

ANTHROPIC IMPACT EVALUATION BY SOIL-PLANT PERSPECTIVE IN GRASSLANDS ECOSYSTEMS FROM NORTHEASTERN ROMANIA

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Abstract

This paper approaches by the soil-plant perspective the evaluation of plant ecophysiological parameters and biological indicators of soil (edaphic mesofauna) in different grassland ecosystems with different degrees of human intervention from the Northeastern Romania. We have studied natural reserves, pastures and hayfields, in two different geographical units - Central Moldavian Plateau and Moldavian Plain. Based on these results, it was considered the human impact through analysis of statistical indicators (arithmetic mean, standard deviation, coefficient of variation) in accordance with the characteristics of studied biotopes. Ecophysiological parameters were assessed by analysis of photosynthesizing pigments (chlorophylls and carotenoid pigments) and fractions of soluble carbohydrate. Variability of photosynthetic indicators was lower in the case of species from natural reserves and larger, but elevated in secondary meadows and pastures. Accumulation of the carbohydrates was discussed in relation with soil type and it was observed the smallest values occurred in anthropic ecosystems (pastures) and in the natural reserve of Central Moldavian Plateau. Bioedaphic indicators were represented by some main groups of soil mesofauna (mites, collembolans, and on the whole, other insects or groups of edaphic microarthropods), analyzed both in a quantitative and qualitative manner. The density of edaphic microarthropods from the grasslands of Moldavian Plain was higher than that of Central Moldavian Plateau. From the qualitative point of view generally, the mites are the dominant group and among them the oribatid mites prevails. The ratio between the main detritomicrophagous groups (oribatid mites/collembolans) is in the favour of the mites with few exceptions. Both quantitative and qualitative features of the edaphic mesofauna mostly depend on the biopedoclimatic stational conditions, especially to the degree of the environmental anthropization, humidity, type of soil etc. The most anthropized grasslands could be considered the hayfields from haplic chernozem in both studied geographic areas. This study was financially supported by BIODIV Research Programme developed under coordination of National Institute of Research and Development for Biological Sciences Bucharest.

Key words: anthropic impact, bioindicators, carbohydrates, edaphic mesofauna, grasslands, statistic indicators