Geophysical Research Abstracts
Vol. 20, EGU2018-3684, 2018
EGU General Assembly 2018

Diversity and spatial variability of soil fauna cultivated with soybean under direct seeding (Maranhão, Brazil)

Ricardo Niehues Buss (1), Glécio Machado Siqueira (2), Raimunda Alves Silva (3), Ênio Farias de França e Silva (4), Osmann Cid Conde Oliveira (3), Poena Pereira Silva (3), and Alana Cristina Cunha Bernardes (3)

(1) Federal University of Tocantins, Campus de Araguaína, Araguaína, Brazil, (2) Federal University of Maranhão, Department of Geoscience, São Luís, Brazil (gleciosiqueira@hotmail.com), (3) Federal University of Maranhão, Department of Geoscience, São Luís, Brazil, (4) University Federal Rural of Pernambuco, Department of Agricultural Engineering, Recife, Brazil

The soil is a natural system that shelters many living organisms. The interactions sustained in the soil make possible the ambient equilibrium, maintenance and stability of the terrestrial ecosystem. Thus, it was aimed in this work to evaluate the diversity of the edaphic fauna under the direct plantation of soy in the State of Maranhão, Brazil. The study area comprehends about of 44.75 hectares of soy plantation (Glicine max L.) cultivated for nine years. The samplings were made in two depths (0.0-0.2 m e 0.2-0.4 m) in 70 points. Latter, 70 pitfall traps were allocated along the area. Each trap stayed active for a period of seven days, being removed, geotagged and had its contents identified. A total of 1,009 specimens were collected, distributed in 15 groups and one family. The groups with greater abundance were Coleoptera Larvae (318 specimens), Coleoptera (299 specimens), Diptera (121 specimens), Formicidae (109 specimens) and Acari (102 specimens). The Shannon-Wiener's diversity and Pielou's Equitability were H'=2.482 and U'= 0,620, respectively. The elevated diversity in systems of direct plantation is related to the higher availability of nutrients, absence of predators, thermal amplitude and soil humidity. The greater abundance of Coleoptera, Formicidae and Acari can indicate the potential of these groups as bio indicators of environmental quality. The spherical geostatistical model was the one which fitted better the diversity indexes, with nugget effect (C0) variations of 0.036 for Simpson's diversity to 24 for Menhinick's diversity. For the values of structural variance (C1), the variation was 0.04 for Simpson's to 35 for Menhinick's. The degree of spatial dependence to the indexes was moderated, with range (m) variating from 150 to 235 meters. The maps of variability presented patterns similar to the Shannon's and Simpson's diversity, since they are considered equal parameters. The equitability presented higher values in the superior parts and also in the inferior to the right, clarifying that the groups were not evenly distributed in the area. The management adopted to the direct seeding area, favored the presence of edaphic fauna, mostly Acari, Coleoptera, Coleoptera larvae and Formicidae.