

Interactive comment on “Manipulating interactions between plant stress responses and soil methane oxidation rates” by Xiaoqi Zhou et al.

Xiaoqi Zhou et al.

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Please find the attached 'reply to comments' file.

Anonymous Referee #1 The authors conducted a field experiment to assess how the use of ethylene biosynthesis inhibitor (AVG) would alleviate the inhibitory effects of ethylene from plants due to drought stress to methane oxidation of soil microbes. Their results showed that adding AVG could increase soil methane oxidation rates compared to control, and thus they concluded that AVG application can increase soil methane oxidation process under moisture stressed conditions. I found this manuscript was straightforward and well written. The topic falls within the scope of the journal. But I think this paper is more suitable for a short communication, as the paper is too short

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and data presented here was very limited. I suggest the authors can modify it to a short communication. R: Many thanks for your positive comments. We have asked the journal manager to change the type of this manuscript into 'Technical Note', a kind of short communication for this journal.

Some minor points are here. 1. L67-70 Rephrase it. Too long to understand. R: It has been revised. Lines 72-76

2. L111-116 How many gas sampling was conducted to measure CH₄ oxidation rates in one jar? How about the coefficient for linear regression? It's better to show gas concentration over time for different treatments in this study. R: We conducted two gas sampling at the beginning and the end of the incubation. Then soil methane oxidation rates in each jar were calculated from differences in the headspace CH₄ concentration over the incubation time. We cannot provide the changes in CH₄ concentration and we cannot calculate the linear regression of soil CH₄ oxidation rates over time, but we acknowledge that these data will make these results more interesting. Lines 126-128

3. L135 “CH₄ methane oxidation” R: Thanks. It has been changed into 'CH₄ oxidation'. Line 152

4. L161-164 Can excessive irrigation directly reduce aerobic methane oxidation as the authors proposed in L148-152? R: Yes, it might be possible. However, it would be expected that the combination of irrigation and AVG would produce CH₄ oxidation rates either the same, or potentially greater than, those observed for AVG alone. In this study, we did not find this case, so the explanation for the significant interaction remains unknown. A further study are needed to investigate the effects of plant, soil and microbial interactions under drought stress. Lines 183-190

Please also note the supplement to this comment:

<https://www.biogeosciences-discuss.net/bg-2018-102/bg-2018-102-AC1-supplement.pdf>

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