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Diversity of epigeous soil macrofauna in spring and summer in two cultivated pasture systems and in the Brazilian Cerrado

Laura C. S. CASTRO[1], Jeskarlândia S. BARROS[2], Wilson W. KOLLER[3], Luísa M. PAIVA[4], Manuel C. M. MACEDO[3], Roberto Giolo de ALMEIDA[3]*
[1] Master student in Animal Science, Universidade Estadual de Mato Grosso do Sul (UEMS). [2] Master student in Animal Science, Universidade Federal do Recôncavo da Bahia. [3] Researcher at Embrapa Beef Cattle, Av. Rádio Maia 830, 79106-550, Campo Grande, MS, Brazil. [4] Professor of Animal Science Course, UEMS.
E-mail address of presenting author*: roberto.giolo@embrapa.br

Introduction

The different management practices used in agricultural systems can directly and indirectly interfere in soil fauna diversity, being an important indicator of biological quality of the environment. A trial was established to evaluate epigeous soil macrofauna diversity in different environments and seasons.

Material and Methods

The experiment was carried out in Campo Grande, MS, Brazil (20°27' S, 54°37' W, 530 m altitude). To capture epigeous soil macrofauna specimens, 15 pitfall traps were set (Anderson and Ingram, 1993) at the environments: Cerrado (native Savannah, used as control), pasture grass (*Brachiaria brizantha* cv. BRS Piatã) on an integrated crop-livestock system (ICL) and the same pasture on an integrated crop-livestock-forest system (ICLF) with *Eucalyptus* sp. (227 trees ha^{-1} in single rows). Captures were weekly. Seasons considered were: Spring (October, November and December 2014) and Summer (January, February and March 2015). Specimens collected were taken to the laboratory for identification in large taxonomic groups (orders) and quantification. Statistical analysis was based on completely randomized design with repeated measurements over time.

Results and Conclusions

The overall average number of individuals collected in each environment was: Cerrado (59.07), ICLF (51.27) and ICL (42.17). A total of twenty orders were collected. There was no environment effect by season for the following orders (followed by the respective average number of individuals): Hymenoptera (34.94), Isoptera (1.33), Diptera (0.57), Dermaptera (0.36), Opiliones (0.22), Lepidoptera (0.08), Anura (0.05), Isopoda (0.003), Pulmonata (0.02), Rodentia (0.01) and Squamata (0.005). For the orders Blattodea, Scutigeromorpha and Araneae, season effect was observed, with a higher average number of individuals during the spring (0.93, 0.20 and 2.87, for all environments respectively). For the order Coleoptera there was a higher average number of individuals during the spring in the Cerrado (14.69). Table 1 presents orders whose populations were affected by environment. Pasture on ICL showed difference in average number of individuals in relation to the Cerrado for all the orders. For pasture on ICLF orders Orthoptera, Spirostreptida, Scutigeromorpha and Haplotaxida did not differ from the observed in the Cerrado.

Table 1. Average number of individuals per order, in three environments.

Environment	**Order**						
	Heteroptera	Homoptera	Orthoptera	Blattodea	Spirostreptida	Scutigeromorpha	Haplotaxida
Cerrado	1,56 A	0,23 B	0,97 B	1,45 A	0,05 B	0,04 B	0,00 B
ICLF	0,56 B	1,41 A	1,58 B	0,30 B	0,62 B	0,17 AB	0,27 AB
ICL	0,67 B	1,31 A	2,33 A	0,45 B	1,26 A	0,21 A	0,65 A

Means followed by the same letter in the column do not differ by Tukey test (p> .05).

References cited

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