

Dear Dr. Zaehle,

Thank you so much for reviewing our manuscript entitled "*Contrasting growth responses among plant functional types to nitrogen fertilization in a subtropical forest in China*" (bg-2016-416). The referees have made a number of insightful comments and suggestions. We have carefully addressed these comments/suggestions and revised the MS accordingly.

The reviewers' major comments are summarized as the following three points: (1) the referee #1 questioned that the dosage of our N fertilization was too high; (2) referee #1 commented on that our experiments were only three replications in each treatment; and (3) referee #2 asked that our hypothesis should be more clear and the explanations in Discussion section should be biologically sound.

For the first point, we have made more clear statements in the 'Materials and methods'. We are sorry that our simple description may cause referee #1 a misunderstanding and incorrect calculation of the N dosage. In fact, in our experiment, 0.48 kg and 0.95 kg NH_4NO_3 were dissolved in 15 L of fresh water, respectively; namely, N concentration in N50 and N100 plots was 11.1 g/L and 22.2 g/L, respectively, but not 440 g/L in the N100 plots as the referee calculated. Taking the N100 treatment as an example, the equation for the calculation of the N concentration is as following:

$$\begin{aligned} \text{N concentration [g N L}^{-1}\text{plot}^{-1}\text{month}^{-1}\text{]} & \text{ for N100 plots (100 kg N ha}^{-1}\text{ yr}^{-1}\text{)} \\ & = 285.71 \text{ kg NH}_4\text{NO}_3 \text{ ha}^{-1} \text{ yr}^{-1} \text{ (please note: 1 kg N = 2.8571 kg NH}_4\text{NO}_3\text{)} \\ & = 0.95 \text{ kg NH}_4\text{NO}_3 \text{ plot}^{-1} \text{ month}^{-1} \\ & = 0.33 \text{ kg N plot}^{-1} \text{ month}^{-1} \end{aligned}$$

Therefore, the N concentration for each plot:

$$= 0.33 \text{ kg N /15L} = 22.2 \text{ g N L}^{-1} \text{ (please note: 0.33 kg N was dissolved into 15 L of fresh water for each plot and each month).}$$

For the second point, that the number of replications in our experiment was only three blocks was because of the actual distribution and topography of the subtropical forests. In eastern China, the distributions of subtropical forest stands are quite topographically fragmented, while relative flat stands are required to avoid N losses and minimize spatial heterogeneity among experimental treatments. Hence, after comparing several forests in subtropical regions, we conducted N fertilization experiment here because both the plant community and the landscape are good representatives of typical subtropical evergreen broadleaf forests. Actually, many of N addition experiments across different sites at boreal, temperate, tropical and subtropical forests have had similar number of replications (Rainey *et al.*, *Ecol. Appl.*, 9, 949-957, 1999; Magill *et al.*, *For. Ecol. Manage.*, 196, 7-8, 2004; Lu *et al.*, *Global Change Biol.*, 16, 2688-2700, 2010). For example, a similar experiment in a subtropical forest at Mt. Dinghushan in south China has a smaller plot size of 20 m×10 m and 3 replications

(Lu *et al.*, *Global Change Biol.*, 16, 2688-2700, 2010). In the Hardward Forest where long-term N fertilization experiments have been conducted for more than 30 years, three replications of three N treatments (control: 0 kg N ha⁻¹ yr⁻¹, low N: 50 kg N ha⁻¹ yr⁻¹, high N: 100 kg N ha⁻¹ yr⁻¹) were settled. That is to say, our experimental treatments (e.g., design of N dosages and replications) are consistent or comparable with those in other regions of forests, which provided a good opportunity to compare results among sites and forest ecosystems globally.

For the third point, we rephrased our hypothesis and focused on answering the question of “whether N is limited in this old-aged evergreen broadleaved subtropical forest” and rewrote the Introduction and Discussion section. We carefully stated the results of our experiment, and added an evidence of canopy cover and predicted the potential risk of N saturation in the subtropical forests in the Discussion section.

The detailed responses to each question and comment of the reviewers are attached with this cover letter. We hope that our revision is satisfactory to you and the reviewers. Please contact me if you have any concerns or further information is requested. Thank you!

I am looking forward to receiving your decision on our manuscript.

Yours sincerely,

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