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abstract abstract: Papatheodorou E. P., Stamou, G. P. and Argyropoulou, M.

The effects of large and small-scale changes in abiotic variables on the communities of soil bacteria and bacterivorous nematodes

We focused on the potential function diversity of soil bacteria and the community of soil bacterivorous nematodes, in a Mediterranean grassland, where soil temperature and humidity were experimentally manipulated. Two levels of soil temperature and two of humidity were created. There was a 1.4°C difference between the two temperature levels, while the two humidity levels differed by 2.3 % water content. The experiment involved monthly sampling of soil and nematodes for a six-month period (July to December). The functional capability of the bacterial community was assessed by the Biolog method by using GN plates. The parameters considered were substrate richness, evenness and diversity, while the nematode community was examined in terms of generic composition, diversity, evenness and richness.

The effect of seasonal variation of abiotic variables is highly pronounced. For the bacterial substrate richness, diversity and evenness, only the seasonal effect is significant, while for the components of the bacterivorous nematode community, both the seasonal effect (large-scale) and the small-scale difference in temperature and humidity are significant. Higher values of functional diversity are recorded in the warm period; with highest in July, while higher nematodes' diversity is recorded in the middle of the sampling period (Sept-Oct). The high value of substrate utilization evenness (0.92) indicates the absence of trophic specialization among the members of the bacterial community, while the low value of nematodes' evenness (0.42) reflects the dominance of Acrobeles, Acrobeloides and Chiloplacus. 9 out of 13 genera respond to small-scale changes in abiotic variables. Acrobeles, Cephalobus and Chiloplacus respond only to temperature changes while the genera Monhysteridae, Panagrolaimus, Plectus, Acrobeloides, Acromoldavicus and Tylocephalus respond to the interactive effect of soil temperature x humidity. Remarkable is the lack of soil humidity effect on the density of any of the bacterivorous genera and on the components of the nematodes community as well.

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