

Some questions about Yang et al. “Quantitative assessment of soil physical quality in northern China based on S-theory” [Rev Bras Cienc Solo. 2015;39:1311-21]

Almost two years have passed since the publication in RBCS of my critical review about the S-index and its use in Brazil (De Jong van Lier, 2014). Two main conclusions were drawn from the analysis presented in that paper. First, as a relative indicator of soil physical quality, the S-index (Dexter, 2004) has no additional values over bulk density or total porosity. Second, as an absolute indicator, S has shown not to be capable of predicting soil physical quality, and a threshold value (like the frequently used $S = 0.035$) does not hold up under several boundary conditions described in the literature.

I was happy to see that since then the number of publications on the subject decreased. However, in one of the latest editions of RBCS (v.39, n.5), the title of a publication by Yang et al. (p. 1311-21) caught my attention: “Quantitative assessment of soil physical quality in northern China based on S-theory”. The title is in utter conflict with the main conclusions of De Jong van Lier (2014), and I would expect that authors cite and question these conclusions, which may lead to an interesting discussion.

In fact, De Jong van Lier (2014) was cited once in the introduction, on p. 1313, 1st column, stating that he “revisited the S-index for soil physical quality and its use in Brazil. He found that as an absolute indicator, the value of S alone has proved to be incapable of predicting soil physical quality, while as a relative indicator, it has no additional value over bulk density or total porosity”. Whereas this citation correctly reproduces the conclusions from De Jong van Lier (2014), in my opinion, quoting this in the introduction of a manuscript aiming at the quantitative assessment of soil physical quality based on S-theory without objecting, impugning, or contesting these statements at some point requires a more profound justification by the authors.

In their conclusions, Yang et al. (2015) find “a negative linear correlation between bulk density and the S index” but do not mention that this correlation is of mathematical origin and implicitly described by eq. 52 presented in De Jong van Lier (2014). Furthermore, in opposition to Conclusion 2 from De Jong van Lier (2014), Yang et al. (2015) concluded that “the average S index of 0.077 indicates that soil physical quality in the Haihe River Basin is very good”. This conclusion is, at least, unreliable, based on De Jong van Lier (2014).

In my opinion, it is important that these points be clarified to the scientific community, more specifically to the readers of RBCS, and I would like to know the view of the authors of Yang et al. (2015) about these remarks.

*** Corresponding author:**

E-mail: qdjvlier@usp.br

How to cite: De Jong van Lier Q. “Some questions about Yang et al. ‘Quantitative assessment of soil physical quality in northern China based on S-theory’ [Rev Bras Cienc Solo. 2015;39:1311-21]”. Rev Bras Cienc Solo. 2016;40:e0160058.

Copyright: This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided that the original author and source are credited.



REFERENCES

De Jong Van Lier Q. Revisiting the S-index for soil physical quality and its use in Brazil. *Rev Bras Cienc Solo*. 2014;38:1-10. doi:10.1590/S0100-06832014000100001

Dexter AR. Soil physical quality: Part I. Theory, effects of soil texture, density, and organic matter, and effects on root growth. *Geoderma*. 2004;120:201-14. doi:10.1016/j.geoderma.2003.09.004

Yang D, Bian Z, Zhang K, Xiong J, Lei S. Quantitative assessment of soil physical quality in northern China based on S-theory. *Rev Bras Cienc Solo*. 2015;39:1311-21. doi:10.1590/01000683rbcs20150030

Quirijn de Jong van Lier*

Universidade de São Paulo,
Centro de Energia Nuclear na Agricultura,
Piracicaba, São Paulo, Brasil.