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## ***Interactive comment on “Strong stoichiometric resilience after litter manipulation experiments; a case study in a Chinese grassland” by C. W. Xiao et al.***

### **Anonymous Referee #3**

Received and published: 1 August 2014

This is a very nice paper giving insights into the effects of changes in net primary production and leaf litter inputs on the stoichiometry of plant biomass, litter, microbial biomass and changes in soil nutrients. In the context of global change, the authors manipulated the litter inputs to soils and continuously monitored changes in the ecological stoichiometry for a number of years. Their results suggest that only very high additions of plant litter (twice the natural inputs) strongly affect the C:N:P stoichiometry in grassland ecosystems, which are mainly resilient to lower –more realistic changes– in input additions.

I find the manuscript to be mostly well written, although some parts need clarification.

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At the end of the introduction section the authors state that they assumed that an increase in soil nutrients would induce an increase in plant biomass through a priming effect. The reasons for this hypothesis (in particular the priming effect) should be shortly introduced in the previous paragraphs of the introduction.

It would be also helpful to specify already in the abstract and introduction that the added litter consisted of above-ground tissues (in contrast to belowground litter). With this, a few sentences are long and difficult to read and need to be improved (i.e. Lines 14-17 on Page 10497, and 21-23 / 24-27 on Page 10499 – see specific comments).

Some figures are very small and their size should be increased (Figure 3, 5 and 6).

Specific comments:

(Page 10488) Line 4: Carbon should be all written in lowercase.

Line 7: “subsoil layer under a steppe community” should be changed to “subsoil layer of a steppe community”

Line 25: I think the authors mean “assessing possible changes in C, N and P cycling”. Add “changes in”

(Page 10489) Line 12: atmospheric carbon dioxide (CO<sub>2</sub>). Add (CO<sub>2</sub>).

Line 14: should read “predicted to increase the net primary production”. Add “the”. Here some references are required at the end of the sentence. Also, add “(NPP)” after the wording “net primary production”.

(Page 10493) Line 5: “the 1 m x 0.3m quadrat” should be changed to “a 1 m x 0.3m quadrat”

Title in paragraph 3.2: should be: Plant biomass, allocation and litter.

(Page 10496) Line 21: Change “Litter amendments we did” to “The litter amendments we applied (Page 10497)”

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Line 4-5: should read: Nevertheless. Other amounts of litter additions had no effects.

(Page 10498) Line 13-17: The work from Li and Xiao (2007) is mentioned, but it should be specified that they were working in a desert ecosystem.

Line 27: “higher than that”

(Page 10499) “when they were quite high” should be changed to “when it was quite high”

Line 24-27: This sentence is long. I suggest to add a full stop after below plant biomass and change the wording “while realistic additions...” to “On the other hand realistic additions...”.

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Interactive comment on Biogeosciences Discuss., 11, 10487, 2014.

**BGD**

11, C4011–C4013, 2014

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