Response to Editor on bg-2019-167

Editor's comments:

Comments to the Author:

The ms has been thouroughly improved by the authors and can be considered to be publish in BG. there are still two main issues I am concerning as following:

We sincerely thank the editor's supportive comments. As detailed below, we have modified our manuscript accordingly.

Comment 1

Up to 95% of litter was mineralized in such a short period of incubation, this needs to be clarified.

Thank you for this comment. We have added the corresponding clarification in Section 4.1 as below:

"Furthermore, the R_{litter} values measured under optimal conditions in this study (25˚C; soil moisture: 55–60% of water holding capacity) are comparable to the litter mineralization rates reported in "real-world" conditions such as in field litterbag experiments. For instance, Wang et al. (2014) reported that >70% of E. speciosus litter degraded under warm (12–35˚C) and humid conditions within 90 days. Shaw and Harte (2001) found that nearly 73% of forb litter was lost within 46 days in a subalpine meadow. Sievers et al. (2018) also discovered that the litter of hairy vetch and cereal rye degraded by 90% in cropland within 84 days. Hence, we consider the R_{litter} measured in this study to reflect optimal decomposition rates of litter in semiarid regions."

References:

Shaw, M. R., and Harte, J.: Control of litter decomposition in a subalpine meadow-sagebrush steppe ecotone under climate change, Ecol. Appl., 11, 1206–1223, 2001.

Sievers, T., and Cook, R.L.: Aboveground and root decomposition of cereal rye and hairy vetch cover crops, Soil Sci. Soc. Am. J., 82, 147–155, 2018.

Wang, G., Zhang, L., Zhang, X., Wang, Y., and Xu, Y.: Chemical and carbon isotopic dynamics of grass organic matter during litter decompositions: A litterbag experiment, Org. Geochem., 69, 106–113, 2014.

Comment 2

Soil PE and other C processes (litter decompose) were not strongly linked with neither edaphic abiological variables, pH, mineral, for example, nor microbial biomass and community, what else potential mechanisms might be?

This is a very good point! PE was not detected in our study. Its regulating factors are complex and beyond the scope of our paper. Litter decomposition rates, on the other hand, are most strongly influenced by PLFA abundances in our incubation experiment (shown in Table 5). However, PLFAs, along with other measured variables, only explained 42% of the R_{litter} variance ($R^2 = 0.42$). Hence, there are still other factors regulating R_{litter} that are not depicted by our analysis. The potential influencing mechanisms include (but are not limited to) radical attack by reactive oxygen species that are widely observed in natural soils and protection by soil aggregation. These considerations are now added to the final part of Section 4.3.