egusphere-2026-682

How is the functioning of saplings limited by soil nutrients in tropical rainforests?

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BIOGEOSCIENCE – Comment on egusphere-2026-682 – 29/05/2026
Responses to comments by referee #2 (2 April 2026)

The author's comments and responses are in blue, and the referees' comments are in black.

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RC2: 'Comment on egusphere-2026-682', Anonymous Referee #2, 02 Apr 2026

This manuscript reports the impacts of nitrogen + phosphorus (N+P) fertilisation on the saplings of tropical rainforest after 8 years of fertilisation. The authors measured soil nutrients, sapling stem, height growth and volume, sapling leaf N and P concentrations, sapling photosynthetic capacity and overstorey leaf area index. Their findings showed that the combined N+P fertilisation increased soil P availability, increased sapling leaf N and P in some species, but had no observable effect on photosynthetic capacity, stem growth and volume. Fertilisation also increased overstorey leaf area, thereby reducing light availability to the saplings, which in response increased in height and specific leaf area. This study is indeed relevant in understanding the responses of saplings to elevated nutrient inputs in tropical forests. Generally, the manuscript reads well, but a few recommendations for improvement are provided below.
Response: We would like to thank Referee#2 for his/her positive feedback, as well as for his/her comments and questions, which we believe we have clarified.

I am wondering why the authors excluded the N fertilisation only and the P fertilisation only from the study. This would have helped disentangle the effects of the individual nutrient additions on the sapling parameters measured.
Response: We thank Referee#2 for raising this pertinent point. If we had had more time, we would certainly have carried out measurements in plots with P fertilisation alone and N fertilisation alone. Unfortunately, time and battery capacity were limited, and photosynthesis measurements per sapling took a long time and used a lot of battery power. We therefore chose to compare the two extreme fertilisation types: +NP versus control.

L187-190. What constituted the six plots used in this study, if there were 12 plots for N, P, and N+P (L. 172), I'm guessing the number of replications was four. Did you study six plots in total or six plots per topographic location? Clarify.
Response: As stated in the "Materials and Methods" section, there were six plots in total: "This study focuses on only six of these fertilisation plots". Please refer to our previous response for further explanation.

I find the description of the statistical analysis section insufficient and rather general. The section lacks information on how the different parameters were handled. These are important to ensure transparency and reproducibility.
Response: We have rewritten the "2.5. Statistical analysis" section, detailing each test. Please also see our response to Reviewer#1.

162 "..(sometimes ANOVA, when overstorey LAI had no statistically significant)". It is unclear what the authors mean here.
Response: By this, we mean that ANCOVA was the main model because overstorey LAI is a continuous variable. However, when the overstorey LAI had no significant effect and was removed from the model for simplicity, it became an ANOVA model.

L186. Is there a reason why height and not diameter was used as a criterion of what a sapling is?
Response: In 2016, height was used as a guideline for defining what constitutes a sapling, but there was no real reason why diameter wasn't also considered. This was probably because height could be estimated more quickly, without the need for highly precise measurements each time. Furthermore, it was also necessary to consider which species were selected and whether they were evenly distributed across the plot, so height was an easier parameter to use. However, to be strictly accurate, diameter could also have been taken into account.

135. '..around the world' yet all the references were mainly neotropical. Either rephrase or include references from other tropical regions.
Response: We agree that this could cause confusion. We have reworded it as follows: "Fertilisation experiments are therefore being conducted at various locations to determine whether soil nutrient availability (as well as light availability) has an effect on survival, growth and CO_2 assimilation capacity".

L.451. What does "deeply " mean?
Response: We thank Referee #2 for pointing this out. In the given sentence, "deeply" referred to shaded forest floors. To avoid further confusion, we have replaced "deeply" with "heavily".

L468. "leaded" Do you mean led?
Response: We have corrected "leaded" to "led".

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