Geophysical Research Abstracts
Vol. 15, EGU2013-8519, 2013
EGU General Assembly 2013

Effects of future rainfall patterns on density and diversity of predatory mites (Gamasida) in characteristic agricultural soils of the Pannonian area

Janet Wissuwa (1), Helene Berthold (2), Alexander Bruckner (1), Johann Zaller (1), Johannes Hösch (2), and Andreas Baumgarten (2)

(1) Institute of Zoology, University of Natural Resources and Life Sciences, Vienna, Austria, (2) Austrian Agency for Health and Food Safety (AGES), Institute for Sustainable Plant Production, Vienna, Austria

Regional climate change scenarios for the end of this century predict fewer but heavier rainfalls and longer lasting droughts during the vegetation period without substantial changes in the total annual amount of rainfall for Eastern Austria (Pannonian region). In a multidisciplinary study, the consequences of future precipitation patterns on agroecosystem processes and functions in one of the most productive agricultural areas of Austria are tested at the AGES Lysimeter station. The lysimeter station comprises the three main soil types of the pannonian agricultural area (calcaric phaeozem, gleyic phaeozem, calcic chernozem) together covering about 80% of the agricultural area. Lysimeters are a valuable tool to study the effects of climate change on the complete soil ecosystem interacting with plants. Precipitation rates are modified according to the predicted 2050 scenario in comparison to the current precipitation patterns.
The abundance and diversity of soil arthropods (Collembola, Gamasida, Oribatida) is monitored for three years. Five randomly taken soil samples per lysimeter (ø 5 cm, 10 cm depth) are pooled for arthropod extraction. Here we will present first year results for Gamasida. As one of the dominant acarine predators Gamasida play a crucial role in soil food webs contributing to nutrient cycling. Preliminary results indicate a stronger influence of soil type than rainfall patterns on mite density. Gamasida density decreased in the order calcaric phaeozem > calcic chernozem > gleyic phaeozem for every sampling date. No difference between current and predicted rainfall was found in May, where the different irrigation measures were launched, and July. Mite density tended to be higher for current rainfall in September.