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Study about perception of soil compaction in grasslands: what can be learnt to foster sustainability and policy intervention?

Manjana Puff², Glenda Garcia-Santos¹, and Andreas Bohner³

¹Geography, Alpen-Adria-University, Klagenfurt, Austria (glenda.garciasantos@aau.at)

²Geography, Alpen-Adria-University, Klagenfurt, Austria (manjanapu@edu.aau.at)

³HBFLA Raumberg-Gumpenstein, Austria (andreas.bohner@raumberg-gumpenstein.at)

The study of the sustainable strategies at regional level complies with the current European Green deal to monitor soil compaction. However, recent studies showed that the implementation of sustainable practices by farmers that are useful for an ecological transition can be slow down by development and technology transfer capacity and or an attitude of resistance of farmers themselves to innovations.

In the context of soil compaction in grasslands, we studied the influence of different management strategies (use of cattle and machinery) and the farmers' perception of soil compaction. The studied bio-physical indicators in the top soil were organic carbon, plant indicators, bulk density, soil texture, plant indicators, infiltration capacity, water repellence, water content and electrical conductivity at the surface level of permanent grasslands in a total of 16 grasslands in the time period 2022-24 within Görtschitztal and Magdalensberg in south Austria (Carinthia).

First results showed correlation between the use of cattle and number of entries in the field with heavy machinery and the increase of the bulk density, though always within low levels of compaction and at the surface. We also found cases of mismatch perception of soil compaction, which may hinder sustainable practices in the future. The results of this study may serve to increase understanding about the theoretical factors influencing the farmer's perception of soil compaction problems, providing a valuable addition to the available literature. In terms of policy implications, a clear picture of the factors underlying the dynamics of farmer's perception can be useful in the future to better targeting policy measures tailored to encourage sustainable practices and innovations in the agricultural sector. We show possible directions affecting perceptions at farmer-based level.