

Impacts of Tillage on Biodiversity of Microarthropod Communities in Two Different Crop Systems

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Abstract : Different uses of land by humans alter the physico chemical characteristics of the soil and affect the soil microhabitat. The objective of this study was to evaluate the influence of tillage in three different human land uses on microarthropods biodiversity in Khuzestan province, southwest of Iran. Three microhabitats including a permanent grassland with old Date-Palms around and no till system, and two wheat fields, one with conservative agricultural practices and low till system and the other with conventional agricultural practices (deep tillage), were compared for the biodiversity of the two main groups of soil microarthropods (Oribatida and Collembola). Soil samples were collected from the top to a depth of 15 cm bimonthly during a period of two years. Significant differences in the biodiversity index of microarthropods were observed between the different tillage systems ($F = 36.748$, $P = 0.000$). Indeed, analysis of species diversity showed that the diversity index at the conservative field with low till (2.58 ± 0.01) was higher ($p < 0.05$) than the conventional tilled field (2.45 ± 0.08) and the diversity of natural grassland was the highest (2.79 ± 0.19 , $p < 0.05$). Indeed, the index of biodiversity and population abundance differed significantly in different seasons ($p < 0.00$).

Keywords : biodiversity, Collembola, microarthropods, Oribatida

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