

Response to the comments raised by the topical editor Dr. Stuart Grandy,

Thank you for reviewing our manuscript.

Regarding your concerns, also expressed by the two reviewers regarding the design, especially the limited number of sites, we like to note the following.

This paper presents the results from a field soil survey carried out in the framework of the European Critical Zone Observatory (CZO) network focusing on the agricultural CZO sites in the EU. The scientific strategy of the network was to select a limited number of sites, and study these sites in depth in a multidisciplinary manner. We are aware that an important limitation in our study is indeed the number of replicates taken, both in space and time, especially also given the fact that the farms also differed in many aspects. This is a limitation, but on the other hand, some findings, such as the soil micro-arthropod diversity, on which the conclusions rely mainly, were statistically significant, despite the differences between farms and the limited number of replicates. The results are in line with earlier findings by others, and in addition, this indicated that the applicability of micro-arthropod diversity as indicator for soil quality can be based on ease of measurements. We have not been able to extend the number of sites for this particular study, but based on your comments, and that of the reviewers, we have addressed the limitations imposed by the CZO the design in the revised manuscript (Conclusions, paragraph 4.4, page 17), and see our comments on the reviews (pages C63 and C68).

You are correct with your comment about the statistical analyses executed, so thank you for that. Inclusion of farm as a random nested factor in the ANOVA accounts for the variation among farms in the dataset, but does not test differences based on soil type. We have now tested the effects of soil type on soil physicochemical characteristics separately by doing an ANOVA with soil type as factor, comparing only Haplic Andosols, Histic Andosols and Chernozems. This had led to slightly, but not principally different levels of statistical significance.

On behalf of all authors,

With kind regards,

Jeroen van Leeuwen