

Interactive comment on “Symbiosis revisited: phosphorus and acid buffering stimulate N₂ fixation but not *Sphagnum* growth” by Eva van den Elzen et al.

Anonymous Referee #2

Received and published: 10 November 2016

General comments: This paper is of environmental importance as authors have discussed the symbiosis of peat plants and symbiotic microorganisms. They are of recent importance as they play vital role in carbon sequestration. It is an interesting paper as the outcomes obtained were not as obvious expected results. However, there are certain flaws in the approaches they have chosen and discussion made. Moreover, it does not have any broader impacts. Though the methodology is very meticulously designed; some pictures or a graphical abstract would make the approach more clear.

Specific comments: 1. Word "symbiosis" in the title of paper is little ambiguous as the paper is only about the relation of P and N fixation and plant growth. Nowhere the microbial community had been addressed. 2. Abstract is quite general; more specific

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results could have been included. 3. Actual field conditions should have been studied and mentioned in the paper. Possibly, few revelations could have been seen like for eg. presence of other growth promoting microorganisms in natural environment which could affect the P/N uptake and plant growth. 4. Time course studies have not been well defined. 5. Three way ANOVA is the statistical technique used here using three independent variable (P, HCO₃ and spp.) which is an appropriate technique. But, three way ANOVA is a technique in which dependent variables should be at continuous level. Here, some dependent variables do not come under this assumption. Moreover; the independent variable should have two or more categorical groups. Authors fail to do so. Authors can read:<https://statistics.laerd.com/spss-tutorials/three-way-anova-using-spss-statistics.php>. Also, post-hoc analysis would make the scenario more clear as it would give precise idea of dependency of each of the independent variable.

Technical comments: Language used in the paper is pretty precise and clear. 1. Number of keywords can be reduced 2. Flow of introduction can be changed. Mention all the required introduction first and then mention your assumptions and reason for doing this study at the end. 3. If you are mentioning anything in your paper for first time mention it clearly. Like page 3, line 25, it was mentioned "our field sites"; as it was being mentioned for the first time it is better to mention the name.

Interactive comment on Biogeosciences Discuss., doi:10.5194/bg-2016-384, 2016.

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