

Interactive comment on “Soil microbial community structure and diversity are largely influenced by soil pH and nutrient quality in 78-year-old tree plantations” by Xiaoqi Zhou et al.

Anonymous Referee #1

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Interactive comment on “Soil microbial community structure and diversity are largely influenced by soil pH and nutrient quality in 78-year-old tree plantations” by Zhou et al.

This study investigates long-term ecological consequences of forest plantations on the community structure and diversity of soil microorganisms. After initial improvements, the manuscript is well written in a clear way. I suggest that it can be accepted to publish in Biogeosciences after minor revision. Please see my comments as follows:

1. Although the authors have mentioned the role of microorganisms in plantations, the significance for elucidating how forest plantations affect microbial community structure and diversity. Plantations are mainly used to supply with timber. Its sustainability will be a target. It will be good if producing more timber and increasing soil organic mat-

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ter at the same time. To achieve this, a prerequisite is to know how forest plantations affect microbial community structure and diversity. The reason is that microorganisms drive biogeochemical cycles. Here suggest that the authors develop a frame for microbial function to connect with the aim of this study and clarify its importance. 2. Soil CH₄-oxidizing bacteria are one of the important microbial groups, but there are also many others. Why oil CH₄ oxidation processes and CH₄-oxidizing bacterial communities were identified in this study? The authors should clarify this. 3. In this study, soil $\delta^{15}\text{N}$ was measured but it seemed that the authors did not mention why measure it. Please clarify what information it can represent. 4. This study focused on soil microbial community structure and diversity. In the text, the authors used soil bacteria and eukaryotes. It is better to briefly mention the main structure and their main functions in somewhere so that the readers are easy to follow. 5. In conclusion, the authors draw a conclusion that soil pH and nutrient quality indicators such as C:N and EOC:EON ratios were key factors determining the patterns of soil bacterial and eukaryotic communities. If it is possible, it will be better to make this change connected with biogeochemical cycles and thus the consequences.

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