medium texture, with high acidity and low fertility characteristic of Amapá savanna areas. The climate is rainy Ami-Tropical, with an annual average rainfall of 2.260 mm concentrated between the months January to July. In 2010 were installed planted seven plots (90 x 60 m) and each received a combined treatment with maize (*Zea mays* L.) and subsequent *Brachiaria ruziziensis* (MB) and a tree species and agricultural species. In MBG treatments - Gliricidia (*Gliricidia sepium*) and MBT - Tachi-white (*Sclerolobium paniculatum*) trees were planted in single rows, with 2 x12 m spacing and, MBE -Eucalyptus (*Eucalyptus urograndis*) dual in -line, with spacing of 2 x 2 x 10 m. The cornfield experiment was conducted in the harvest in 2013. The soil sampling for the assessment of soil meso-organisms was performed in 2014 in the depth 0-5 cm of systematic collection of samples at distances of 1,5 m and 6,0 m lines and trees, in the rainy season and one in the dry season. For the extraction of meso-organisms laboratory used the Berlese Tullgreen apparatus. Data were subjected to the analysis of variance, and means were compared by the t test (LSD), at 1% probability.

## Results and Conclusions

Eleven Arthropoda orders found, Acari were the most abundant independent of the season and treatment. In decreasing order: Collembola and Hymenoptera were abundant in the rainy season and dry season respectively. The rainy season had higher abundance of meso-organisms (966) that the dry season (213) (P = 0.0001). In the rainy season, treatments intercropped with trees CLF had greater abundance of meso-organisms in intercropping CL, except for the MBE. O índice de diversidade de Shannon variou entre 0,18 e 0,52, valores considerados baixos em relação aos observados em cerrado *sensu stricto* e cerrado ralo do Planalto Central do Brasil. In the rainy season we observed a greater abundance in the distance of 6.0 m in all treatments with tree (P = 0,0016), though in the dry season the abundance was similar in both assessed distances. Treatments differed in abundance (P = 0.0042) only in the rainy season. MBG and MBT were higher than MBE and MB. The seasons and production systems influence on the variation of fauna density, species richness and Shannon Winner index for edaphic meso-organisms.

## Acknowledgements

To Embrapa and all technicians and field workers at Embrapa Amapá Research Centre involved in the evaluation.