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Identification of sensitive indicators to assess the interrelationship between soil quality, management practices and human health

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In general the authors have done a very good job in commenting the most pertinent literature and compiling this in a comprehensive and well-structured review. With no doubt this work would be of interest to SOIL readers.

I highly recommend this work to be published in SOIL with a minor revision.

GENERAL COMMENTS:

Introduction

In Page 465 Line 5. The paragraph starting with “Nonetheless ...” It seems to me that what is here being compromised is the services that a healthy soil will provide. I will suggest the authors to introduce here this, more modern, term of soil ecosystem services.

Daily, G.C. 1997. What are ecosystem services?. In: Nature’s Services: Societal Dependence on Natural Ecosystems (ed G.C. Daily), pp. 1 – 10. Island Press, Washington, DC

Kremen, C. & Ostfeld, R.S. 2005. A call to ecologists: measuring, analyzing, and managing ecosystem services. *Frontiers in Ecology and the Environment*,3, 540 – 548.

Millennium Ecosystem Assessment (MA). 2005. Ecosystems and Human Well-Being: Synthesis [1]. Island Press, Washington. 155pp.

<http://www.unep.org/maweb/documents/document.356.aspx.pdf> (last time visited 11/11/2014)

In Page 465 Line 24. The paragraph explaining the aims of the work is reiterative and needs rephrasing. “This paper aimed”, “This paper synthesizes”, “This review incorporates”

In Page 466 Line 3. The sentence is not relevant nor necessary “We have reviewed the most significant literature including 119 articles published since 1991.”

In Page 467 Line 2. The paragraph starting with “One of the...” needs rephrasing for clarity and including Doran’s paper title is not necessary here.

In Page 467 Line 15. Again, introducing here the concept of soil ecosystem services would be appropriate.

In Page 467 Line 19. The reference to Larson and Pierce (1991) is not easily available. Will suggest to mention the first citation Larson and Pierce (1991) as in Larson and Pierce (1994) that is easily available.

Larson, W. E. and Pierce, F. J. 1994. The dynamics of soil quality as a measure of sustainable management. Pages 37 - 51 in J. W. Doran, D. C. Coleman, D. F. Bezdicek and B. A. Stewart, eds. Defining soil quality for a sustainable environment. SSSA- Special Publication 35. Soil Science Society of America, Madison , WI, USA.

Would recommend merging the introduction sections 1.3 and 1.4 in a single section, 1.3 "Approaches to assess soil quality and the selection of suitable indicators."

Agricultural practices and soil quality indicators

In Page 470 Line 14: May be it would be useful to highlight that Liu et al. (2014b) validated their SQI (Liu et al., 2014a) in low productive albic low-yielding soils from Eastern China.

Forest management and soil quality indicators

In Page 471 Line 4: Something is missing in the sentence starting "Most research..." please rephrase.

In Page 171 Line 8: Rewrite the sentence with something like "Also to assess forest SQ the most used indicators are SOC, followed by."

In Page 171 Line 11-15: The paragraph starting with "In the last years..." is vague and not clear, please rephrase.

Land use Change and soil quality

In Page 474 Line 24-28: The comment in relation to the work by Ruiz et al. (2011) is unnecessary. The authors described their findings when using a macroinvertebrate QI that may or may not been in agreement with any other work performed using different QIs. In general they found very high QIs for 3 of the 5 forest systems they studied (out of 22 systems for which IBQS were computed) and only 2 give medium -average I will said- values. Furthermore literature reporting higher QI in crops/pastures than in some forest can be found elsewhere.

References

Appart from the literature mentioned above, the authors may consider including other relevant references related mainly with the relevance of SOM and their fractions for SQ:

Arias et al. (2005) Soil health—a new challenge for microbiologists and chemists. *International Microbiology* 8: 13-21

Miralles et al. (2009) Soil quality and organic carbon ratios in mountain agroecosystems of Southeast Spain. *Geoderma* 150: 120-128.

MINOR and TYPO ERRORS:

Page 464

Line 22: Change “were” with “where”

Line 27: Change “spectroscopy” with “spectroscopic”

Page 465

Line 3: Change “media” by “medium” or “compartment” or “factor”

Page 466

Line 22: “medium” is a singular whereas “media” is the plural form. Any way I will use here another term i.e. “aspects”

Page 667

Line 17: “immense” is too much “a wide range” would be more appropriate

Page 469

Line 14 Change “weighting of different” with ““weighting different”

Page 471

Line 6 Change “concerns” with “concern”

Line 7 Write “made a shift in research focus towards the sustainability...”

Line 8 Change “nutrients level” with “nutrient values”

Line 11 Change “aggregates” by “aggregate”

Line 13 Use an alternative word for “relevance”

Page 471

Line 14 Change “aggregates” by “aggregate”

Page 473

Line 15 Delete “cause”

Page 480

Line 7 Change “highly” with “often”

Line 9 Change “level” with “aspects” or “features”

Line 15 Change “great” with “wide”

Line 17 Change “curves” with “functions”

Line 25 Change “were” with “where”

Line 26 Rephrase to avoid duplications “new”

Age 481

Line 1 highlight “per se” use semicolon or italics