

## ***Interactive comment on “Dynamics of microbial communities during decomposition of litter from pioneering plants in initial soil ecosystems” by J. Esperschütz et al.***

**J. Esperschütz et al.**

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Both reviews clearly indicate that the study is original with interesting results and use of appropriate methodologies. Referee 1 requires the authors' to explain variable decomposition rates of Calamagrostis and Lotus. has been added (see response to reviewer 1)

Furthermore, the author should demonstrate if leaching of FA from litter may occur that could explain high levels of FA 18:3 and 18.2w6,2. has been added (see response to reviewer 1)

The English needs improvement. I suggest that the author consult a native speaker to  
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fix the English. The English has been rechecked by our team assistant (Tanja Smith) who is a native English speaker and works in addition to her job at our center as a professional translator. Minor changes were made wherever needed

Furthermore, there are very few references on litter decomposition and biogeochemical cycles drawn from restoration ecology. The issue of how microbial activity commences in an “abiotic substrate” is a central question to restoration ecology and could aid in formulating a more precise hypothesis. We like your idea linking the issue more close to restoration ecology. Therefore the issue of how microbial activity commences in an “abiotic substrate” is a central question to restoration ecology” as it links the study also more to practical questions. Therefore we included this issue in the last paragraph of the introduction.

Some methods need further information to ensure reproducibility by either adding references with accurate and detailed description or by adding supplemental materials/appendices. Has been added (see below)

Detailed comments: Page 14986 Lines 10-12: Statement of expectation in the introduction is ambiguous: for example “the amount of N derived from plant litter highly influences the performance of the litter degrading microbial biomass” Can you be more specific how the influence will be and what you mean by performance? has been changed to: “We postulated that due to the initial nutrient-poor substrate that was associated with a low abundance litter decomposers, the amount of N derived from plant litter highly influences the abundance and activity of the microbes involved in litter degradation resulting in a much faster colonization and degradation of the litter derived from *L. corniculatus*”.

Lines 18-19: Texture information of the substrate used would be very useful to make the experiment reproducible. Also, indication of what type of clay would help. Texture data has been added to the Material and Methods section; data on the clay type is unfortunately not available for the particular side

Lines 22-25: Refer to a publication in which technical details of the tent method are outlined. Gschwendtner et al. (2011) has been added

Page 14988 Lines 7-9: Add reference concerning light fraction analysis. Esperschütz et al. (2011) has been added.

Pages 14990-14991 Shouldn't you add a reference concerning the calculations – this is not the first time that for example delta 13 C is being defined. Esperschütz et al. (2011) has been added

Page 14998 Lines 10-15: The presentation of the conclusion is not compelling. It starts with a statement confirming what other studies have already shown followed by indicating that further research is needed. I suggest you go through the points you make and start with a positive message of what you have achieved and ending with a suggestion of what should be studied (and how) next. We thank the editor for this comment, as indeed an improvement and a focus on the major outcomes was helpful. We therefore deleted the link to former studies and the role of fungal communities during litter degradation. We also added a new idea of experiments needed for the future. "If this lack of nitrogen and probably also other nutrients, which obviously highly impacts transformation rates of litter material and therefore the generation of stable carbon pools in soil during ecosystem development, can be simply substituted e.g. by fertilization of the plots or by active planting of plants with a very low C/N ratio (e.g. legumes) remains an open question, which needs to be addressed in future research, mainly to transfer this knowledge to the development of practical application for soil restoration".

I have attached a pdf file with an annotated introduction, in which I tried to improve the presentation. The respective sentence has been changed to "Therefore it has been postulated that mainly the second phase of litter degradation is more depending on the structure and activity of soil microbes" in the revised version

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Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/9/C9438/2013/bgd-9-C9438-2013-supplement.pdf>

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