

Review of: "The impact of land use practice on the spatial variability of soil physicochemical Properties at Wondo Genet, Southern Ethiopia"

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Potential competing interests: No potential competing interests to declare.

Dear Dr. Mikias Biazen Molla

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The manuscript entitled 'The impact of land use practice on the spatial variability of soil physicochemical Properties at Wondo Genet, Southern Ethiopia' presents interesting results. However, it presents some points that deserve attention.

There are some suggestions/recommendations I consider are important to be taken into account by the authors in order to improve this scientific work:

1. Abstract

1.1. Please, add the hypothesis of the work.

1.2. Please, add the conclusion of the work based on the hypothesis.

2. Keywords

2.1. I suggest to add "natural forest", "plantation forest", and "agricultural land" in the keywords section.

3. Introduction

3.1. I suggest to add more scientific works related to the impacts of soil compaction (caused by harvest machines) in forest plantations on soil C, N, P, K and other nutrients availability, and on soil physical properties (i.e. soil density and porosity). For instance:

Silva SR, Barros NF, Costa LM, Leite FP. Soil compaction and eucalyptus growth in response to forwarder traffic intensity and load. *Revista Brasileira de Ciência do Solo*. 2008 June; 32:921-932. doi: 10.1590/S0100-06832008000300002

Dias Junior MD, Silva SR, Santos NS, Araujo-Junior CF. Assessment of the soil compaction of two ultisols caused by logging operations. *Revista Brasileira de Ciência do Solo*. 2008 December; 32:2245-2253. doi: 10.1590/S0100-06832008000600004

Silva SR, Silva IR, Barros NF, Mendonça ED. Effect of compaction on microbial activity and carbon and nitrogen transformations in two oxisols with different mineralogy. *Revista Brasileira de Ciência do Solo*. 2011 October; 35:1141-1149. doi: 10.1590/S0100-06832011000400007

Oliveira FC, Silva IR, Ferreira GW, Soares EM, Silva SR, Silva EF. Contribution of Eucalyptus Harvest Residues and Nitrogen Fertilization to Carbon Stabilization in Ultisols of Southern Bahia. *Revista Brasileira de Ciência do Solo*. 2018 January; 42:e0160340. doi: 10.1590/18069657rbcS20160340

Silva SR, Barros NF, Novais RF, Pereira PR. Eficiência nutricional de potássio e crescimento de eucalipto influenciados pela compactação do solo. *Revista Brasileira de Ciência do Solo*. 2002 December; 26:1001-1010. doi: 10.1590/S0100-06832002000400018.

Silva SR, Barros NF, Costa LM. Physical attributes of two Oxisols affected by soil compaction. *Revista Brasileira de Engenharia Agrícola e Ambiental*. 2006 December; 10:842-847. doi: 10.1590/S1415-43662006000400009.

Silva SR, Barros NF, Silva IR, Comerford NB. Diffusive fluxes of phosphorus, potassium and metallic microelements as affected by soil compaction. *Communications in Soil Science and Plant Analysis*. 2018 August; 49:2369-2378. doi: 10.1080/00103624.2018.1510947.

Silva SR, Barros NF, Boas JE. Eucalyptus growth and nutrition as affected by latosol compaction at different moistures. *Revista Brasileira de Ciência do Solo*. 2006 October; 30:759-768. doi: 10.1590/S0100-06832006000500001.

3.2. I suggest to add more scientific works related to the impacts of soil tillage in agricultural land on soil C, N, P, K and other nutrients availability, and on soil physical properties (i.e. soil density and porosity). For instance:

Silva SR, Santos HP, Lollato RP, Santi A, Fontaneli RS. Long-term effects of tillage systems on liming efficiency, soil chemical properties and wheat yield in Southern Brazil. *Soil Research*. 2021 November; 60:497-510. doi: 10.1071/SR21023

Silva SR, Santos HP, Lollato RP, Santi A, Fontaneli RS. Soybean Yield and Soil Physical Properties as Affected by Long-Term Tillage Systems and Liming in Southern Brazil. *International Journal of Plant Production*. 2022 November; 16. doi: 10.1007/s42106-022-00217-0

Foloni JS, Silva SR, Abati J, de Oliveira Junior A, de Castro C, de Oliveira FA, Nogueira MA, Bassoi MC. Yield of soybean-wheat succession in no-tillage system and soil chemical properties affected by liming, aluminum tolerance of wheat cultivars, and nitrogen fertilization. *Soil & Tillage Research*. Forthcoming; 226:105576. doi: 10.1016/j.still.2022.105576

3.3. Please, add the hypothesis of the work before the objective.

4. Methods and Materials

4.1. For “Natural forest land” section, add the popular and scientific names of the main trees that occupy the area.

4.2. For “Plantation forest” section, add the scientific names of the four quoted species.

4.3. For “Agricultural land” section, add the scientific names of all crop species.

4.4. For “Soil sampling techniques” section, please, be specific whether the soil samples were taken from 0-60 cm layer or they were sampled at 60 cm depth.

4.5. For “Soil analysis” section, please detail the methods used for soil porosity and soil density analyzes.

5. Results and Discussion

5.1. Please, explain your results based on the novelty and compared to the main scientific papers related to the subject of your study. Please, see the aforementioned papers.

6. Conclusions

6.1. Please, add the conclusion of the work based on the hypothesis.