

Study on the relationship between Net primary productivity and site quality in Japanese larch plantations in mountainous areas of eastern Liaoning

According to the structure and criteria of the *PeerJ—The Journal of Life and Environmental Sciences*, the current review is divided into 4 sections as follows: Also, an extra section was considered as **Confidential notes to the editor**.

The manuscript is interesting for forestry literature and specifically for Chinese forestry. The ADA and GADA models have been used to model the h-a relationship and develop SI equations in several species and worldwide.

This manuscript is interesting, but it is hard to understand in the entire manuscript. There is a disorder for references in the entire manuscript. Some references appear a copy and paste for other manuscript. Please, improve all reference in the entire manuscript and use the correct style for PeerJ. All references should be in pose or parentheses and well organized.

Please, the authors can find point by point some comments, suggestions, and recommendations as follows:

1. Basic reporting

The manuscript is well written, but it is hard to follow the objectives, methods, results and conclusions. Some paragraphs in Results and Discussion sections seem methods.

The authors kindly suggested to use “SI” instead “site index” in the entire manuscript. Sometime SI is used and sometime site index. Please, use ADA or GADA after first mentioning.

The GADA methodology should be clarified and improved in the entire manuscript.

Some Tables are missed for the main text.

Conclusion should be rewritten in a single paragraph. Please avoid to add mathematical formulas in this section.

Authors should explain and justify the ADA and GADA models. The E1 is an ADA model but the solution is false.

Please, improve the Tables and Figures.

Additionally, all information presented in results should be added in Materials and methods.

Please, all tables and Figures should be added in the Results section.

2. Experimental design

The experimental design is interesting. But the used dataset to fit the ADA and GADA equations comes from forest inventory. Authors should explain in detail. Hot the ADA and GADA equations were fitted to forest inventory dataset.

If the h1 parameter was fixed for a specific age, authors should explain and justify. The results seem as a fitted curve guide equation.

3. Validity of the findings

In this section is hard to understand the manuscript. The objectives does not match methods, results, and conclusions. The Study is hard to follows and the cites literature is disorganized.

Some details about GADA theory are missed. But the results emerge from study.

4. General comments

The comments for authors were divided into two sections; general comments and specific comments.

General comments.

The using of references should follow a congruent style according to the Authors guide and how they should be shown in the manuscript. Please. Avoid spaces in before and after all references

Specific comments and suggestions.

Title section

Looks good.

Abstract section

Please, improve this section and use past tense for main sentences.

L14. Please use italic font for species name and do the same in the entire manuscript (MS).

L18—19. Please, use the same order for growth equations. This should match the order in in L211—216.

L23. “was”.

L24. “were”.

L25. “was”.

L26. Please, introduce the E1 equation.

Please, use SI for site index.

L29. “was”.

L30. What is NPP?

L31. Please, explain MOD17A3HGF.

L38 “*Larix kaempferi*”.

Introduction

L41. “et all” or “et al”?

L41. Please avoid spaces before and after reference. The same in L48 and in the entire MS.

L51. “al”.

L55. Please, improve reference. Do the same in the entire MS.
L64. I think is “et al” instead of “et all”.
L82-83. “ The Modern Resolution Imaging Spectroradiometer (MODIS)...”.
L86. Improve references. Please, add a comma or point.
L93. Please add the reference at the end of sentence.
L94—117. Please, improve all reference.
L114. “index age or base age”.
L114. “SI”.
L115. “SI”. Please, do the same in the entire MS.
L117. “SI”. Please, improve the reference.
L119—120. Please, improve the paragraph and each sentence.
L121. “SI”. And do the same in the entire MS.
L136 and L138. “were”.

Materials & methods

L142. “subsection”?
L151. Please, rewrite this sentence.
L152. “... C, and North ...”.
L167—168. Please, explain in detail.
L169. “were”.
L170 “were”.
L176 “ 500 m”.
L178. What is HDF?, please, explain.
L185. “were”.
L189. “ADA”.
L190. “ADA”.
L192. “SI”.
L192—194. “(2) ...; (2), ..., (3)”.
194, “GADA”.
L196—197. Rewrite.
L207—208. Please, follow the same order in equations. Please avoid #.
L208. “[56]?”.
L209 “SI”.

L221. "2.3.2?".

L222. Improve the first sentence.

L222. "ADA" instead of "algebraic difference approach".

L228. "SI".

L234. " t_0 and h_0 ". If you are talking about X_0 , you should use t_0 and h_0 .

L240. "SI".

Please, improve all GADA formulations. You should use 0 and 1 or 1 and 2, but not 0 and 2 stages.

Please, avoid #.

L245. Please, use h_0 , t_0 and X_0 . Also, α 's parameter could be used.

L256—257. This is false. Each parameter a , b , and c has a specific solution and X_0 has a different solution.

L257. "[53]?".

The solution for X for E_0 in Table 3 is wrong. That is the solution for $\exp(X_0)$. Neither ADA nor GADA.

L267. BIAS and MAE are the same. Please use only one. I kindly recommend authors to use BIAS.

L274. Please, use "1" instead of "n" for this formulation.

L281. Please, check the reference for R or RStudio.

L298. Please add a reference.

Authors should explain in detail how the GADA models were fitted. They use nls and the h_0 parameter was not explained. The GADA models were fitted by guide curve and the results showed that. If it is true, base growth models could be used or ADA models.

Authors should rewrite the GADA theory and its formulation.

L291. This was not used in the Results section.

Please, add more detail about NPP was obtained for MODIS. How was this variable ranged?

L295—296. Please, rewrite these sentences.

Results

L304. "were".

L304. "SI".

L326. "(1)".

L327. "(2)".

L327. "(3)".

L327. "(4)".

L329. "SI".

L337. "SI". The same for L338.

The equation E0 has two parameters and the equation E1 has three parameters. Please, remove all GADA equations which were not convergence in fitting process. Please, just include the GADA equations with convergence.

Please, include the comparison between GADA models with three parameters. The ADA equation has only two parameters. They are comparable.

L372—392. Please remove this information. This is not necessary.

L394. Formulas 14 and 15 are missed. Also, remove this information.

L395—400. Please. Move to materials and methods section.

L417. Please. Improve Figure 6.

L426—431. Please. Move to materials and methods section.

L437—441. "sep-eration?".

L442. "3.3.1?".

Discussion

L462. "SI".

L462—467. Please, improve this paragraph and all references.

L467. "SI". The same in L476.

L488—507. This information is not relevant for the study. Please, remove or rewrite it.

All Tables and Figures should be included in the Results section.

Conclusions

Please, improve this section in a single paragraph (Less than 250 words). Please, avoid formulas.

Please use GADA instead of Algebraic Difference Approach.

This section should be rewritten.

Figures and Tables

The information of Figure 7 should be added in the material and methods section.

Please, improve Table 1. Please, add a description below table for each variable.

The solution for X in E0 is wrong. This solution is for $\exp(X0)$. I think you are talking about the "a" parameter solution of base growth model. Please, include only equation with convergence in fitting process.

Why E2 did not converge in the fitting process? This equation is so popular and well performance could be shown. Is this about the used dataset?, please, explain in detail.

Only include E0, E1. The rest of GADA equations performed poorly.

The BIAS and MAE should be the same. Just MAE in positive values. Please, use only the BIAS statistic.

Please use " <0.00001 " for p-value instead of " $<2e-16$ ".

Information of Table 6 should be added in the materials and methods section.

Table 7 is missed in MS.

Table 8 is missed in MS.