Response to K. INUBUSHI

Dear K. INUBUSHI,

Thank you very much for your valuable comments. We would like to answer your concerned points one by one (Q, plain, and A, blue font).

Q1. This manuscript aimed to show how different C supplied from rice plant and soil microbes promoted C mineralization and interaction with native C in incubated experiment, which would be useful information to assess soil C sequestration and greenhouse gas mitigation in paddy soil, because the knowledge of C dynamics in waterlogged paddy soil is still limited to compare with aerobic upland soil (unlike L93).

A: Thank you very much for the kind comments. We have revised the sentence as follows: "There were only limited studies of estimating the fate of plant residues and rhizodeposits in paddy soils and, to our knowledge, there is no comparative information on (1) the decomposition of different organic C sources, such as rice shoots and roots, rhizodeposits, and microbe-assimilated C; or (2) the effects of different organic C sources on the mineralization of native SOC."

Q2. However one critical point of methodology is the way of preparing microbe-assimilated ^{13}C in soil without rice plant (L146); it is well-known that microbial activity is higher with rice plant than without plant, in general, so that the results of microbe-assimilated ^{13}C in this investigation might be underestimated.

A: Thanks. We acknowledge that microbial activity is higher with rice plant than without plant. In our study we wanted to separate the effects of different types of primers to native soil organic matter mineralization. As this is not possible with growing plants, we added the rhizodeposition separately. With this we hope to mimic the effects of the release of low-molecular substances by the plant and their microbial utilization. As another primer we simulated the microbe-assimilated ^{13}C fixed in soil by autotrophic organisms, which occurs in the paddy fallow season.

Q3. Also rhizodeposits (L144) were obtained by gentle sharking moist soil, which is common method for aerobic soil, but doubt for wet paddy soil, resulting again underestimate the contribution in ^{13}C dymanics.

A: We apologized the not clear statement. The method of obtaining rhizodeposited ^{13}C was revised as follows: "^{13}C-labelled rhizodeposits were obtained by gently shaking moist soil from the rice roots, and the soil adhere to root was washed by distilled water, then the soil slurries, consisting of soil and wash water, were mixed well and centrifuged at 13,000 g for 15 min. The fine roots with light density were removed together with supernatants".

To assess whether this method was effective enough to remove most of the fine living roots from soils, ten 15-g soil samples (two for each labeling event) were checked under a dissecting microscope. Very few fine roots were found in two samples and no roots were found in the other eight samples. We determined the $\delta^{13}C$ values of two soil samples using the chloroform-fumigation extraction method (Wu *et al.*, 1990) before and after picking out the fine roots, and found no differences in $\delta^{13}C$ values before and after picking out these roots. It was therefore considered that the sieving-centrifugation procedure effectively remove most of the fine living roots and was comparable to visual separation under a microscope. However, some very fine (micro) root materials may have remained in the soil samples, which may have caused minor overestimation of plant C input.

Q4. Other minor points are as below to improve the manuscript.

L31; Effective digits are not uniformed as 1.89 vs 1.9 and 1.8. Also L327.

A: We have revised them and used three effective digits.

L83; Yuan et al. 2014c, but only one Yuan et al. for 2014 in the list. Also L294.

A: We have deleted this reference.

L112; pH of 5.6 and a soil: water .. should be pH of 5.6 at a soil: water . . .. . .

A: We have revised this sentence.

L137; how about humidity? It is important to regulate photosynthesis/respiration.

A: During the labeling periods, the growth chambers were placed in a rice field to ensure that the environmental conditions of the labelled and control plants would be identical for labelled plants and unlabelled controls. The humidity was similar with natural condition.

L163; if the same bottle for the almost the same soil/water contents, water level should be not as in such wider range < 1-2 cm.

A: We measured the water level in bottle, it was 2–3 cm.

L167; how to adjust gas pressure during incubation especially with plant added?

A: At the initial of the incubation the gas is produced quickly, to ensure the gas pressure in bottles is similar with atmospheric pressure we sampled more frequently.

L195 C sample; unit is not clear.

A: C samples represented rice shoot, root, soil organic C, CO_2 and CH_4.

L242; linearly should be exponentially?

A: Yes, it should be exponentially and we changed it accordingly.

L249; Fig S1, missing or not available.

A: Fig S1 was provided in Supplementary Materials.

L277; different that .. should be different from ..

A: We have revised it.

L318; remove ; after Cheng et al, 2014

A: We have removed it.

Table 1; Why zero for Total ^{13}C of Bulk soil? Negligible ^{13}C natural abundance?

A: We are sorry for this mistake, the excess of ^{13}C (not total ^{13}C) of bulk soil was zero. We have added the ^{13}C abundance of bulk soil ($\delta^{13}C$, -26.7‰) in section of "Study site and soil sampling".