

Biogeosciences Discuss., author comment AC3
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Comment on bg-2022-6

Josue De Los Rios et al.

Author comment on "Assessing the effects of no-till on SOC dynamics throughout the soil profile after grassland renovation and conversion to silage maize" by Josue De Los Rios et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2022-6-AC3>, 2022

Dear Referee,

Thank you very much for your suggestions for improvement.

Following, we would like to share a point-by-point report of the changes made to the manuscript based on your review.

We are happy to answer further questions and include your recommendations to our manuscript.

Sincerely,

Josue De Los Rios

General comment

The manuscript reports annual SOC stocks over a period of 6 years comparing different management systems. However, bulk density was only determined once at the end of the study in 0-30 cm and estimated for 30-60 and 60-90 cm and, thus, the SOC stock changes are highly speculative. It is unclear whether SOC stocks at the control were in equilibrium or the baseline was drifting. Further, total C is reported as SOC without indicating test for carbonates. More comments and suggestions in an annotated manuscript attached.

(1) Regarding: "bulk density was only determined once at the end of the study in 0-30 cm and estimated for 30-60 and 60-90 cm and, thus, the SOC stock changes are highly speculative."

Response:

The dynamics in SOC stocks we are reporting are only linked to changes in SOC concentrations, not to changes in bulk density.

(2) Regarding: "It is unclear whether SOC stocks at the control were in equilibrium or the baseline was drifting"

Response:

The SOC stocks in the control (GC) are not in equilibrium at 30-60 cm depth. Before grassland establishment in 2004, the study site was dominated by an arable cropping system with a 3-year rotation. It is probable that since then, the SOC stocks increase is ongoing. We are addressing that point in the new version.

(3) Regarding: "total C is reported as SOC without indicating test for carbonates"

Response:

We did not find carbonate content within the samples after using HCl. Therefore total C is referred as total SOC.

Further observations added to the manuscript are documented in the attached document.

Please also note the supplement to this comment:

<https://bg.copernicus.org/preprints/bg-2022-6/bg-2022-6-AC3-supplement.pdf>