

***Interactive comment on* “Technical note: Methionine, a precursor of methane in living plants” by K. Lenhart et al.**

K. Lenhart et al.

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The authors wish to thank the referee for his efforts in reviewing our manuscript and for the helpful and constructive comments provided. Below are our point by point responses to all issues raised by the referee. The manuscript has been revised accordingly.

General Comments In this manuscript the authors describe experiments designed to test whether methionine can be a source of methane production in plants. The experiments appear to have been well carried out, the presentation is clear and the results are convincing – when plants are incubated with labelled methionine the label does appear in released methane and more so during stress. The authors are also careful to make the point in the discussion that free methionine does not have to be the source

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in vivo, it could be protein-bound methionine (or probably both depending on conditions?) as previously suggested by Bruhn et al. (2012). Specific comments There is an unfortunate tradition to use the units ng, mg or g when talking about amounts of greenhouse gases. The only unit that makes chemical and biological sense, especially when comparing the amounts of two gases (e.g., CO₂ and methane) is moles. I can accept that the data are also given as ng or mg. The authors have recognized this as they use molar ratios when comparing CO₂ and methane emissions, but even here the results are given as “a pmol/l μ mol” (picomoles/micromoles) where it should be “a x 10⁻⁶” (and no unit), which I suppose could be called “molar ppm”? Authors’ response: We fully agree with the referee to use the unit mol when comparing the amounts of greenhouse gases. However, to ensure the comparability of our emission rates with other publications where the amount is often given in ng, we decided to give the emissions in both units (mol and ng). We have changed the CH₄:CO₂ ratio unit from pmol: μ mol to mol:mol x10⁶ in the results section (line 228), the discussion section, and in Fig. 2.

Technical corrections Page 16088 line 20 lavender should be written with lower case Authors’ response: Correction made. Page 16093 line 21 5-fold should be 4-fold Authors’ response: Correction made. Page 16094 line 20 “increase of CH₄ emissions” should be “increase in CH₄ emissions” Authors’ response: Correction made. Page 16095 line 18 5-fold should be 4-fold Authors’ response: Correction made. Page 16097 line 25 “we did not to scan” – delete “to” Authors’ response: Correction made.

Interactive comment on Biogeosciences Discuss., 11, 16085, 2014.

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