

Interactive comment on “Flexural behaviour of selected plants under static load” by F. J. Sutili et al.

Anonymous Referee #1

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General comments

The paper is surely interesting.

The desirable characteristics of the plants for soil-bioengineering purposes should be better outlined referring to elasticity (bank protection and decreasing roughness and flow resistance after bending, not only bank stabilization and/or lever effect, cfr. P1472 L16), plasticity (permanent deformation, survival, etc.), and breaking (survival after “natural” coppicing or pruning).

According to this:

- TITLE: suggestion for this Journal: Flexural behaviour of selected riparian plants under static load

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- P1469 L16-26: suggestion: please, move to Introduction section

Statistical tests are missing.

Authors incurred in a systematic mistake in the three points loading test, due to the “flexibility” of the green stems: the geometrical configuration of the test (as stated by DIN 52186 [Tests on wood. Bending test]) is no more valid when the stem is going to be bent so much that ray of the curved stem in the centre is lower or equal to the ray of the semi-cylindrical head of loading. In this situation, when the loads are high enough, the geometry of the test is completely lost, as well shown in the snapshot of the text:

1) bending moment is unknown because, for the shifting of the stem on the supports, the “lever arm” is changing (bending moment $M_f = l/2 \times F/2$, actual l is shortening with load increasing),

2) direction of the forces are no more vertical,

3) the contact points (on the shifted stems), are four and no more three So in this situation it is not possible to know the true stress on the stem. This systematic error is increasing with the slope of the stem and with the growing of the load, but it can change, stem by stem, due to the combination of load, modulus of elasticity, slope, etc.

The recommendation is: Authors have to rewrite the text, pointing out that some important assumptions due to the lost of the three point loading geometry have been done and specifying all the effects on the other results. Differently, if the Authors think that the effect of the loosing geometry is negligible, they have to declare it explicitly, explaining and demonstrating why it is not significant.

The proof-reading by a native speaker and the translation of some technical words are recommended.

The check of quotations and references in the biography is recommended. A list of symbols and the check of all the formula and units of measurement are suggested (also in tables, figures and captions).

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Considering all of the above, as well as the following specific remarks and other numerous minor deficiencies (of which I have also a more detailed list and will present them upon your request), I think that this manuscript is suitable for publication after major revisions.

Specific comments (see attached .zip file)

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/7/C273/2010/hessd-7-C273-2010-supplement.zip>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 1459, 2010.