

SOIL Discuss., <https://doi.org/10.5194/soil-2020-16-RC1>

Land-use perturbations in ley grassland decouple the degradation of ancient soil organic matter from the storage of newly derived carbon inputs.

Dear SOIL Editorial Board,

Dear reviewer,

We would like to thank you for the second revision of our manuscript entitled “*Land-use perturbations in ley grassland decouple the degradation of ancient soil organic matter from the storage of newly derived carbon inputs.*”

We have performed the necessary corrections to the manuscript suggested by one of the reviewer.

We hope that our responses and the changes we made in our manuscript make it suitable for its publication in SOIL.

Sincerely,

Dr. Abad Chabbi in behalf of all the co-authors.

Revision notes

Reviewer #1

Reviewer comment: The revised manuscript by Panettieri et al. has been improved according to reviewers' comments. Some points have been clarified. In consequence, I think that the manuscript could be accepted. I have only minor comments:

Answer: We would like to thank the reviewer for his/her time and for his/her constructive comments. We provide the answers to his/her minor comments and we have modified the manuscript accordingly.

Reviewer comment: L53 « chemical characterization of SOM will establish C turnover rates»: chemical characterization alone cannot provide information on C turnover rate.

Answer: We modified this sentence. Chemical composition of SOM unveil the degradation patterns, whereas stable isotope probing is used to assess C turnover rate.

Reviewer comment: L86 to 89: the sentence concerning the hypothesis is very long. “stored within different soil compartments”: as the focus on LF was questioned by reviewers, the authors should specify here the LF and its indication of early change.

Answer: We modified the sentence as suggested.

Reviewer comment: L132: The method of Le Bissonnais is mentioned but I would appreciate some details.

Answer: As requested, we have added more details about Le Bissonnais aggregate fractionation we have used.

Reviewer comment: L357: I agree for LG and PG but there is overlap of PC and BF only considering bulk BF.

Answer: We agree; we have modified this sentence as suggested.

Reviewer comment: L396 presumably lost following microbial degradation, rather than from translocation to mineral associated fraction: nothing supports this hypothesis. I would remove this sentence.

Answer: We removed this sentence as requested.

Sincerely,

Dr. Abad Chabbi in behalf of all the co-authors.