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Solid Earth Discussions

Interactive comment on "Cultivated grasslands present a higher soil organic carbon sequestration efficiency under leguminous than under gramineous species" *by* Yu Liu et al.

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Thank you very much for your positive and constructive comments and suggestions on our manuscript. We have tried to take these comments and suggestions seriously and addressed each of them in all details. We have replied to the comments point by point and all changes have been included in the MS-modified version attached as a supplement.

SOC sequestration efficiency is commonly expressed by the relationship between annual C input and SOC accumulation rate, however the authors didn't evaluate the difference C input caused by sowing different plant species. Soil bulk density has large variation in the soil depth, the authors didn't describe how to measure and calculate

soil bulk density within 100cm, so did SOC concentration in table 2, is this an average value of 100cm soil depth or something else?

Response: Thank you for your suggestion, the SOC sequestration efficiency was used to calculate the amount of carbon sequestration on the aboveground biomass of per unit area, which was put forward by us. We have added the description of soil bulk density and SOC concentration in table 4 and 5, which is an average value of 100 cm soil depth. The details have been showed in the MS-modified version.

Experiment design and measurement in section 2 is not clear. Many presentation mistakes in the manuscript, line 42-43 (reference sequence), line 47, 53-54, 82.

Response: Thank you for your suggestion, we have revised our experiment design and measurement in section 2 and other mistakes through the entire manuscript to make it clear and rigorous. Moreover, we have added a figure to show our study site and sampling strategy in modified version Figure 1.

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/se-2016-109/se-2016-109-AC3-supplement.pdf

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