

# ***Interactive comment on “How serious a problem is soil compaction in the Netherlands? A survey based on probability sampling” by Dick J. Brus and Jan J. H. van den Akker***

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Received and published: 1 December 2017

Dear authors,

the title of your manuscript grabbed my attention. Studying the areal extent of compacted agricultural land is of great importance. However, it is a challenging task and various approaches have been suggested to do so.

While reading the present manuscript, the following issues came into my mind:

The ratio of bulk density (porosity) and respective threshold values served as indicators to classify subsoil as compacted or not compacted. The reported threshold values were

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underpinned with citations. However, when briefly screening the respective articles, I could not find information on how the threshold values were exactly derived and related to soil functions. I would therefore recommend to explain the origin of these threshold values in a revised version of this manuscript in greater detail.

The study concludes that about 45% of the soils in the Netherlands are overcompacted. However, this confused me a little because in the methods section it says that organic soils and naturally compacted soils were omitted from the present study (page 4, line 28). What's the areal percentage of organic and naturally compacted soils in the Netherlands? Furthermore, mentioning the existence of naturally compacted soils is an important point, which I believe would be interesting to be addressed in greater detail in a revised version of this manuscript. For example Gao et al. (2016) pointed out that bulk density (or the degree of soil compaction) typically increases with soil depth merely due to the overburden pressure exerted by the above soil column. Could the present results be used to distinguish between anthropogenic and natural soil compaction?

Finally, I was wondering at which depth soil samples were taken if no plough layer was present (if I understood correctly also uncultivated soils were sampled, right? page 4, line 28) and whether on cropland typically more compacted parts of the fields like traffic lanes or headland were sampled as well.

Best regards,

Florian Schneider

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Gao, W., et al. "Deep roots and soil structure." *Plant, cell & environment* 39.8 (2016): 1662-1668.

Interactive comment on SOIL Discuss., <https://doi.org/10.5194/soil-2017-28>, 2017.

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