

Comment on soil-2021-25

Anonymous Referee #2

Referee comment on "Changes in soil physicochemical properties and bacterial communities at different soil depths after long-term straw mulching under a no-till system" by Zijun Zhou et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-25-RC2>, 2021

This manuscript is a long-term experiment (started in 2005) and includes a detailed study on the impact of straw removal (control treatment) and straw mulching on soil parameters physicochemical and microbial community assembly at different soil depths. This paper contains very good data and it is an interesting field study. In general, the article is well written and provides relevant information on the management of mulch in no-till system. Unfortunately, the results have been not been described or explained in a clear or specific manner. Moreover, the discussion of the results is greatly lacking in clearly explaining the effects which have been observed. There is a reasonable connection with previous studies, but often the results from the present study are poorly explained in context to and in comparison to the published studies.

As a result the abstract is written in a very general / vague manner with little given on the results. What is presented is not specific at all.

Specific comments

- Introduction

Probably too long and needs to be more focused. I suggest that the authors substantially reduce the text size, replacing long sentences with more objective ones.

The connection between paragraphs should also be improved.

2 - Material and Methods

Line 176: it is necessary to present more details about the fertilization used for the crops. Source, dose and frequency of application must be added.

Section 2.2 Soil sampling

Have soil collections at different depths been randomized? that is, were they sampled at the same sampling point? If so, the comparison between depths is not statistically correct, and the results are obvious.

Section 2.3 Soil physicochemical properties

Details of extractor must be included.

The soil used to determine ammonium and nitrate was stored under what conditions? This information is missing.

3 - Results

Here is the biggest problem with this study. I do not agree, at all, to compare the different layers of the soil. It is almost logical that the effects of soil fertility are described. Additionally, for this type of comparison to take place, soil collection at different depths must also be randomized and not all from the same collection point. Comparisons between treatments must occur in each layer of the soil and not between layers. I suggest that the authors opt for this approach. The same is true for the relative abundances of bacterial phyla in Table 3.

5 - The discussion is very detailed and consistent with the results;

The discussion is very long. It needs to be more focused. In addition, many results are repeated in the discussion.

This section should be improved.

Lines 465 -467: This sentence is obvious for the physicochemical parameters of the soil. I believe it is more appropriate for the microbial community.

6 - Conclusions

It is very well written and answers the questions raised by the hypothesis