

Reviewing report of PCI Forestry and Wood Science

(Reviewer: *****)

Date of reporting:

8th Jan 2021

Author(s):

Bernard Thibaut, Joseph Gril

Title of contribution:

Tree growth stresses, in situ measurement and properties of normal and reaction woods

Type of contribution:

Original paper

Dear Authors

Thank you very much for your contribution to the PCI Forest and Wood Sciences.

The paper is well designed and edited, delivering important information to some investigators and engineers who are interested in sawmill and timber sciences.

The authors are one of well-known top-leading researchers of tree and wood biomechanics, who has been accumulating a plenty of knowledge of physical and mechanical properties of reaction wood (they referred it “compression wood” and “tension wood” in this contribution). The reviewer believes this contribution delivers not “a very novel discovery which requires consecutive discussions among researchers among researchers” but “a grand-sum theory to educate or lead young researchers and engineers who are interested in biomechanics of wood and timber”. The present contribution is quite long and taking a style of semi-review paper; I am afraid that some readers sometimes feel tedious. Therefore, the authors should always keep their eyes open for describing each paragraph briefly so that readers could read easily. In any way, basically I strongly recommend the authors to publish the present contribution in PCI Forestry in agreement with the editor-in-chief.

Recommendations of corrections

1. The figures should be edited in a typical and classic style.

Explanation of each axis in the x-y diagram “must” be always put and in an accurate font.

What does “ $BD=f(DD)$ ” mean in Fig.3? I think many of explanation should be described

not in the x-y diagram but in the caption as a Notes or Legends. Same could be checked in another some figures.

2. Any abbreviated quantity should not be used in the text if it is not listed in the nomenclature table or without any explanation. Examples are, CIRAD in L.162, sigmaM in L.322, FSP in L.234.
3. Important mathematical equation should be described in a classic style using MathType in an independent line with numbering.
4. Some reader could not understand the difference between “maturation strain and growth strain”, “maturation stress and growth stress”. In Introduction chapter, brief definitions of key-terms are helpful for readers.

(another comments)

- (1) The aim and/or goal of the contribution should be clearly declared in Introduction Chapter.
- (2) In Line 161~177, the CIRAD single-hole method should be graphically illustrated if possible. I discover an example in Gril et al. (2017).
- (3) In Line 229-230, what Mk meas? A subscripted k in Mk is a kind of suffix? This “k” causes more or less confusion with “k” in the equation in Line 207.
- (4) In line 267 in caption of Fig.5, the unit of MOE is not “MPa” but “GPa”?
- (5) The authors should propose a final (or tentative) recommendation of formula to calculate the value of phi. Which is the most recommended one between in Line 297 ($\phi = -0.4811S_{Mb} + 25.45$) or in Figure 8 ($\phi = -0.4811S_{Mb} + 25.45$)?
- (6) In table 2, each sample species has each code number, while in Table 3, no code. Do you think about no need to put code number?
- (7) What is difference between sigma-M in Line 323 and sigma-m (maturation stress)? Was the sigma-M already defined in the text?
- (8) A sentence in Line 534 “It is natural and useful - - - of maturation as basic - - - ” is difficult to be understood.
- (9) In Line 550, “fond” is misspelling of “found”?
- (10) Signs of strains in Table 5 are confusable. Please check “expansion of alpha-m” is positive in CW, and “contraction of alpha-m” is negative in TW.
- (11) The reviewer looks forward to reading the completer manuscript in a published stayle in PCI Forestry.

Sincerely yours