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Interactive comment on “Interactive effects of belowground organic matter input, increased precipitation and clipping on soil carbon and nitrogen mineralization in a temperate steppe” by L. N. Ma et al.

Anonymous Referee #2

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===== General comments =====

This ms describes a manipulative field experiment conducted in a temperate grass-land steppe, in which organic matter input (clipping and direct incorporation into soil) and precipitation were the main factors. The authors examined the resulting effects on soil C and N mineralization and microbial community structure. This is an interesting subject, the approach taken has novel aspects, and in general is appropriate for Biogeosciences.

There are a number of significant problems, however. First, the clipping portion of
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the experimental design is quite problematic: (a) it's not part of the randomized block design, and this fact needs to be made clear, and (b) it's not replicated! Or, rather, it's pseudo-replicated, but given the very small spatial scale of the experiment, this obviously raises questions about whether you can draw *any* inferences about the effect of clipping. At a minimum, you need to demonstrate that these two areas were identical (in biomass, etc.) before the experiment began.

Second, I'm concerned that there's some results overlap with papers published in PLOS ONE last year (Ma et al., both cited in the ms). For example, the results about SOM effects on soil temperature and moisture, as well as PLFA ratios, appeared in the "Soil Microbial Properties and Plant Growth Responses" 2012 paper.

Third, the figures are not very clear or imaginative. They mirror the results, actually—a great mass of data all plotted together, without a consistent theme or story. (See other reviewer's comment about lack of clear hypotheses.)

Finally, English quality is mixed; generally good, but there are consistent errors throughout which makes reading distracting and at times the meaning unclear.

===== Specific comments =====

1. Page 9494, lines 13-19: somewhat confusing; break up sentence and clarify if possible
2. P. 9496, l. 13: evidence doesn't claim, people do
3. P. 9497, l. 22-: so the clipping treatment (i) isn't part of the randomized block and (ii) is pseudo-replicated, not truly replicated
4. P. 9501, l. 22-: I'm a little unclear how these stepwise linear analyses were performed, clarify if possible. Given the number of factors being tested, how did you guard against overfitting / spurious correlations?
5. P. 9502, l. 3-15 as well as PLFAs: some of these results have already been pre-

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sented in your PLOS ONE paper

6. P. 9504, l. 12-16: move to discussion

7. P. 9509, l. 3: what long-term implications? Be specific

8. Table 1: this table would be much more informative with d.f. and F values included; you could indicate significance by shading/underlining

9. Table 2: give unit for all variables

10. Figures 3-5: bar chart overload. Bar charts make comparisons tough between dates, and are generally a poor use of space I think. Consider re-plotting at least some of these data, being more imaginative (e.g. box-and-whisker plots; point plots; etc) and focusing on most interesting comparisons.

11. Figure 4: what are June-3, Aug-3, Sep-3 values? Poor labeling generally

12. Figure 5: is bottom-right of x axis mislabeled? Should those be Jun-2, Aug-2, Sep-2?

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